

## Appendices

### **Appendix 5.9-1 Transportation Impact Analysis**

## Appendices

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# **FINAL Transportation Impact Analysis**

## **Westminster Mall Specific Plan**

Prepared for:  
Placeworks, Inc.

November 2020

OC19-0686

FEHR  PEERS



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## 1.0 EXECUTIVE SUMMARY

Fehr & Peers has completed the transportation impact analysis (TIA) for the Westminster Mall Specific Plan (WMSP) in Westminster, California. This TIA was developed based on coordination with the City of Westminster and the City's updated transportation impact analysis requirements that address both level of service (LOS) at local intersections and new vehicle miles traveled (VMT) that is now required by CEQA.

The Specific Plan is bordered by Edwards Street to the west, Bolsa Avenue to the south, Goldenwest Street to the east, and I-405 freeway to the north. The specific plan proposes to redevelop the existing Westminster Mall to include the following land uses:

- Retail: up to 1,020,000 square feet
- Multi-Family Residents: up to 3,000 dwelling units
- Office: up to 180,000 square feet
- Hotel: up to 425 rooms

As part of the TIA, and consistent with the City's general plan, the following scenarios were analyzed:

- Existing (2019) Conditions: Consists of traffic counts collected in April 2015 as part of the City of Westminster General Plan Update, factored up by annual growth developed from the Orange County Transportation Analysis Model (OCTAM) to account for traffic volume growth that may have occurred since the time the General Plan Traffic Counts were collected.
- Existing (2019) Plus Project Conditions: Consists of traffic volumes from the Existing (2019) scenario plus trips generated by the proposed project.
- Opening Year (2023) No Project Conditions: Consists of Existing volumes factored up by an annual growth rate developed from the OCTAM model to account for ambient growth in the area.
- Opening Year (2023) Plus Project Conditions: Consists of Opening Year (2023) No Project Conditions traffic forecasts plus trips generated by the proposed project.
- Cumulative (2040) No Project Conditions: Consists of 2040 forecasted volumes using the OCTAM consistent with City of Westminster's General Plan Buildout.
- Cumulative Year (2040) Plus Project Conditions: Consists of Cumulative Year (2040) No Project Conditions traffic forecasts plus trips generated by the proposed project





## FINDINGS

VMT assessment reveals the project's baseline VMT per service population (VMT/SP) is estimated to be approximately 4% lower than the baseline Orange County regional average, which results in a project level impact. The project's VMT/SP will reduce the City of Westminster's VMT/SP in the Cumulative Year (2040), which indicates that the project will not cumulatively affect Citywide VMT.

WMSP encourages the development of TDM strategies and programs that can be implemented to encourage commuters to reduce their vehicle trips per day and consider the use of other modes of transportation to get to work. These TDM measures could likely reduce VMT/SP to approximately 15% below the current citywide average.

Level of service analysis indicated that the study intersections evaluated will operate acceptably at LOS D or better with the development of the project under all scenarios. A comprehensive description of this analysis is provided in the report. No significant impacts have been determined for pedestrian, bicycle, and transit modes.





## 2.0 INTRODUCTION

Fehr & Peers has completed a transportation impact analysis (TIA) for the proposed Westminster Mall Specific Plan (WMSP) in the City of Westminster, California. This report summarizes the methodology, findings and conclusions of the analysis. This chapter outlines the geographic scope of the transportation impact analysis, including the study area.

### PROJECT DESCRIPTION

The WMSP plans to revitalize the existing Westminster Mall through the development of a mixed-use community. The project is bordered by Edwards Street to the west, Bolsa Avenue to the south, Goldenwest Street to the east, and I-405 freeway to the north. The project lies within the City of Westminster and borders the City of Huntington Beach. **Figure 1** shows the WMSP site plan. Access to the existing project site is provided by two driveways along Edwards Street, three driveways along Bolsa Avenue, and one driveway from the I-405 ramp near Goldenwest Street. The WMSP proposes the removal of mall access at the intersection of Mar Vista Drive and Edwards Street and the development of a new driveway along Edwards Street. The following is a summary of the land uses included in the proposed Project:

- Retail: up to 1,020,000 square feet
- Multi-Family Resident: up to 3,000 dwelling units
- Office: up to 180,000 square feet
- Hotel: up to 425 rooms

### STUDY AREA

The study area and analyzed intersections were determined based on preliminary trip generation, trip distribution, trip assignment estimates developed for the project, our knowledge of the study area, use of the regional travel demand forecasting model to estimate traffic distribution, and input from the City of Westminster.





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Project Site

Figure 1

**Project Site**



The study area is shown on **Figure 2**. The following lists define the study area:

**Study Intersection**

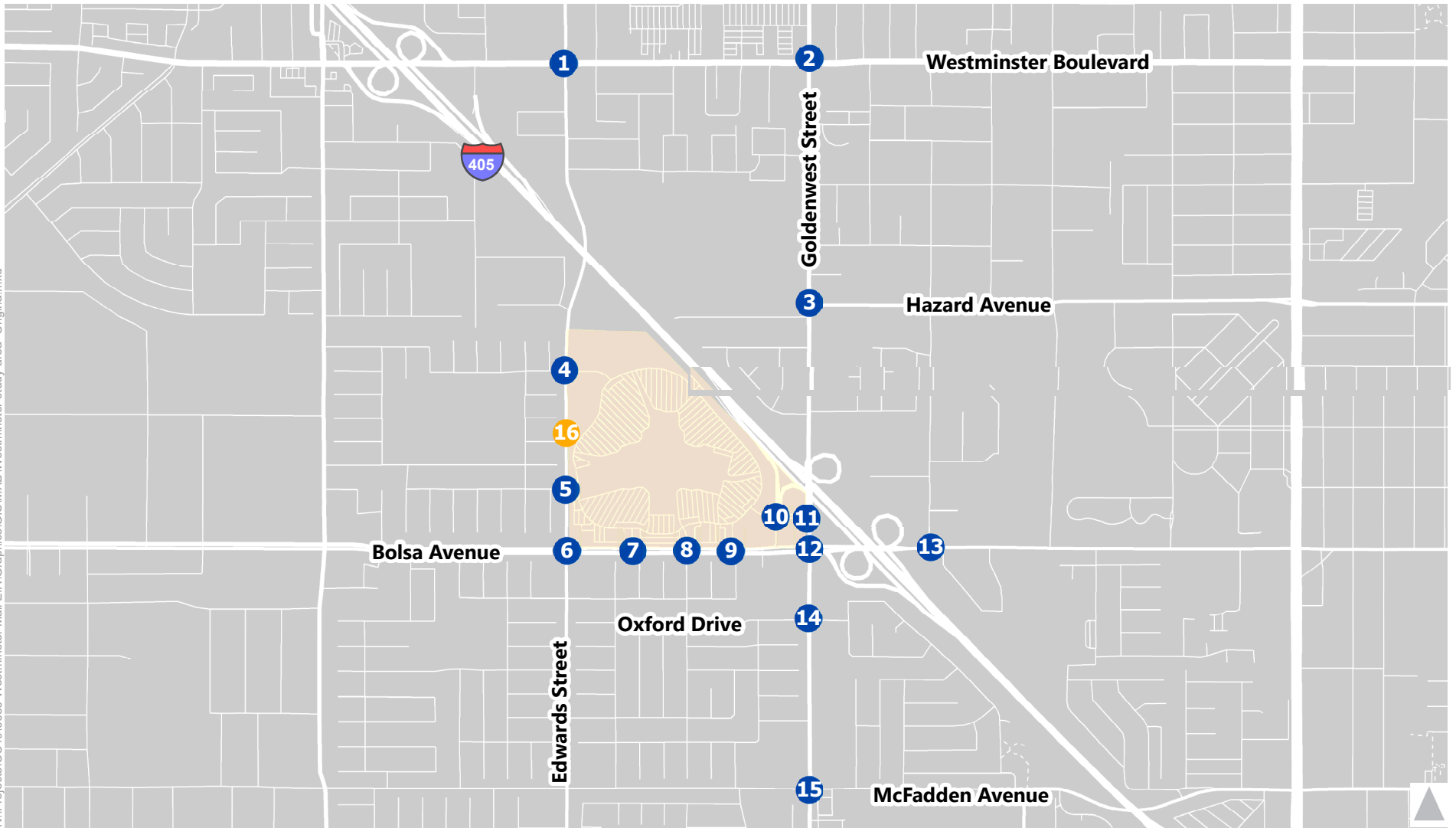
1. Edwards Street & Westminster Boulevard
2. Goldenwest Street & Westminster Boulevard
3. Goldenwest Street & Hazard Avenue
4. Edwards Street & Royal Oak Drive
5. Edwards Street & Mar Vista Drive
6. Edwards Street & Bolsa Avenue
7. West Drive & Bolsa Avenue
8. Victoria Lane & Bolsa Avenue
9. East Drive & Bolsa Avenue
10. I-405 Ramps & Westminster Mall
11. Goldenwest Street & Westminster Mall
12. Goldenwest Street & Bolsa Ave Drive
13. Chestnut Street & Bolsa Avenue
14. Goldenwest Street & Oxford Drive
15. Goldenwest Street & McFadden Avenue
16. Edwards Street & Project Driveway

**Freeway Segments:**

1. Southbound I-405 North of Goldenwest Street Off-Ramp
2. Southbound I-405 Goldenwest Street Off-Ramp
3. Southbound I-405 Goldenwest Street Off-Ramp to Bolsa Avenue On-Ramp
4. Southbound I-405 Bolsa Avenue On-Ramp
5. Southbound I-405 South of Bolsa Avenue On-Ramp
6. Northbound I-405 South of Bolsa Avenue Off-Ramp
7. Northbound I-405 Bolsa Avenue Off-Ramp
8. Northbound I-405 Bolsa Avenue Off-Ramp to Goldenwest Street On-Ramp
9. Northbound I-405 Goldenwest Street On-Ramp
10. Northbound I-405 North of Goldenwest Street On-Ramp



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- Project Site
- Existing Intersection
- Proposed Driveway

Figure 2

## Study Area

## ANALYSIS SCENARIOS

To identify traffic operations of the surrounding transportation network, Fehr & Peers analyzed the following scenarios:

- Existing (2019) Conditions: Consists of traffic counts collected in April 2015 as part of the City of Westminster General Plan Update, factored up by annual growth developed from the Orange County Transportation Analysis Model (OCTAM) to account for traffic volume growth that may have occurred since the time the General Plan Traffic Counts were collected.
- Existing (2019) Plus Project Conditions: Consists of traffic volumes from the Existing (2019) scenario plus trips generated by the proposed project.
- Opening Year (2023) No Project Conditions: Consists of Existing volumes factored up by an annual growth rate developed from OCTAM to account for ambient growth in the area.
- Opening Year (2023) Plus Project Conditions: Consists of Opening Year (2023) No Project Conditions traffic forecasts plus trips generated by the proposed project.
- Cumulative (2040) No Project Conditions: Consists of 2040 forecasted volumes using the OCTAM consistent with City of Westminster's General Plan Buildout.
- Cumulative Year (2040) Plus Project Conditions: Consists of Cumulative Year (2040) No Project Conditions traffic forecasts plus trips generated by the proposed project



## 2.0 ANALYSIS METHODOLOGIES

This chapter discusses the analysis methodologies and assumptions used to determine project impacts as approved by the City.

### LEVEL OF SERVICE CRITERIA

#### INTERSECTION ANALYSIS

Consistent with the guidance identified the City of Westminster's General Plan and Traffic Impact Study Guidelines, intersections within the City of Westminster's jurisdiction were evaluated using the Highway Capacity Manual (HCM) 6<sup>th</sup> Edition Transportation Research Board (TRB) (2017) methodology. Please note that the proposed project would not add more than 50 peak hour trips to any Orange County Congestion Management Program (CMP) intersection, although it does add trips to Bolsa Avenue. Since the project does not add more than 50 trips to CMP-designated intersections, this report does not specifically address CMP facilities.

##### Highway Capacity Manual

The *Highway Capacity Manual (HCM) 6<sup>th</sup> Edition* methodology is considered the state-of-the-practice methodology for evaluating intersection operations. The HCM 6<sup>th</sup> Edition Methodology estimates a quantitative delay at intersections. After the quantitative delay estimates are complete, the methodology assigns a qualitative letter grade that represents the operations of the intersection. These grades range from level of service (LOS) A (minimal delay) to LOS F (excessive congestion). LOS E represents at-capacity operations. Descriptions of the LOS letter grades are provided in **Table 1**.

Synchro 10 was used to perform the HCM 6th Edition methodology LOS calculations for intersections under the jurisdiction of Caltrans and the City of Westminster. The following parameters were used in the traffic analysis for intersections under the jurisdiction of Caltrans and the City of Westminster:

- Through and turn lane capacities of 1,900 vehicles per hour per lane in Synchro,
- Peak Hour Factors (PHF) collected as a part of the Westminster General Plan were used for intersections in the Existing and Opening Year scenarios and a PHF of 0.95 was used for intersections in the Cumulative Year scenarios.
- A peak hour truck percentage of 2% was applied to represent heavy truck and general traffic characteristics in the study area based on our field visit and knowledge of the study area.
- Signal timing was obtained from the City of Westminster.



**TABLE 1 INTERSECTION LOS CRITERIA**

LOS	Description	Signalized Delay (Seconds)	V/C Ratio
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	$\leq 10.0$	$< 0.61$
B	Operations with low delay occurring with good progression and/or short cycle lengths.	$> 10.0$ to $20.0$	$0.61$ to $0.70$
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	$> 20.0$ to $35.0$	$0.71$ to $0.80$
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	$> 35.0$ to $55.0$	$0.81$ to $0.90$
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	$> 55.0$ to $80.0$	$0.91$ to $1.00$
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	$> 80.0$	$> 1.00$

Source:

1. *Highway Capacity Manual* (Transportation Research Board, 2017).



## FREEWAY ANALYSIS

Freeway mainline and ramps were evaluated using a Highway Capacity Software (HCS) equivalent tool, which applies methodologies contained in the HCM 6<sup>th</sup> Edition. The LOS was calculated for each study facility based on density in number of vehicles per hour per lane. **Table 2** below describes the LOS thresholds for freeway sections identified in the HCM 6<sup>th</sup> Edition.

**TABLE 2**  
**BASIC, MERGE, DIVERGE & WEAVE FREEWAY SEGMENT LOS THRESHOLD**

Level of Service	Description	Density (vplpm) <sup>1</sup>	
		Mainline (Basic)	Ramp / Weave
A	Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	≤ 11	≤ 10
B	Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.	> 11 to 18	> 10 to 20
C	Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.	> 18 to 26	> 20 to 28
D	Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort.	> 26 to 35	> 28 to 35
E	Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queuing.	> 35 to 45	> 35 to 45 <sup>2</sup>
F	Represents a breakdown in flow.	> 45	> 45 <sup>2</sup>

Notes:

1. Density is reported in vehicles per lane per mile.

2. The maximum density for ramp junctions and weaving sections under LOS E is not defined in the HCM. The maximum density for basic segments of 45 vplpm was assumed to apply to ramp junctions and weaving sections.

Source: Highway Capacity Manual (Transportation Research Board, 2017)





## PERFORMANCE CRITERIA

The following LOS performance criteria were employed to determine if the project will result in any traffic operation deficiencies based on jurisdiction thresholds within the study area.

### CITY OF WESTMINSTER

The City of Westminster has adopted LOS "D" as the minimum acceptable standard on facilities where automobiles are prioritized. On streets where automobiles are not prioritized, LOS E is considered acceptable. This is based on Policy 1.3 of the General Plan Mobility Element. For the purpose of this assessment LOS D or better is considered acceptable.

According to the City's impact study guidelines, an intersection would be defined as operating at a deficient level if the addition of project-generated trips causes an intersection to change from an acceptable LOS to a deficient LOS; or if project traffic increases the delay at any intersection already operating at an unacceptable LOS by 2.0 seconds. In these cases, the project would be responsible for providing improvements to restore acceptable operations in the near-term scenarios and/or would be responsible for a fair share contribution to improve operations under the future year condition.

### CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)

Caltrans used to utilize LOS in the evaluation of their facilities. However, in 2016, Caltrans released interim guidance identifying that Caltrans staff should utilize VMT for reviewing local development applications. The guidance generally referenced the Office of Planning and Research's (OPR) *Technical Advisory*, which discusses an approach for evaluating VMT.

Caltrans is in process of finalizing their ultimate guidance document in their *Transportation Impact Study Guidelines*, which is currently being finalized.

Since the City of Westminster thresholds of significance related to VMT is generally consistent with the OPR Technical Advisory, this assessment is consistent with the Draft Caltrans guidelines. However, since the City of Westminster continues to use LOS to evaluate infrastructure consistent with the City's General Plan, it is prudent to also evaluate it on Caltrans facilities. For purposes of this study, a deficiency will be considered on a Caltrans facility if the segment operates at LOS E or LOS F.



## TRAFFIC VOLUME FORECASTING

### ORANGE COUNTY TRAFFIC ANALYSIS MODEL (OCTAM)

Orange County Traffic Analysis Model (OCTAM) is a regional model that is based on the traditional four-step sequential modeling methodology with “feedback loop” procedures to insure internal modeling consistency. The model incorporates multi-modal analytical capabilities to analyze the following modes of travel: local and express bus transit, urban rail, commuter rail, toll roads, carpools, truck traffic, as well as non-motorized transportation which includes pedestrian and bicycle trips. Regional transportation models, such as the OCTAM, use socioeconomic data to estimate trip generation, mode choice, as well as several sub models to address complex travel behavior and multi-modal transportation issues. The model responds to changes in land use types, household characteristics, transportation infrastructure, and travel costs such as transit fares, parking costs, tolls, and auto operating costs.

OCTAM Version 3.4 (constrained network) was used to develop the future traffic volume forecasts and is the model that was used to forecast buildout of the City’s General Plan. Two model scenarios were utilized in the forecasting process: Base Year and General Plan Cumulative Year, as described below:

- Base Year Model – This scenario contains the base year (2010) land use and roadway network assumptions without and modifications by Fehr & Peers.
- General Plan Cumulative Year – This scenario is based on the future year (2035) OCTAM model, on top of which the City of Westminster General Plan’s proposed land use socioeconomic data growth was incorporated in the OCTAM on a traffic analysis zone (TAZ) basis. The only exception is that the Bolsa Row Specific Plan is excluded from the land use to represent the Cumulative No Project conditions.

The General Plan Cumulative Year model accounts for the growth assumed in Westminster with full build-out of the General Plan, without the Westminster Mall Specific Plan. Cumulative (2040) traffic forecasts were developed by comparing the General Plan Cumulative Year Model to the Base Year Model outputs using the difference method. The difference method was done using standard techniques consistent with National Cooperative Highway Research Program (NCHRP) Report 255. The arithmetic difference was taken between the future year and base year model outputs and that difference was used to determine an annual growth. That annual growth was then successively added to the Westminster General Plan traffic counts collected in 2015 to reach the cumulative year of 2040. This method was applied for turning movement volumes. To provide a conservative analysis, negative growth was not allowed in the Cumulative Year (2040) scenario volumes. If the model predicted negative growth over existing conditions, the existing conditions volumes were utilized.





To develop Cumulative Year Plus Project volumes for this assessment, the trips generated by the project were added to the Cumulative Year (2040) No Project volumes. This scenario accounts for projected increases in traffic from full-build out of the General Plan and the WMSP.

## FUTURE YEAR ROADWAY IMPROVEMENT ASSUMPTIONS

The following intersection configuration improvements have been assumed under the cumulative conditions, based on plans from the I-405 Improvement Project consistent with modeling efforts from the Westminster General Plan update:

### 10). Westminster Mall & I-405 Ramps

- Southbound approach from 2 through lanes and 1 free-right lane to 4 through lanes and 1 free right lane.
- Northbound approach from 3 through lanes to 4 through lanes.

### 12). Bolsa Avenue & Goldenwest Street:

- Southbound approach from 1 left turn lane, 2 through lanes, and 1 through/right shared lane to 2 left turn lanes, 3 and 1 right turn lane.
- Northbound approach from 2 left turn lanes, 2 through lanes, and 1 through/right shared lane to 2 left turn lanes, 3 through lanes, and 1 right turn lane.

### 13). Bolsa Avenue & Chestnut Street

- Eastbound approach from 1 left turn lane and 2 through lanes to 1 left turn lane and 3 through lanes.

## PROJECT TRAFFIC VOLUMES

### PROJECT TRIP GENERATION

The proposed project will generate new vehicle trips in the study area. However, given the mix of land uses, it will not generate traffic in a similar manner as to what is typically evaluated for most traffic studies. As such, the analysis evaluates the combined effects of the project's land uses, regional location, demographics, and development scale that contribute to a reduction (when compared to national homogeneous development projects) in off-site average weekday vehicle "trips" (e.g., one vehicle trip is when a person drives from their home to school, shopping, or their job and their return drive home is another trip). This reduction is due largely to the project's ability to "internally capture" these trips. That is, most of the reduction in total daily vehicle off-site trips generated by the project is attributable to those trips beginning and ending on the project. (e.g., both a person's home and job, shopping, or local school are within the project).



Traditionally, traffic engineers and transportation planners have estimated internalization of project trips using one of two methods. First, they would estimate it based on professional judgment. Alternatively, professionals relied on the Institute of Transportation Engineers' (ITE) internalization methodology presented in the ITE Trip Generation Handbook. Although this has been applied in thousands of studies in California, the methodology was limited as it was based on only six surveys in Florida. Additionally, the ITE internalization methodology only accounts for the land use types on the mixed-use site. Given the limited input information (land use amount and type) and the limited range of data (six surveys), the accuracy of the internalization estimates has recently been found to generally under-estimate internalization of trips from projects with multiple land use types.

Seeing the limited data set and simplified methodology applied in the ITE handbook, the United States Environmental Protection Agency (EPA) commissioned a study to develop a more substantial, statistically superior methodology. This methodology, identified as MXD below, begins with ITE rates and develops trip internalization estimates based on a series of factors tied to numerous site attributes. The MXD methodology is described in greater detail below.

### **MXD Trip Internalization Methodology**

The internal capture percentage reported is not an "assumed" number, but rather is a number that was derived using a best practices trip generation model designed specifically for development projects with multiple land use types. The MXD model was developed through collaboration between consultants, the EPA, and an academic research team. The model estimates trip generation and internal capture by adjusting trip generation rates to account for the influence of built environment variables. A variety of research studies have demonstrated that these variables influence vehicle trip generation, most of which are summarized on the EPA's website<sup>1</sup>.

Variables used in the MXD model include general site information such as geographic factors, the land use of the surrounding area, and site/surrounding area demographics. Geographic factors such as the site of the developed area and intersection density influence internalization from a spatial standpoint – the denser the area the more likely certain types of trips can be completed within the mixed-use development and without the need to travel externally. Land use factors and demographics such as employment, average household size, and vehicle ownership influence how people in the mixed-used development might decide to travel. Another factor related to trip internalization is its proximity to transit. Accessibility to transit vastly increases transportation choices for those seeking to travel. This feature is also included in the MXD trip generation methodology as applied in this study, as it accounts for the total employment located along the

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<sup>1</sup> [http://www.epa.gov/smartgrowth/mxd\\_tripgeneration.html](http://www.epa.gov/smartgrowth/mxd_tripgeneration.html)





transit corridors and estimates the probability of a mode shift toward transit if development occurs within the mixed-use site.

The MXD model used was developed based on household travel survey data obtained from 239 existing mixed-use developments in six metropolitan regions throughout the U.S., including San Diego and Sacramento. The internal capture percentage calculated for the Project is reflective of the varied land uses that would be developed as part of the Project, which would reduce the need to travel beyond the Project site and is also consistent with the percentage found for other mixed-use developments of similar size and scope.

A set of 16 independent mixed-use sites that were not included in the initial model were tested to help validate the model. Among the validation sites, use of the MXD model produced superior statistical performance when comparing the model results to observed data. Specifically, the MXD model had a significantly lower root mean squared error (RMSE) and higher pseudo-R squared than traditional methods when comparing estimated to observed external vehicle trips. Estimates from the ITE Trip Generation Manual had an RMSE of 40% and pseudo-R squared of 0.58 (i.e., the ITE method only explains about 58 percent of the variability in external vehicle trips). Modified estimates using ITE's traditional trip internalization techniques had an RMSE of 32% and pseudo-R squared of 0.73, whereas modified estimates using the MXD model had an RMSE of 26% and pseudo-R squared of 0.82.

It should also be noted that the MXD model has been developed in cooperation with the EPA and ITE. Given the statistical robustness of the MXD model, it was deemed the most appropriate approach for estimating internalization of project trips.

### **MXD Model Inputs and Trip Generation Estimates**

To determine the number of trips that would be internal to the Project site, an MXD trip generation estimate was prepared. The MXD analysis first begins with gross trip rates identified in the Institute of Transportation Engineers' Trip Generation (10th Edition, 2017). It then incorporates the MXD methodology for "matching" trips to estimate the amount of internalization within the Project site. The MXD methodology inputs are shown below in **Table 3**.



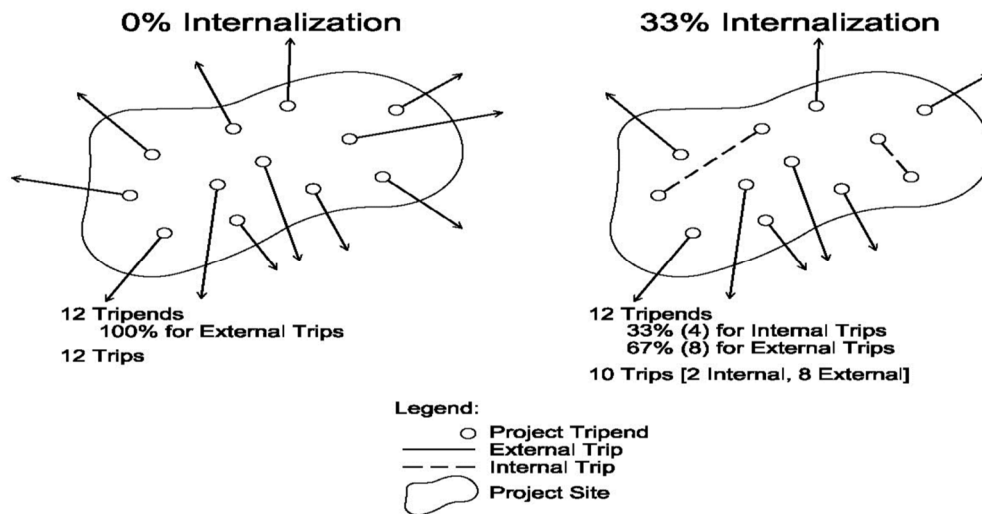
**Table 3 Proposed Project MXD Model Input Values**

Input Variable	Input Value	Source
Developed Area (Acres)	101	Project Site Plan
Intersection Density (Intersections/square mile)	50	EPA Smart Location Database
Transit Available within Site	Yes	Site Plan and Transit Maps
Employment (jobs) within 1 Mile of the Plan Area	5868	OCTAM Model 2035
Employment (percentage of jobs as a share of regional employment) within a 30-minute trip by transit	0.000001	
Total SCAG Regional Employment	7,733,805	Estimated from SBTAM Travel Demand Forecasting Model
Average household size near site	3.52	Estimated from United States Census Bureau data
Average vehicles owner per dwelling unit near site	1.64	
Multi-Family (Dwelling Units)	3,000	Project Description
General Retail (KSF)	1,020	
Office (Non-Medical, KSF)	180	
Hotel (Rooms)	425	

Source: Fehr and Peers, 2020

Internal capture represents the percentage of project trip ends for trips that would remain internal to the project, which differs from the overall percentage of the net number of project trips that remain internal to the project. Since each trip has two trip ends (i.e., the beginning of the trip and the end of the trip), if a project generates 100 internalized tripods, this represents 50 trips that are internal to the project (i.e., 100 trip ends/2 trip ends per trip = 50 trips). As such, when the number of trips is applied to the tripods component of the project, the total internal capture is roughly twice that which would otherwise be accounted for in the trips component. An example of the relationship between trip ends and trips is provided in the following illustration:





**Table 4** summarizes the anticipated daily, AM, and PM peak hour of adjacent street traffic trips generated by the proposed project. Raw ITE trips are presented, and internalization and pass-by reductions are applied. A reduction was assumed to account for existing trips produced by the Westminster Mall site. We assumed a 50% reduction in existing trips produced by the Westminster Mall to account for vacant retail stores located in the mall.

**Table 4 Westminster Mall Specific Plan Project Trip Generation Estimates**

Land Use	Units	ITE Code	Quantity	Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
Multi-Family Residential	DUs	222	3,000	16,320	281	799	1,080	805	515	1,320
Office	KSF	710	180	1,753	180	29	209	33	174	207
Hotel	Rooms	310	425	3,553	118	82	200	130	125	255
Retail	KSF	820	1,020	43,554	607	372	979	1,816	1,968	3,784
<b>Net Raw Project Trips</b>				65,180	1186	1282	2468	2784	2782	5566
<b>Reductions</b>										
<i>Internal Capture (16% Daily, 22% AM, 25% PM)</i>				-10,690	-398	-431	-829	-1002	-1002	-2004
<b>Net Project Trips</b>				<b>54,490</b>	<b>788</b>	<b>851</b>	<b>1,639</b>	<b>1,782</b>	<b>1,780</b>	<b>3,562</b>
<b>Existing Retail (50%) Reduction</b>										
Existing Retail (Subtracted from Net Trips)	KSF	820	680	25,670	396	243	639	1,244	1,347	2,591
Retail Reductions				-1,770	-46	-27	-73	-107	-115	-222
<b>Net Existing Retail Trips</b>				23,900	350	216	566	1,137	1,232	2,369
<b>Total Project Trips</b>										
<b>Net Project Trips</b>				<b>30,590</b>	<b>438</b>	<b>635</b>	<b>1,073</b>	<b>645</b>	<b>548</b>	<b>1,193</b>

Source: Fehr & Peers 2020





### Project Trip Distribution

The project trip distribution reflects the likely approach and departure routes to the projects site, as determined through multiple sources. Two key sources of data were analyzed and synthesized to develop the project trip distribution. First, the Orange County Transportation Analysis Model was used identify regional travel behavior. A select zone analysis was performed for a transportation analysis zone (TAZ) in the immediate vicinity of the proposed project location that had a similar land use mix to determine where trips in this area originate from and are destined to. Then, the existing traffic counts and local knowledge of the study area was used along with our professional judgement. The project trip distribution was reviewed and approved by City of Westminster staff prior to initiating the technical analysis. **Figure 3** shows the trip distribution assumed for the Project.

### Project Trip Assignment

Based on the trip generation and trip distribution estimates developed and described above, project trips were assigned to the study area roadway network. The assignment of "project only" trips for the development is shown on **Figure 4** for the Plus Project Scenario.





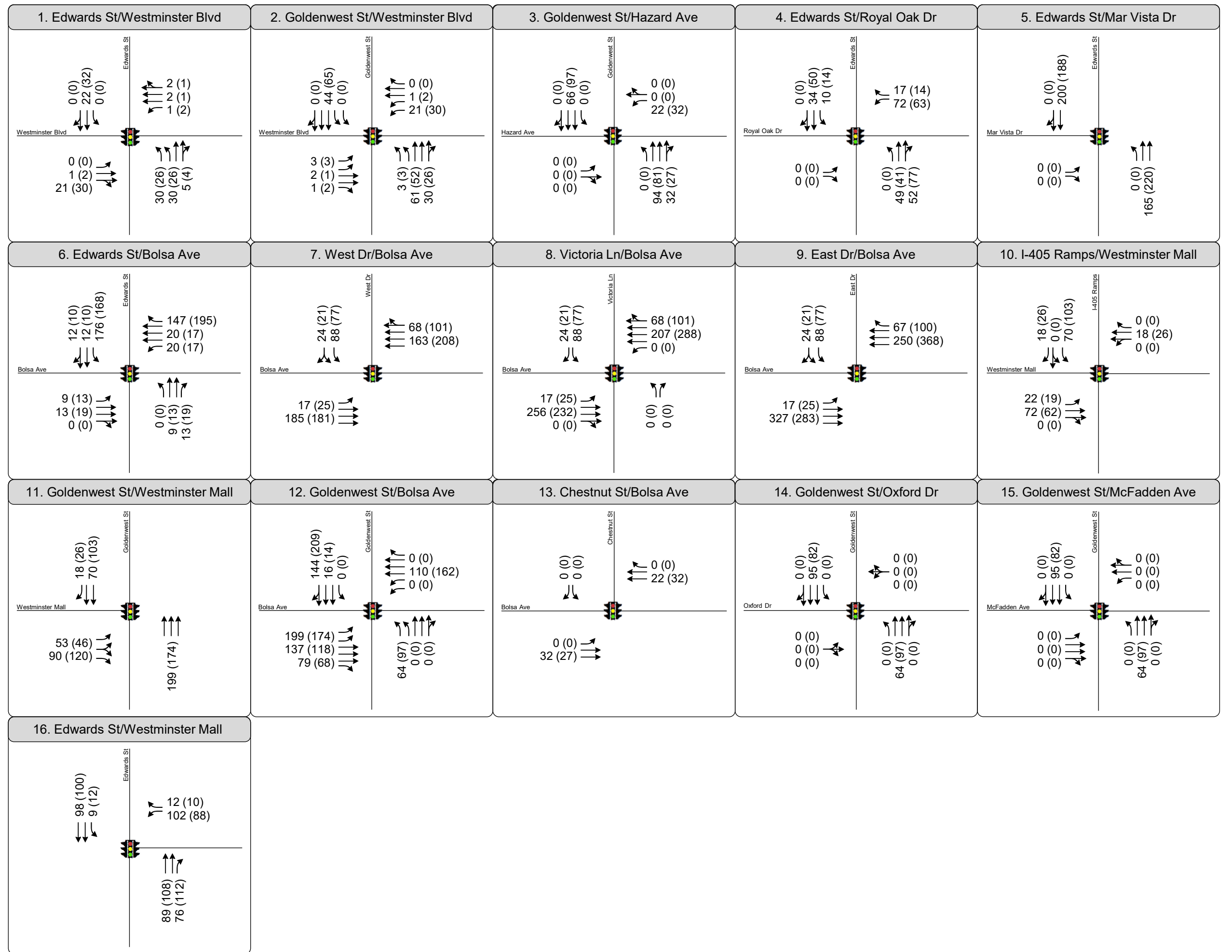
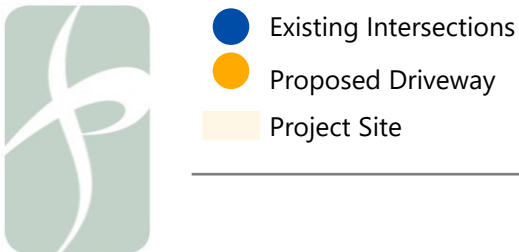
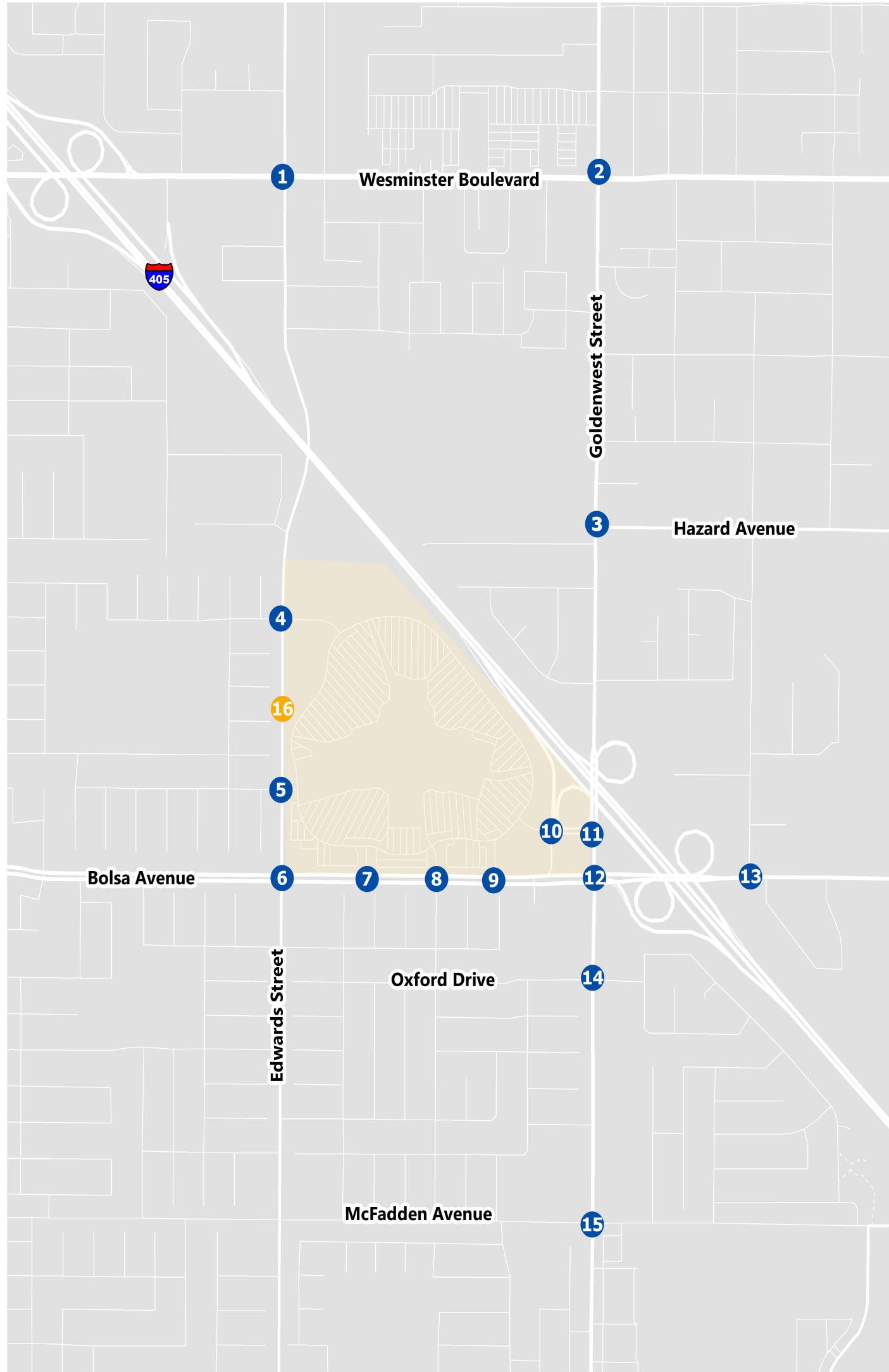


Figure 4  
Project Trip Assignment



## PROJECT PLANNED INTERSECTION IMPROVEMENTS

The WMSP plans to develop traffic calming treatments to improve circulation and safety within the study area, outlined in the Circulation Chapter of the Environmental Impact Report (EIR). These traffic calming treatments assumed to be implemented with project and are analyzed in all plus project scenarios. The following intersection lane configurations represent the project design features at the project access locations:

4) Edwards Street & Royal Oak Drive: Installation of a gullwing treatment that will restrict through movements along the minor legs. The following turning movements were updated to reflect this improvement:

- Southbound approach: One left-turn lane and one-right-turn lane
- Northbound approach: One left-turn lane and one right-turn lane

5) Edwards Street & Mar Vista Drive: Installation of a traffic diverter that will discourage traffic from intruding into the neighborhood *or* removal of the mall approach to this intersection

8) Victoria Lane & Bolsa Avenue: Installation of a gullwing treatment that will restrict through movements along the minor legs. The following turning movements were updated to reflect this improvement:

- Westbound approach: One left-turn lane and one-right-turn lane
- Eastbound approach: One left-turn lane and one right-turn lane

16) Edwards Street & Westminster Mall Drive: Installation of new signalized intersection approximately 600' north of the intersection of Mar Vista Drive & Edwards Street that would provide mall access. This improvement contains the following turning movements:

- Southbound: One left-turn lane and two through lanes
- Northbound: One through lane and one shared through-right-turn lane
- Westbound: One left-turn lane and one right-turn lane





## 3.0 EXISTING (2019) CONDITIONS

This chapter discusses the existing transportation conditions in the project study area. This discussion addresses the roadway, transit, bicycle, and pedestrian networks. An operational analysis of the study area intersections and freeway facilities is also discussed.

### EXISTING ROADWAY FACILITIES

#### REGIONAL ROADS

**Interstate 405 (I-405) San Diego Freeway** – I-405 freeway is a north-south facility beginning in the San Fernando Valley and terminating in the City of Irvine. Within the city limits, the freeway has ten lanes, including two high-occupancy vehicles lanes, with a posted speed limit of 65 miles per hour. The I-405 freeway borders the project site to the northeast.

#### LOCAL ROADS

**Bolsa Avenue** – Bolsa Avenue is classified as an *Arterial Roadway* between Euclid Street and Brookhurst Street and between Magnolia Street and Edwards Street, and as a *Multi-Way Boulevard* between Brookhurst Street and Magnolia Street. Bolsa Avenue is an east-west facility and has four to six lanes with a posted speed limit of 40-45 miles per hour. It borders the project site to the south.

**Edwards Street** – Edwards Street is classified as a *Connector Street* between 1st Street and Westminster Boulevard, a *School Street* between Westminster Boulevard and Bestel Avenue, and a *Bicycle Corridor* between Bestel Avenue and Garden Grove Boulevard. Edwards Street is a north-south facility with four lanes and a posted speed limit of 35 miles per hour. It borders the project site to the west.

**Goldenwest Street** – Goldenwest Street is classified as a *School Street* between McFadden Avenue and Edinger Avenue and as an *Arterial* between Edinger Avenue and Garden Grove Boulevard. Goldenwest Street is a north-south facility with six lanes and a posted speed limit of 40 miles per hour. It is located east of the project site.

**Westminster Boulevard** – Westminster Boulevard is classified as a *Multi-Way Boulevard* between Hoover Street and I-405, and as an *Arterial* between I-405 and Bolsa Chica Road, and Bushard Street and Hoover Street. Westminster Boulevard is an east-west facility and has four lanes with a posted speed limit of 45 miles per hour. It is located north of the project site.



**Hazard Avenue** – Hazard Avenue is classified as a *Bicycle Corridor* between Euclid Street and Hoover Street, and as a *Connector Street* between Hoover Street and Goldenwest Street. Hazard Avenue is an east-west facility and has three to four lanes with a posted speed limit of 40 miles per hour. It is located northeast of the project site.

**McFadden Avenue** – McFadden Avenue is classified as a *School Street* between Euclid Street and Hortense Drive, and as a *Connector Street* between Hortense Drive and Goldenwest Street. McFadden Avenue is an east-west facility and has four lanes with a posted speed limit of 40-45 miles per hour. It is located north of the project site.

## EXISTING TRANSIT FACILITIES

There are ten transit lines that currently operate within the study area. The lines are operated by the Orange County Transportation Authority (OCTA).

- **Route 21 (Buena Park – Huntington Beach)** – Route 21 is in the north-south direction from the Buena Park Metrolink Station to the Warner Loop at Pacific Coast Highway (PCH) 1 in Huntington Beach. Route 21 is along the western edge of the study area via Valley View Street and Bolsa Chica Road and has a bus stop at Graham Street/McFadden Avenue. This route operates Monday through Saturday between 5:30 AM to 10:00 AM and 2:00 PM to 9:00 PM with 60-minute headways.
- **Route 25 (Fullerton to Huntington Beach)** – Route 25 is in the north-south direction from the Buena Pacific Coast Highway /1st Street stop in Huntington Beach to the Fullerton Park-and-Ride lot. Route 25 travels along Goldenwest Street and has stops at Buena Park Metrolink Station, and Westminster Mall. This route operates Monday through Friday between 4:40 AM and 10:50 PM with 45 to 60-minute headways, Saturday between 7:45 AM and 7:50 PM with 60-minute headways, and Sunday between 7:15 AM and 8:30 PM with 60 and 70 minute headways.
- **Route 60-560 (Long Beach to Tustin)** – Route 60 is in the east-west direction from the Veterans Affairs (VA) Hospital/California State University, Long Beach (CSULB) Area to Larwin Square. Route 60 goes through the northern portion of the study area via Westminster Boulevard and has bus stops at Westminster Boulevard/Goldenwest Street and Westminster Boulevard/Beach Boulevard. This route operates Monday through Friday between 4:00 AM to 1:30 AM with 10 to 60-minute headways, Saturday between 4:00 AM to 1:30 PM with 20 to 60-minute headways, and Sunday and holidays between 4:00 AM to 1:30 PM with 30 to 60 minute headways. Route 60 is classified as an OCTA High Quality Transit Route. Route 560 BRAVO! Travels from 7th & Channel in Long Beach to



the Santa Ana Metrolink Station in Santa Ana on weekdays and to Larwin Square on weekends. Route 560 has 20 to 30-minute headways on weekdays and 20-minute headways on weekends.

- **Route 64 (Huntington Beach to Tustin)** – Route 64 is in the east-west direction from Larwin Square in Tustin to Boeing in Huntington Beach. Route 64 travels along 1st Street/Bolsa Avenue and has stops at Beach Boulevard/Bolsa Avenue and Harbor Boulevard/1st Street. This route operates Monday through Friday between 4:30 AM and 11:30 PM with 10 to 20-minute headways, Saturday between 5:00 AM and 11:00 PM with 15 to 30-minute headways, and Sundays and holidays between 5:30 AM and 11:00 PM with 15 to 20 minute headways.
- **Route 64X (Huntington Beach to Tustin)** – Route 64X is an express route in the east-west direction from Larwin Square in Tustin to the Westminster Mall area in Westminster. Route 64X travels along 1st Street/Bolsa Avenue and has stops at Beach Boulevard/Bolsa Avenue and Harbor Boulevard/1st Street. This route operates Monday through Friday between 6:00 AM and 7:00 PM with 45-minute headways and does not operate on weekends or holidays.
- **Route 66 (Huntington Beach to Irvine)** – Route 66 is in the east-west direction from Irvine Valley College to Boeing in Huntington Beach. Route 66 goes through the southern portion of the study area via McFadden Avenue and has bus stops at McFadden Avenue/Euclid Street, McFadden Avenue/Beach Boulevard, and the Goldenwest Transportation Center Area/Park-and-Ride. This route operates Monday through Friday between 4:00 AM to 12:00 AM with 10 to 30-minute headways and Saturday, Sunday, and holidays between 5:00 AM to 10:30 PM with 30 to 60-minute headways. Route 66 is classified as an OCTA High Quality Transit Route.

## BICYCLE FACILITIES

Bicycle facilities in the City of Westminster are classified as follows:

### **Class I – Bikeways (Bike Paths)**

Class I bicycle facilities are bicycle trails or paths that are off-street and separated from automobiles. They are a minimum of eight feet in width for two-way travel and include bike lane signage and designated street crossings where needed. A Class I Bike Path may parallel a roadway (within the parkway) or may be a separate right-of-way that meanders through a neighborhood or along a flood control channel or utility right-of-way.





#### CLASS I - Multi-Use Path

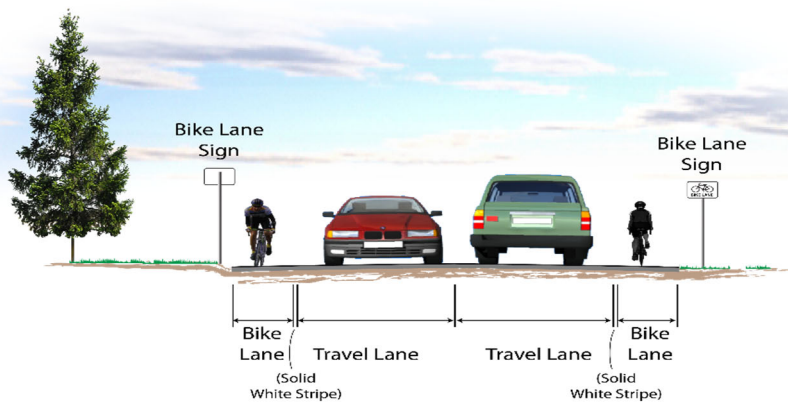
Provides a completely separated right-of-way for exclusive use of bicycles and pedestrians with crossflow minimized.



MUTCD R44A (CA)

#### Class II - Bike Lane:

Class II bicycle facilities are striped lanes that provide bike travel and can be either located next to a curb or parking lane. If located next to a curb, a minimum width of five feet is recommended. However, a Bike Lane adjacent to a parking lane can be four feet in width. Bike Lanes are exclusively for the use of bicycles and include bike lane signage, special lane lines, and pavement markings.



#### CLASS II - Bike Lane

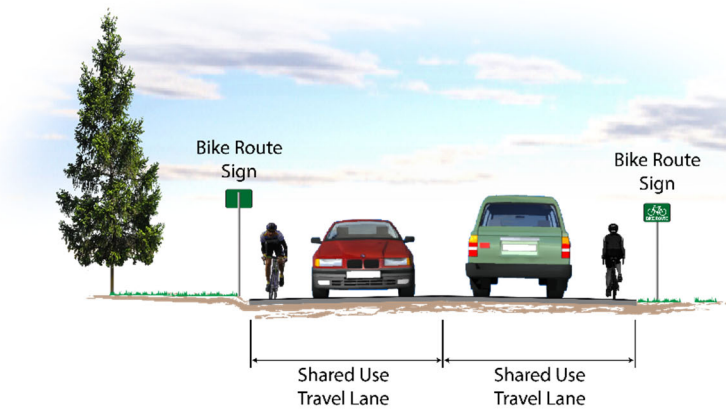
Provides a striped lane for one-way bike travel on a street or highway.



MUTCD R81 (CA)

#### Class III - Bike Route:

Class III bicycle facilities are streets providing for shared use by motor vehicles and bicyclists. While bicyclists have no exclusive use or priority, signage – both by the side of the street and stenciled on the roadway surface – alerts motorists to bicyclists sharing the roadway space and denotes that the street is an official bike route.



### CLASS III - Bike Route

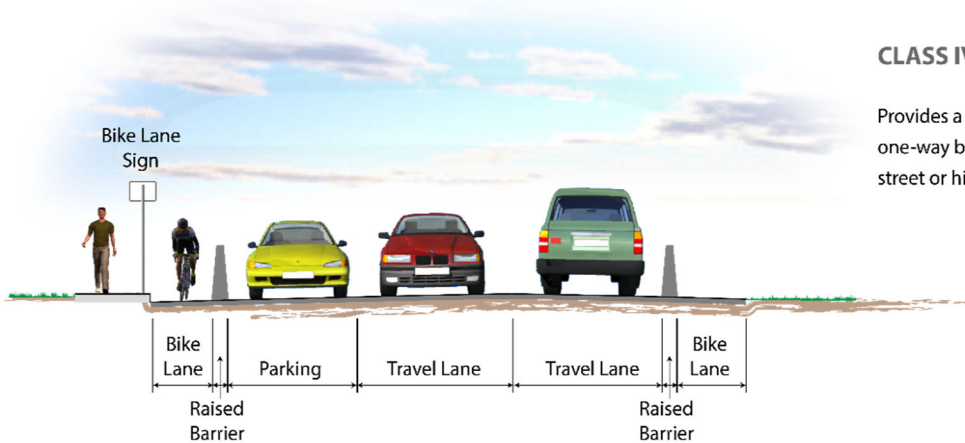
Provides a shared use with pedestrians or motor vehicle traffic, typically on lower volume roadways.



MUTCD D11-1

### Class IV – Separated Bikeway:

Class IV bicycle facilities, sometimes called cycle tracks or separated bikeways, provide a right-of-way designated exclusively for bicycle travel adjacent to a roadway and are protected from vehicular traffic via separations (e.g. grade separation, flexible posts, inflexible physical barriers, on-street parking).



### CLASS IV - Separated Bikeway (Cycle Track)

Provides a protected lane for one-way bike travel on a street or highway.

Near the project site, Class II bike lanes currently exist along:

- Edwards Street between Homer Street and Bolsa Avenue
- McFadden Avenue between Bolsa Chica Street and Gothard Street
- Bolsa Avenue between Edwards Street and Bolsa Chica Street

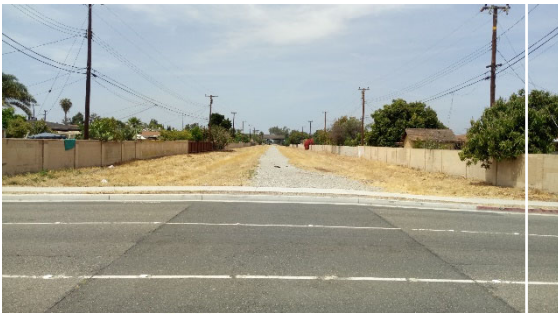
There are no existing Class III or Class IV bicycle facilities in the immediate vicinity of the project site. However, the City is planning for a future Class I bicycle facility along the Navy Trail, as shown below in **Exhibit A**, just north of the project site. This bicycle facility would utilize the existing rail corridor to connect







Seal Beach into Westminster and ultimately connect to the City's Planned Class IV bikeway along Hoover Street, shown in **Exhibit B**. A portion of Navy Trail's improvement is included as a part of the specific plan and includes connectivity directly to the Navy Trail. Additionally, the City plans to provide a Class I bikeway from the current terminus of Hoover Street south (under I-405) to McFadden Avenue and provide a connection to Golden West College. This will ultimately provide accessibility for bicycles from the WMSP site to Golden West College to be accommodated completely through Class I and Class IV bicycle facilities.



BEFORE

AFTER



**Exhibit A - Westminster Nature Activity Trail  
Former Navy Rail Corridor (Phase 1) – Proposed Project**





***Exhibit B - The Mendez Historic Trail & Green Street Bikeway  
Hoover Street (Phase 2) – Grant Funded Project***

## PEDESTRIAN FACILITIES

Throughout the City of Westminster, sidewalks are generally provided on both sides of the street, except for roadways near freeways and interchanges. However, sidewalks are missing directly adjacent to the project, where pedestrians were not originally prioritized. Sidewalks provide access to local activity centers and are buffered in some neighborhood areas. Throughout the City, there is little shading and no slope on the sidewalks. Sidewalks that exist along Bolsa Avenue and Edwards Street do not have a landscaped buffer exists between the sidewalk and the adjacent vehicle travel lane. All driveway intersections provide crosswalks, except for the intersection I-405 and Westminster Mall Road.

## TRUCK ROUTES

The City of Westminster has Bolsa Avenue and Westminster Avenue listed as designated truck routes. Magnolia Street and Westminster Avenue are also listed as designated truck routes by the City of Westminster, though these are farther from the project site. Regionally, Interstate 405 is designated as Surface Transportation Assistance Act (STAA) truck routes.







## TRAFFIC VOLUMES AND LANE CONFIGURATIONS

The I-405 Improvement Project is currently widening the freeway and improving numerous local roadways including some locations within Westminster. The on-going construction has altered typical local travel patterns making the ability to collect new counts in this area not appropriate for this assessment as they would not reflect “normal” traffic conditions. As such, counts collected as a part of the City of Westminster General Plan Update were used for this analysis. The General Plan counts, collected in 2015, were interpolated to the year 2019 using growth rates derived from the regional model. Although it is not ideal to use outdated counts, use of these counts will be more representative of normal traffic conditions rather than counts collected during the I-405 improvement project.

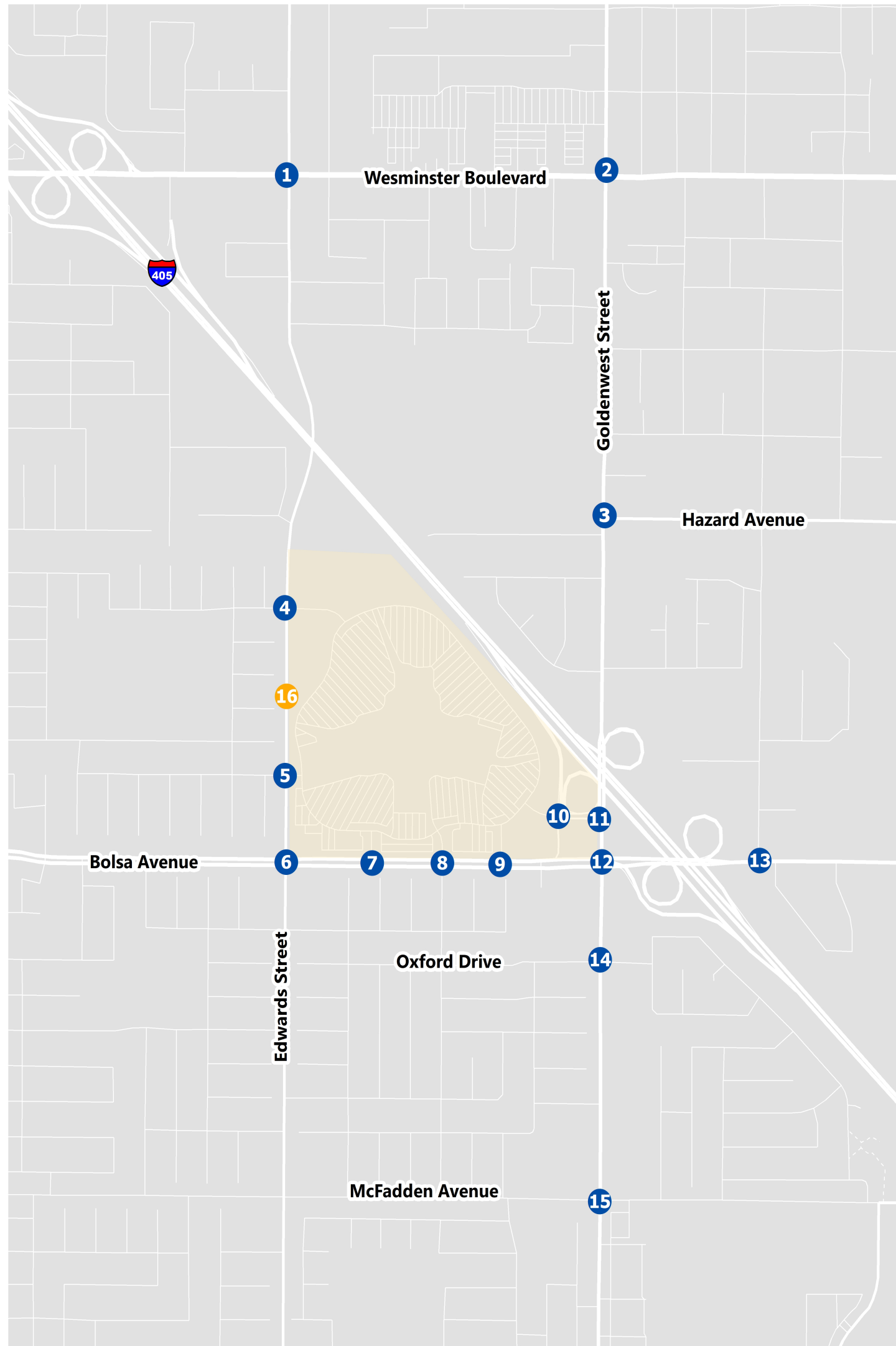
The interpolated 2019 volumes were used to evaluate existing conditions. For the City of Westminster General Plan Update, existing morning (7:00 AM to 9:00 AM) and evening (4:00 PM to 6:00 PM) peak period intersection vehicle and bicycle and pedestrian counts were collected at study intersections throughout the City during April 2015. These time periods correspond to peak period traffic conditions on typical roadways. Existing peak hour traffic volumes for study intersections are shown on **Figure 5** Existing traffic counts are provided in **Appendix A**.

## INTERSECTION OPERATIONS

Existing traffic volumes, lane configurations, and signal timings were used to evaluate operations at the study intersections for existing AM and PM peak hour conditions. The results are summarized in **Table 5**, showing LOS at the study intersections. The Existing LOS report is provided in **Appendix B**.

As shown **Table 5**, all study intersections currently operate acceptably at LOS D or better during the AM and PM Peak hour.





<b>1. Edwards St/Westminster Blvd</b> 	<b>2. Goldenwest St/Westminster Blvd</b> 	<b>3. Goldenwest St/Hazard Ave</b> 	<b>4. Edwards St/Royal Oak Dr</b> 	<b>5. Edwards St/Mar Vista Dr</b> 
<b>6. Edwards St/Bolsa Ave</b> 	<b>7. West Dr/Bolsa Ave</b> 	<b>8. Victoria Ln/Bolsa Ave</b> 	<b>9. East Dr/Bolsa Ave</b> 	<b>10. I-405 Ramps/Westminster Mall</b> 
<b>11. Goldenwest St/Westminster Mall</b> 	<b>12. Goldenwest St/Bolsa Ave</b> 	<b>13. Chestnut St/Bolsa Ave</b> 	<b>14. Goldenwest St/Oxford Dr</b> 	<b>15. Goldenwest St/McFadden Ave</b> 



- Existing Intersections
- Proposed Driveway
- Project Site

Figure 5  
Peak Hour Traffic Volumes and Lane Configurations  
Existing (2019) Conditions

**TABLE 5**  
**EXISTING (2019) CONDITIONS INTERSECTION LEVEL OF SERVICE**

ID	Intersection	Traffic Control	Peak Hour	Delay	LOS
1	Edwards St & Westminster Blvd	Signalized	AM	50.1	D
			PM	44.3	D
2	Goldenwest St & Westminster Blvd	Signalized	AM	38.9	D
			PM	37.0	D
3	Goldenwest St & Hazard Ave	Signalized	AM	43.4	D
			PM	29.0	C
4	Edwards St & Royal Oak Dr	Signalized	AM	18.5	B
			PM	13.6	B
5	Edwards St & Mar Vista Dr	Signalized	AM	23.6	C
			PM	12.0	B
6	Edwards St & Bolsa Ave	Signalized	AM	38.6	D
			PM	39.4	D
7	West Dr & Bolsa Ave	Signalized	AM	1.4	A
			PM	6.2	A
8	Victoria Ln & Bolsa Ave	Signalized	AM	3.0	A
			PM	17.7	B
9	East Dr & Bolsa Ave	Signalized	AM	1.5	A
			PM	3.2	A
10	I-405 Ramps & Westminster Mall	Signalized	AM	5.9	A
			PM	6.7	A
11	Goldenwest St & Westminster Mall	Signalized	AM	6.6	A
			PM	6.3	A
12	Goldenwest St & Bolsa Ave	Signalized	AM	27.6	C
			PM	36.9	D
13	Chestnut St & Bolsa Ave	Signalized	AM	13.5	B
			PM	16.2	B



**TABLE 5**  
**EXISTING (2019) CONDITIONS INTERSECTION LEVEL OF SERVICE**

ID	Intersection	Traffic Control	Peak Hour	Delay	LOS
14	Goldenwest St & Oxford Dr	Signalized	AM	3.2	A
			PM	5.9	A
15	Goldenwest St & McFadden Ave	Signalized	AM	38.7	D
			PM	41.5	D
16 <sup>3</sup>	Edwards St & Project Driveway	Signalized	AM	-	-
			PM	-	-

**Notes:**

- 1- Intersections were analyzed using HCM 6<sup>th</sup> Edition methodology.
- 2- **Bold** indicates a LOS below the acceptable threshold.
- 3- Intersection of Edwards St & Project Driveway does not exist in the no project scenario.

Source: Fehr & Peers, 2020

## FREEWAY FACILITY OPERATIONS

**Table 6** present the results of the freeway basic, merge, and diverge assessment for the I-405 freeway. Existing freeway mainline volumes from the Westminster General Plan were grown using an annual growth rate to account for 2019 conditions. Please note that existing freeway ramp volumes were obtained from Caltrans Performance Measurement System (PEMs) data. Mainline volumes were balanced through the corridor using ramp volumes. Bus/truck percentages are assumed to be 3% (based on the most recent Caltrans Traffic Census for truck traffic). The terrain was assumed to be level, free-flow speed is assumed to be 65 miles per hour, and a 0.95 peak hour factor was assumed for the freeway analysis. LOS calculation worksheets for freeway segments are provided in **Appendix C**.



**TABLE 6 I-405 FREEWAY OPERATIONS-EXISTING YEAR (2019) CONDITIONS**

Segment	Type	AM			PM		
		V/C	Density	LOS	V/C	Density	LOS
I-405 Southbound							
Between Westminster Blvd On-Ramp and Goldenwest St Off-Ramp	Basic	0.45	-	F	0.66	-	F
Goldenwest St Off-Ramp	Diverge	0.51	-	F	0.71	-	F
Goldenwest St Off-Ramp to Bolsa Ave On-Ramp	Basic	0.36	-	F	0.56	-	F
Bolsa Ave On-Ramp	Merge	0.46	-	F	0.65	-	F
Between Bolsa Ave On-Ramp and Beach Blvd Off-Ramp	Basic	0.41	-	F	0.73	28.48	D
I-405 Northbound							
Between Beach Blvd On-Ramp and Bolsa Ave Off-Ramp	Basic	0.83	32.79	D	0.76	-	F
Bolsa Ave Off-Ramp	Diverge	0.84	33.79	D	0.79	-	F
Bolsa Ave Off-Ramp to Goldenwest St On-Ramp	Basic	0.75	29.19	D	0.67	-	F
Goldenwest St On-Ramp	Merge	0.74	27.88	C	0.71	-	F
Between Goldenwest St On-Ramp and Westminster Blvd Off-Ramp	Basic	0.78	30.68	D	0.75	-	F

**Notes:**

1. Calculated using methodologies consistent with the HCM 6<sup>th</sup> Edition.
  2. Density reported as passenger cars per mile per lane
  3. HCM 6<sup>th</sup> Edition cannot accurately estimate density greater than 45 pc/mpl. Therefore, Density is not report for LOS F.
  4. **Bold** indicates unacceptable operations
- Source: Fehr & Peers, 2020





As shown in **Table 6**, 10 freeway segments operate unacceptably (LOS E, or LOS F) during the AM or PM Peak Hours:

- I-405 Southbound North of Goldenwest St Off-Ramp
- I-405 Southbound Goldenwest St Off-Ramp
- I-405 Southbound Goldenwest St Off-Ramp to Bolsa Ave On-Ramp
- I-405 Southbound Bolsa Ave On-Ramp
- I-405 Southbound South of Bolsa Ave On-Ramp
- I-405 Northbound, South of Bolsa Ave Off-Ramp
- I-405 Northbound, Bolsa Ave Off-Ramp
- I-405 Northbound, Bolsa Ave Off-Ramp to Goldenwest St On-Ramp
- I-405 Northbound, Goldenwest St On-Ramp
- I-405 Northbound, North of Goldenwest St On-Ramp





## 4.0 EXISTING YEAR (2019) PLUS PROJECT CONDITIONS

This chapter presents the Existing Year (2019) Plus Project Conditions for the development. This scenario consists of traffic generated by the proposed project added to the Existing Year (2019) Conditions. This will be used to evaluate the net change in traffic conditions and to identify any traffic operation deficiencies.

### TRAFFIC VOLUMES

Traffic volumes for the Existing Year (2019) Plus Project Conditions consist of volumes from the Existing Year (2019) Conditions plus volumes generated by the proposed project as described in Chapter 3. The Existing Year (2019) Plus Project traffic volumes are shown in **Figure 6**.

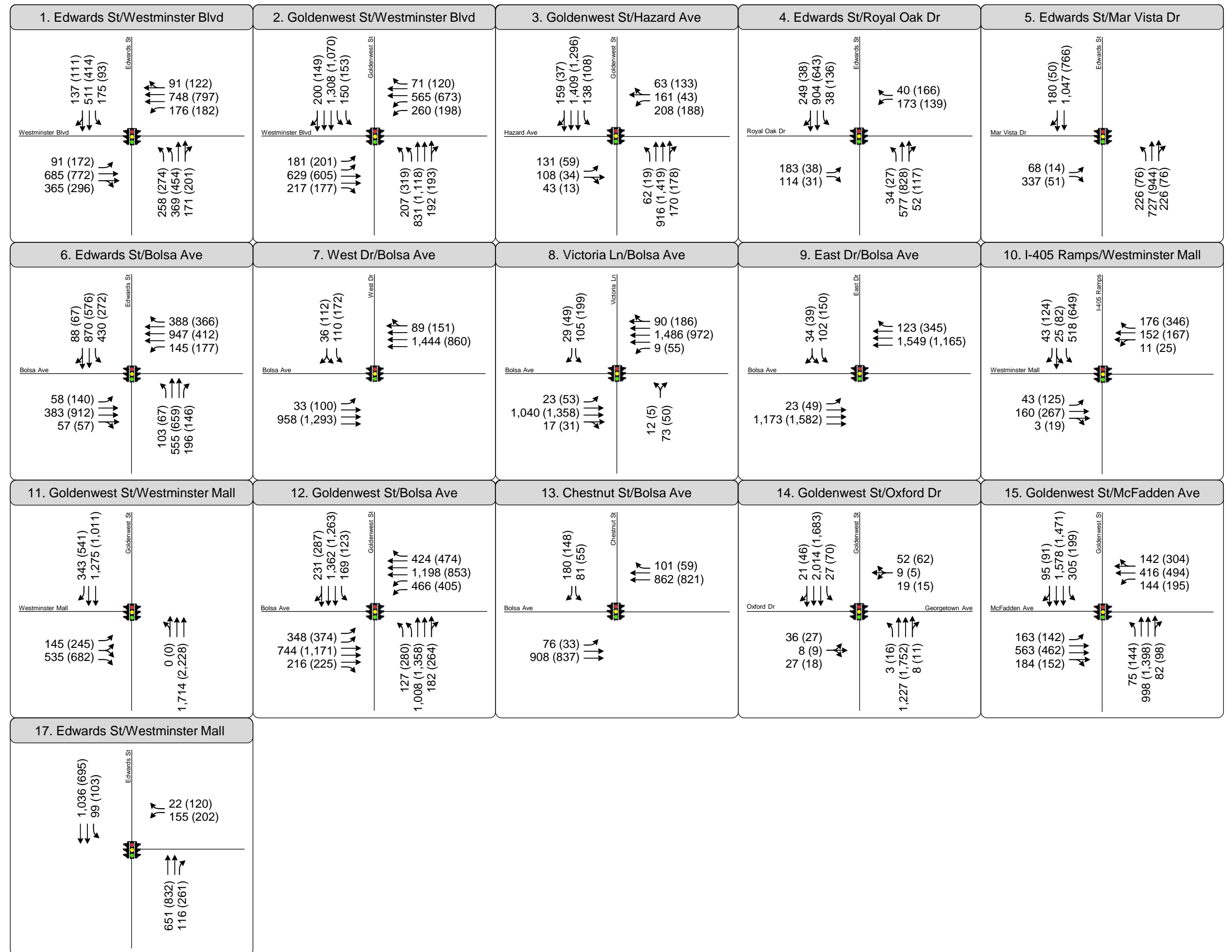
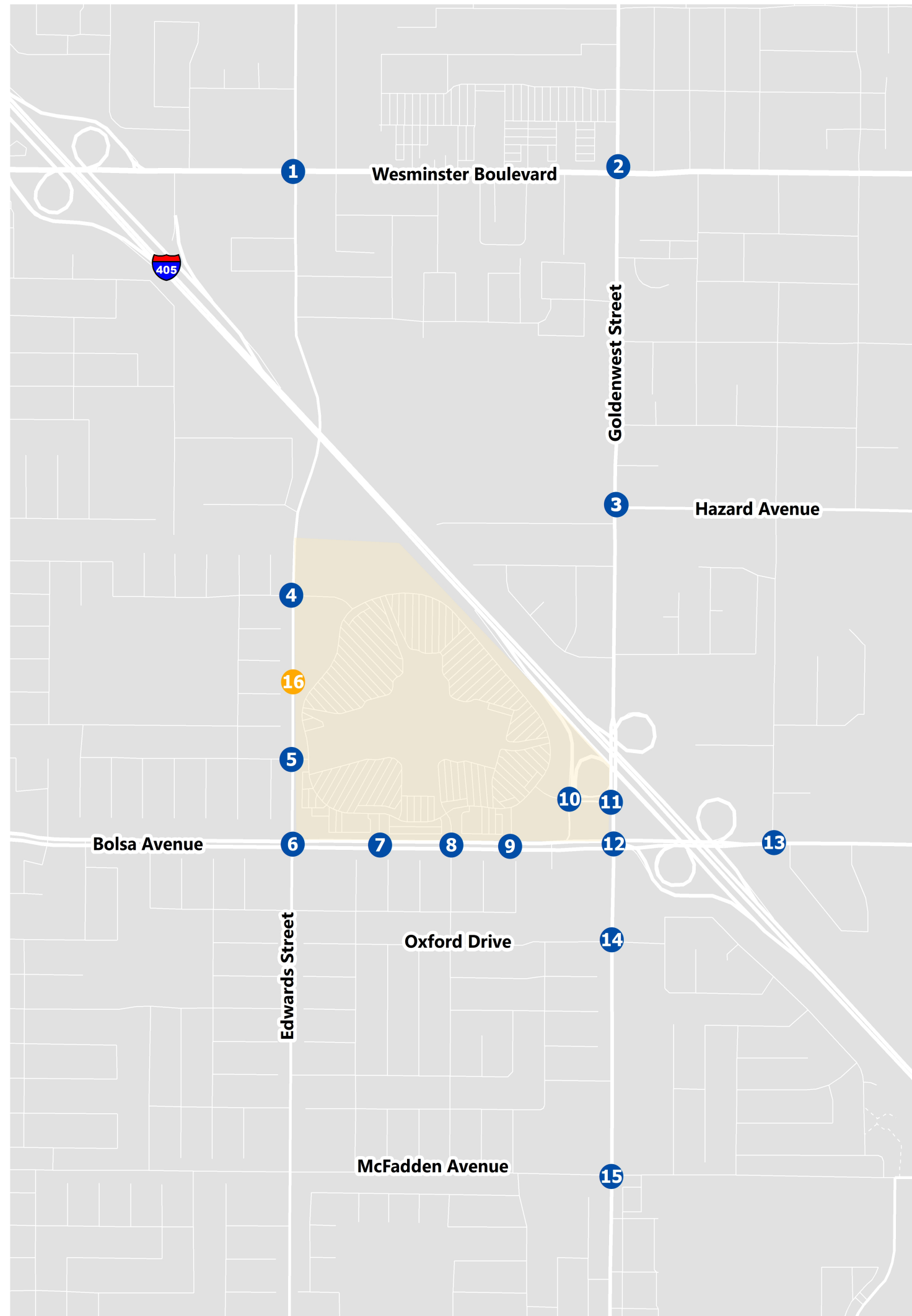
### PLANNED INTERSECTION IMPROVEMENTS

The WMSP intersection improvements, described in Chapter 3, are assumed to be implemented under the Existing Year (2019) Plus Project scenario.

### INTERSECTION OPERATIONS

The intersection LOS results are summarized in **Table 7** for Existing Year (2019) Plus Project Conditions. As shown in **Table 7**, all intersections operate acceptably at LOS D or better. The Existing Year (2019) Plus Project LOS report is provided in **Appendix B**.





- Existing Intersections
- Proposed Driveway
- Project Site

Figure 6  
Peak Hour Traffic Volumes and Lane Configurations  
Existing Year (2019) Plus Project Conditions



**TABLE 7**  
**EXISTING (2019) PLUS PROJECT CONDITIONS INTERSECTION LEVEL OF SERVICE**

#	Intersection	Traffic Control	Peak Hour	Delay	LOS
1	Edwards St & Westminster Blvd	Signalized	AM	52.4	D
			PM	45.8	D
2	Goldenwest St & Westminster Blvd	Signalized	AM	39.8	D
			PM	37.6	D
3	Goldenwest St & Hazard Ave	Signalized	AM	47.5	D
			PM	30.0	C
4	Edwards St & Royal Oak Dr	Signalized	AM	15.2	B
			PM	12.5	B
5	Edwards St & Mar Vista Dr	Signalized	AM	14.4	B
			PM	13.8	B
6	Edwards St & Bolsa Ave	Signalized	AM	43.8	D
			PM	43.5	D
7	West Dr & Bolsa Ave	Signalized	AM	5.7	A
			PM	7.3	A
8	Victoria Ln & Bolsa Ave	Signalized	AM	27.8	C
			PM	19.9	B
9	East Dr & Bolsa Ave	Signalized	AM	5.0	A
			PM	5.4	A
10	I-405 Ramps & Westminster Mall	Signalized	AM	6.1	A
			PM	7.3	A
11	Goldenwest St & Westminster Mall	Signalized	AM	7.4	A
			PM	7.3	A
12	Goldenwest St & Bolsa Ave	Signalized	AM	33.6	C
			PM	40.6	D
13	Chestnut St & Bolsa Ave	Signalized	AM	13.5	B
			PM	16.3	B



14	Goldenwest St & Oxford Dr	Signalized	AM	3.0	A
			PM	5.6	A
15	Goldenwest St & McFadden Ave	Signalized	AM	46.2	D
			PM	42.7	D
16	Edwards St & Project Driveway	Signalized	AM	8.2	A
			PM	8.3	A

**Notes:**

- 1- Intersections were analyzed using HCM 6<sup>th</sup> Edition methodology.
- 2- **Bold** indicates a LOS below the acceptable threshold.

Source: Fehr & Peers, 2016

## INTERSECTION IMPACTS

Under the Existing (2019) Plus Project Conditions, no intersection impacts were identified based on the criteria discussed in Chapter 3.

## FREEWAY FACILITY OPERATIONS

**Table 8** presents the results of the freeway basic, merge, and diverge assessment for the I-405 freeway. As shown in **Table 8**, 10Wo study freeway segments on I-405 are forecast to operate below acceptable LOS D during at least one peak hour with the addition of Project traffic. LOS calculation worksheets for freeway segments are provided in **Appendix C**.

**TABLE 8 I-405 FREEWAY OPERATIONS-EXISTING YEAR (2019) PLUS PROJECT CONDITIONS**

Segment	Type	AM			PM		
		V/C	Density	LOS	V/C	Density	LOS
I-405 Southbound							
Between Westminster Blvd On-Ramp and Goldenwest St Off-Ramp	Basic	0.45	-	F	0.67	-	F
Goldenwest St Off-Ramp	Diverge	0.52	-	F	0.74	-	F
Goldenwest St Off-Ramp to Bolsa Ave On-Ramp	Basic	0.35	-	F	0.55	-	F
Bolsa Ave On-Ramp	Merge	0.49	-	F	0.67	-	F



South of Bolsa Ave On-Ramp	Basic	0.41	-	F	0.74	28.93	D
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#### ***I-405 Northbound***

Between Beach Blvd On-Ramp and Bolsa Ave Off-Ramp	Basic	0.83	32.79	D	<b>0.77</b>	-	<b>F</b>
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Bolsa Ave Off-Ramp	Diverge	0.84	33.79	D	<b>0.82</b>	-	<b>F</b>
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Bolsa Ave Off-Ramp to Goldenwest St On-Ramp	Basic	0.75	29.19	D	<b>0.67</b>	-	<b>F</b>
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Goldenwest St On-Ramp	Merge	0.74	27.88	C	<b>0.73</b>	-	<b>F</b>
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Between Goldenwest St On-Ramp and Westminster Blvd Off-Ramp	Basic	0.78	30.68	D	<b>0.76</b>	-	<b>F</b>
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#### **Notes:**

1. Calculated using methodologies consistent with the HCM 6<sup>th</sup> Edition.
  2. Density reported as passenger cars per mile per lane
  3. HCM 6<sup>th</sup> Edition cannot accurately estimate density greater than 45 pc/mpl. Therefore, Density is not report for LOS F.
  4. **Bold** indicates unacceptable operations
- Source: Fehr & Peers, 2020

As shown in **Table 8**, 10 freeway segments operate unacceptably (LOS E, or LOS F) during the AM or PM Peak Hours:

- I-405 Southbound North of Goldenwest St Off-Ramp
- I-405 Southbound Goldenwest St Off-Ramp
- I-405 Southbound Goldenwest St Off-Ramp to Bolsa Ave On-Ramp
- I-405 Southbound Bolsa Ave On-Ramp
- I-405 Southbound South of Bolsa Ave On-Ramp
- I-405 Northbound, South of Bolsa Ave Off-Ramp
- I-405 Northbound, Bolsa Ave Off-Ramp
- I-405 Northbound, Bolsa Ave Off-Ramp to Goldenwest St On-Ramp
- I-405 Northbound, Goldenwest St On-Ramp
- I-405 Northbound, North of Goldenwest St On-Ramp

Under the Existing (2019) Plus Project Conditions, the 10 freeway segments listed above were identified as operating at an unacceptable level based on the criteria discussed in Chapter 3.





## 5.0 OPENING YEAR (2023) CONDITIONS

This chapter summarizes the Opening Year (2023) Conditions as outlined in Chapter 3. This scenario analyzes the conditions that are expected to be present at the time of Project completion.

### TRAFFIC VOLUMES

As described in Chapter 3, the traffic volumes for this scenario were developed by using OCTAM to determine yearly traffic volume growth and extrapolating that growth out to Year 2023. The final Opening Year (2023) Conditions traffic forecasts are shown on **Figure 7**.

### PLANNED INTERSECTION IMPROVEMENTS

The I-405 Improvement project is anticipated to be completed by the end of 2023. In order for this assessment to provide a conservative freeway/intersection assessment, we assumed that the I-405 improvements will not be completed before the WMSP project opens in 2023. As such, no planned intersection within the study area assumed in the Opening Year (2023) Conditions.

### INTERSECTION OPERATIONS

The intersection LOS results are summarized in **Table 9** for Opening Year (2023) Conditions. Lane configurations and peak hour traffic volumes at study intersections for Opening Year (2023) Conditions are shown on **Figure 7**. The Opening Year (2023) Condition LOS reports are provided in **Appendix B**.



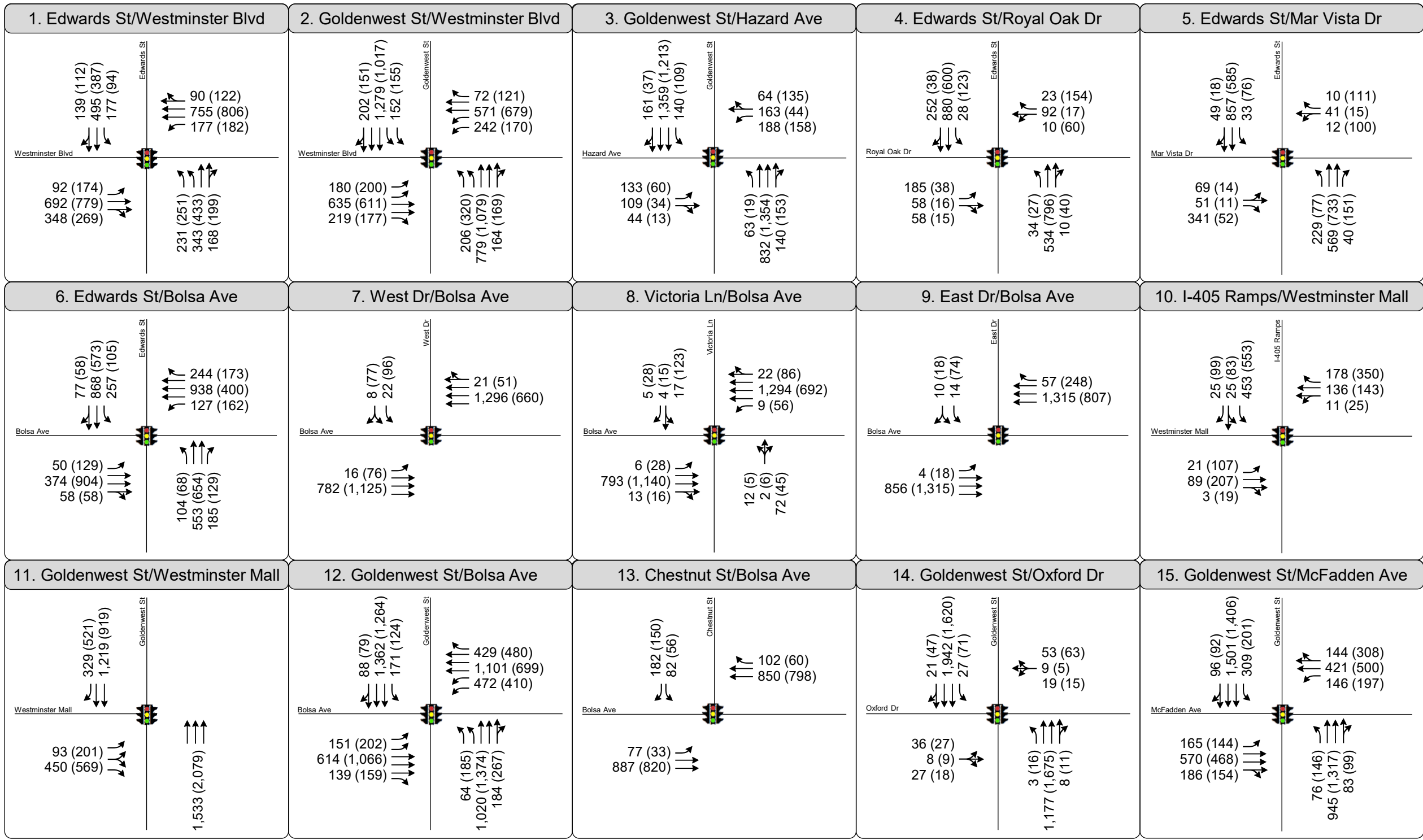
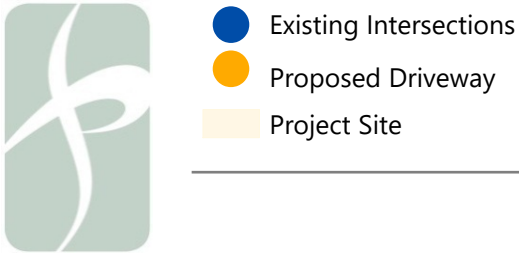
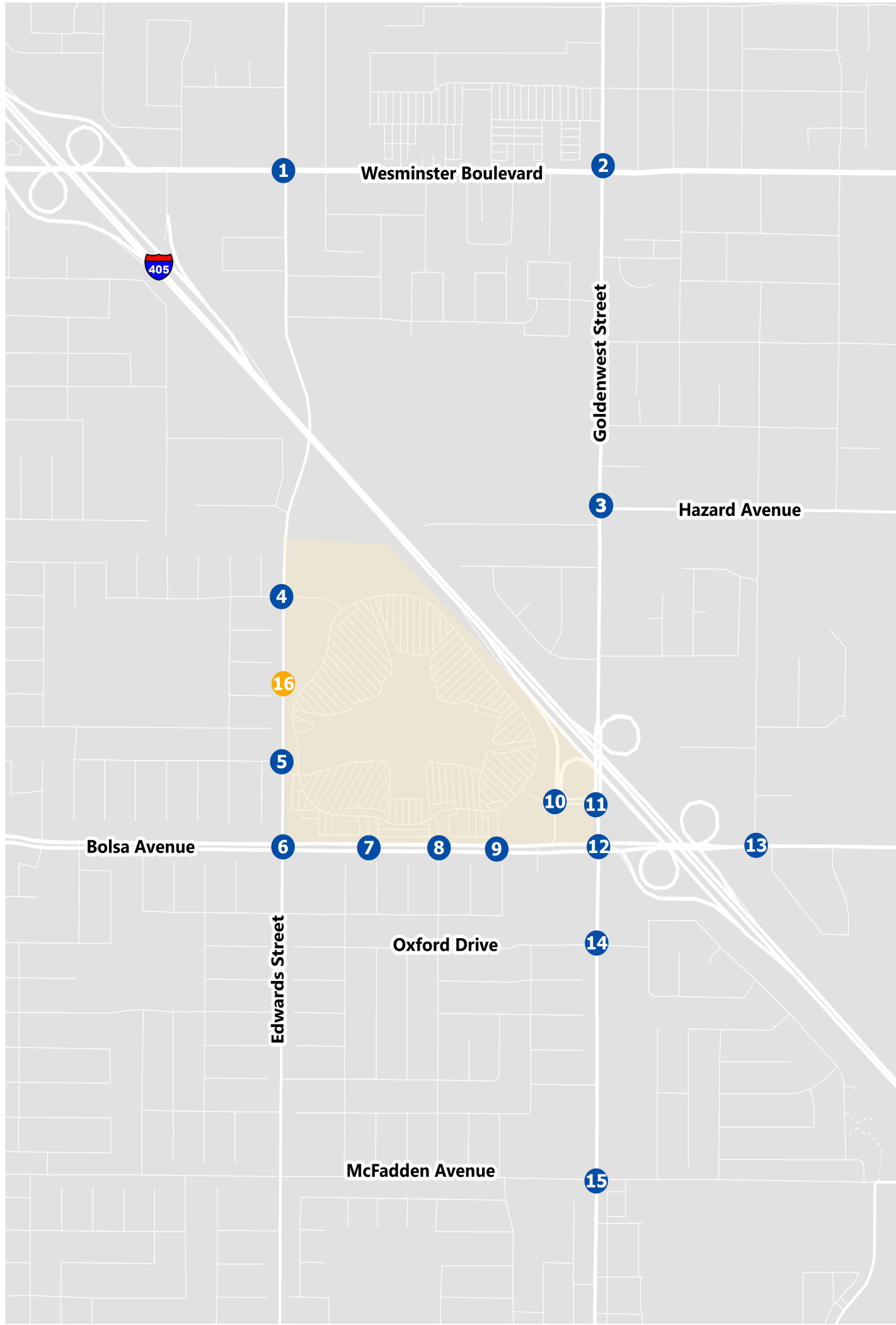


Figure 7  
Peak Hour Traffic Volumes and Lane Configurations  
Opening Year (2023) No Project Conditions

**TABLE 9**  
**OPENING YEAR (2023) CONDITIONS INTERSECTION LEVEL OF SERVICE**

#	Intersection	Traffic Control	Peak Hour	Delay	LOS
1	Edwards St & Westminster Blvd	Signalized	AM	51.1	D
			PM	44.8	D
2	Goldenwest St & Westminster Blvd	Signalized	AM	39.3	D
			PM	37.3	D
3	Goldenwest St & Hazard Ave	Signalized	AM	45.4	D
			PM	29.2	C
4	Edwards St & Royal Oak Dr	Signalized	AM	18.7	B
			PM	13.6	B
5	Edwards St & Mar Vista Dr	Signalized	AM	24.1	C
			PM	12.0	B
6	Edwards St & Bolsa Ave	Signalized	AM	38.8	D
			PM	38.2	D
7	West Dr & Bolsa Ave	Signalized	AM	1.4	A
			PM	6.2	A
8	Victoria Ln & Bolsa Ave	Signalized	AM	3.0	A
			PM	17.9	B
9	East Dr & Bolsa Ave	Signalized	AM	1.5	A
			PM	3.1	A
10	I-405 Ramps & Westminster Mall	Signalized	AM	5.9	A
			PM	6.7	A
11	Goldenwest St & Westminster Mall	Signalized	AM	6.6	A
			PM	6.3	A
12	Goldenwest St & Bolsa Ave	Signalized	AM	27.9	C
			PM	37.2	D
13	Chestnut St & Bolsa Ave	Signalized	AM	13.6	B
			PM	16.3	B



**TABLE 9**  
**OPENING YEAR (2023) CONDITIONS INTERSECTION LEVEL OF SERVICE**

#	Intersection	Traffic Control	Peak Hour	Delay	LOS
14	Goldenwest St & Oxford Dr	Signalized	AM	3.2	A
			PM	5.9	A
15	Goldenwest St & McFadden Ave	Signalized	AM	45.7	D
			PM	42.6	D
16	Edwards St & Project Driveway <sup>3</sup>	Signalized	AM	-	-
			PM	-	-

**Notes:**

- 1- Intersections were analyzed using HCM 6<sup>th</sup> Edition methodology.
- 2- **Bold** indicates a LOS below the acceptable threshold.
- 3- Intersection of Edwards St & Project Driveway does not exist in the no project scenario.

Source: Fehr & Peers, 2020

## FREEWAY FACILITY OPERATIONS

**Table 10** presents the results of the freeway basic, merge, and diverge assessment for the I-405 freeway. LOS calculation worksheets for freeway segments are provided in **Appendix B**. As shown in **Table 10**, 10 study freeway segments on I-405 are forecast to operate below acceptable LOS D during at least one peak hour with the addition of Project traffic.

**TABLE 10 I-405 FREEWAY OPERATIONS-OPENING YEAR (2023) CONDITIONS**

Segment	Type	AM			PM		
		V/C	Density	LOS	V/C	Density	LOS
I-405 Southbound							
South of Bolsa Ave On-Ramp	Basic	0.47	-	F	0.68	-	F
Goldenwest St Off-Ramp	Diverge	0.53	-	F	0.74	-	F
Goldenwest St Off-Ramp to Bolsa Ave On-Ramp	Basic	0.38	-	F	0.58	-	F
Bolsa Ave On-Ramp	Merge	0.48	-	F	0.67	-	F



**TABLE 10 I-405 FREEWAY OPERATIONS-OPENING YEAR (2023) CONDITIONS**

Segment	Type	AM			PM		
		V/C	Density	LOS	V/C	Density	LOS
South of Bolsa Ave On-Ramp	Basic	0.42	-	<b>F</b>	0.75	29.52	D
<b>I-405 Northbound</b>							
South of Bolsa Ave Off-Ramp	Basic	0.84	33.56	D	0.78	-	<b>F</b>
Bolsa Ave Off-Ramp	Diverge	0.85	34.34	D	0.82	-	<b>F</b>
Bolsa Ave Off-Ramp to Goldenwest St On-Ramp	Basic	0.76	29.76	D	0.69	-	<b>F</b>
Goldenwest St On-Ramp	Merge	0.75	28.32	D	0.73	-	<b>F</b>
Between Goldenwest St On-Ramp and Westminster Blvd Off-Ramp	Basic	0.80	31.32	D	0.78	-	<b>F</b>

**Notes:**

1. Calculated using methodologies consistent with the HCM 6<sup>th</sup> Edition.
2. Density reported as passenger cars per mile per lane
3. HCM 6<sup>th</sup> Edition cannot accurately estimate density greater than 45 pcpmpl. Therefore, Density is not report for LOS F.
4. **Bold** indicates unacceptable operations

Source: Fehr & Peers, 2020

As shown in **Table 10**, 10 freeway segments operate unacceptably (LOS E, or LOS F) during the AM or PM Peak Hours:

- I-405 Southbound North of Goldenwest St Off-Ramp
- I-405 Southbound Goldenwest St Off-Ramp
- I-405 Southbound Goldenwest St Off-Ramp to Bolsa Ave On-Ramp
- I-405 Southbound Bolsa Ave On-Ramp
- I-405 Southbound South of Bolsa Ave On-Ramp
- I-405 Northbound, South of Bolsa Ave Off-Ramp
- I-405 Northbound, Bolsa Ave Off-Ramp
- I-405 Northbound, Bolsa Ave Off-Ramp to Goldenwest St On-Ramp
- I-405 Northbound, Goldenwest St On-Ramp
- I-405 Northbound, North of Goldenwest St On-Ramp







## 6.0 OPENING YEAR (2023) PLUS PROJECT CONDITIONS

This chapter summarizes the Opening Year (2023) Plus Project Conditions as outlined in Chapter 3. This scenario analyzes the conditions that are expected to be present at the time of Project completion.

### TRAFFIC VOLUMES

Traffic volumes for the Opening Year (2023) Plus Project Conditions scenario consist of volumes from the Opening Year (2023) Conditions plus volumes generated by the proposed project as described in Chapter 3. The Opening Year (2023) Plus Project traffic volumes are shown in **Figure 8**.

### PLANNED INTERSECTION IMPROVEMENTS

The WMSP intersection improvements, described in Chapter 3, are assumed to be implemented under the Opening Year (2023) Plus Project scenario.

### INTERSECTION OPERATIONS

The intersection LOS results are summarized in **Table 11** for Opening Year (2023) Plus Project Conditions. The Opening Year (2023) Plus Project LOS report is provided in **Appendix B**.



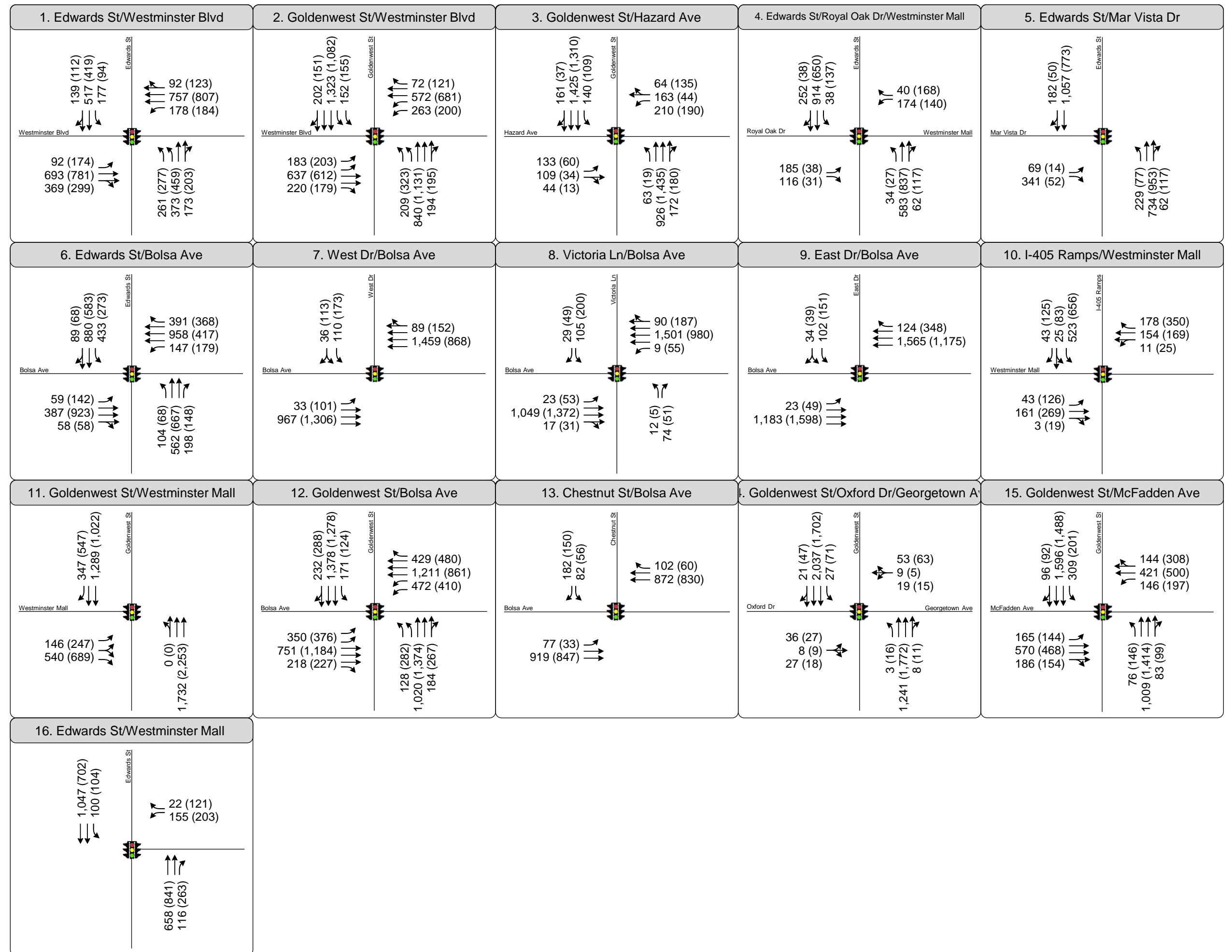
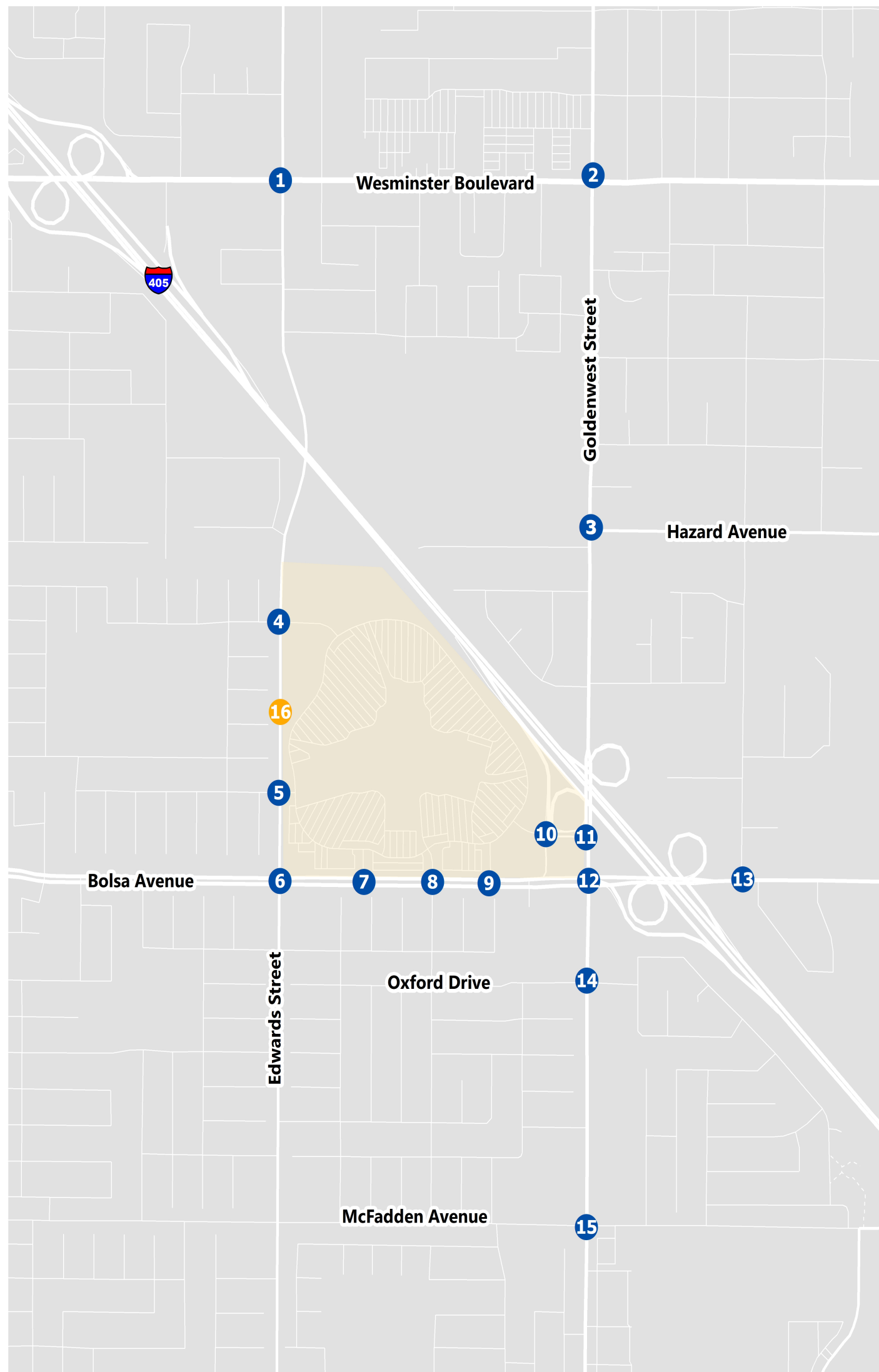


Figure 8  
 Peak Hour Traffic Volumes and Lane Configurations  
 Opening Year (2023) Plus Project Conditions

**TABLE 11**  
**OPENING YEAR (2023) PLUS PROJECT CONDITIONS INTERSECTION LEVEL OF SERVICE**

#	Intersection	Traffic Control	Peak Hour	Delay	LOS
1	Edwards St & Westminster Blvd	Signalized	AM	53.7	D
			PM	46.3	D
2	Goldenwest St & Westminster Blvd	Signalized	AM	40.2	D
			PM	37.9	D
3	Goldenwest St & Hazard Ave	Signalized	AM	49.6	D
			PM	30.2	C
4	Edwards St & Royal Oak Dr	Signalized	AM	15.2	B
			PM	12.5	B
5	Edwards St & Mar Vista Dr	Signalized	AM	14.6	B
			PM	13.8	B
6	Edwards St & Bolsa Ave	Signalized	AM	44.3	D
			PM	43.8	D
7	West Dr & Bolsa Ave	Signalized	AM	3.8	A
			PM	7.3	A
8	Victoria Ln & Bolsa Ave	Signalized	AM	24.5	C
			PM	19.9	B
9	East Dr & Bolsa Ave	Signalized	AM	4.5	A
			PM	5.4	A
10	I-405 Ramps & Westminster Mall	Signalized	AM	6.1	A
			PM	7.4	A
11	Goldenwest St & Westminster Mall	Signalized	AM	7.5	A
			PM	7.3	A
12	Goldenwest St & Bolsa Ave	Signalized	AM	34.0	C
			PM	40.9	D



**TABLE 11**  
**OPENING YEAR (2023) PLUS PROJECT CONDITIONS INTERSECTION LEVEL OF SERVICE**

#	Intersection	Traffic Control	Peak Hour	Delay	LOS
13	Chestnut St & Bolsa Ave	Signalized	AM	13.6	B
			PM	16.4	B
14	Goldenwest St & Oxford Dr	Signalized	AM	2.9	A
			PM	5.5	A
15	Goldenwest St & McFadden Ave	Signalized	AM	47.4	D
			PM	44.0	D
16	Edwards St & Project Driveway	Signalized	AM	8.2	A
			PM	8.2	A

**Notes:**

- 1- Intersections were analyzed using HCM 6<sup>th</sup> Edition methodology.
- 2- **Bold** indicates a LOS below the acceptable threshold.

Source: Fehr & Peers, 2020

## INTERSECTION IMPACTS

Under the Opening Year (2023) Plus Project Conditions, no intersection deficiencies were identified based on the criteria discussed in Chapter 3.

## FREEWAY FACILITY OPERATIONS

**Table 12** presents the results of the freeway basic, merge, and diverge assessment for the I-405 freeway. LOS calculation worksheets for freeway segments are provided in **Appendix C**. As shown in **Table 12**, 10 study freeway segments on I-405 are forecast to operate below acceptable LOS D during at least one peak hour with the addition of Project traffic.



**TABLE 12 I-405 FREEWAY OPERATIONS-OPENING YEAR (2023) PLUS PROJECT CONDITIONS**

Segment	Type	AM			PM		
		V/C	Density	LOS	V/C	Density	LOS
I-405 Southbound							
North of Goldenwest St Off-Ramp	Basic	0.47	-	F	0.69	-	F
Goldenwest St Off-Ramp	Diverge	0.54	-	F	0.77	-	F
Goldenwest St Off-Ramp to Bolsa Ave On-Ramp	Basic	0.37	-	F	0.57	-	F
Bolsa Ave On-Ramp	Merge	0.50	-	F	0.69	-	F
South of Bolsa Ave On-Ramp	Basic	0.43	-	F	0.77	30.01	D
I-405 Northbound							
South of Bolsa Ave Off-Ramp	Basic	0.85	34.04	D	0.80	-	F
Bolsa Ave Off-Ramp	Diverge	0.87	35.10	E	0.85	-	F
Bolsa Ave Off-Ramp to Goldenwest St On-Ramp	Basic	0.76	29.69	D	0.69	-	F
Goldenwest St On-Ramp	Merge	0.78	29.26	D	0.76	-	F
North of Goldenwest St On-Ramp	Basic	0.81	31.87	D	0.79	-	F

**Notes:**

1. Calculated using methodologies consistent with the HCM 6<sup>th</sup> Edition.
2. Density reported as passenger cars per mile per lane
3. HCM 6<sup>th</sup> Edition cannot accurately estimate density greater than 45 pc/mpl. Therefore, Density is not report for LOS F.
4. **Bold** indicates unacceptable operations

Source: Fehr & Peers, 2020



As shown in **Table 12**, 10 freeway segments operate unacceptably (LOS E, or LOS F) during the AM or PM Peak Hours:

- I-405 Southbound North of Goldenwest St Off-Ramp
- I-405 Southbound Goldenwest St Off-Ramp
- I-405 Southbound Goldenwest St Off-Ramp to Bolsa Ave On-Ramp
- I-405 Southbound Bolsa Ave On-Ramp
- I-405 Southbound South of Bolsa Ave On-Ramp
- I-405 Northbound, South of Bolsa Ave Off-Ramp
- I-405 Northbound, Bolsa Ave Off-Ramp
- I-405 Northbound, Bolsa Ave Off-Ramp to Goldenwest St On-Ramp
- I-405 Northbound, Goldenwest St On-Ramp
- I-405 Northbound, North of Goldenwest St On-Ramp

Under the Opening Year (2023) Plus Project Conditions, 10 freeway segments listed above were identified as deficient based on the criteria discussed in Chapter 3.



## 7.0 CUMULATIVE (2040) NO PROJECT CONDITIONS

This chapter summarizes the Cumulative Year (2040) Conditions as outlined in Chapter 3. This scenario analyzes the base conditions that are expected to be present during the Cumulative Year 2040.

### TRAFFIC VOLUMES

Traffic volumes used in this analysis were developed using the methodology described in Chapter 3. The Cumulative Year (2040) Conditions traffic forecasts are shown on **Figure 9**.

### PLANNED INTERSECTION IMPROVEMENTS

The I-405 freeway improvement project and Westminster General Plan Update intersection improvements, described in Chapter 3, are assumed to be implemented under the Cumulative Year (2040) scenario.

### INTERSECTION OPERATIONS

The intersection LOS results are summarized in **Table 13** for Cumulative Year (2040) Conditions. The Cumulative Year (2040) LOS report is provided in **Appendix B**.



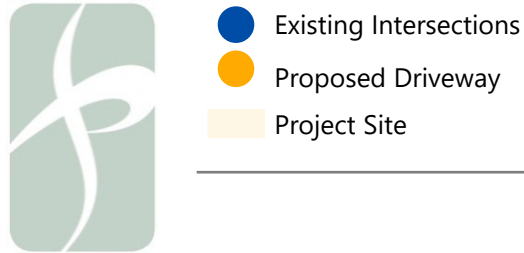
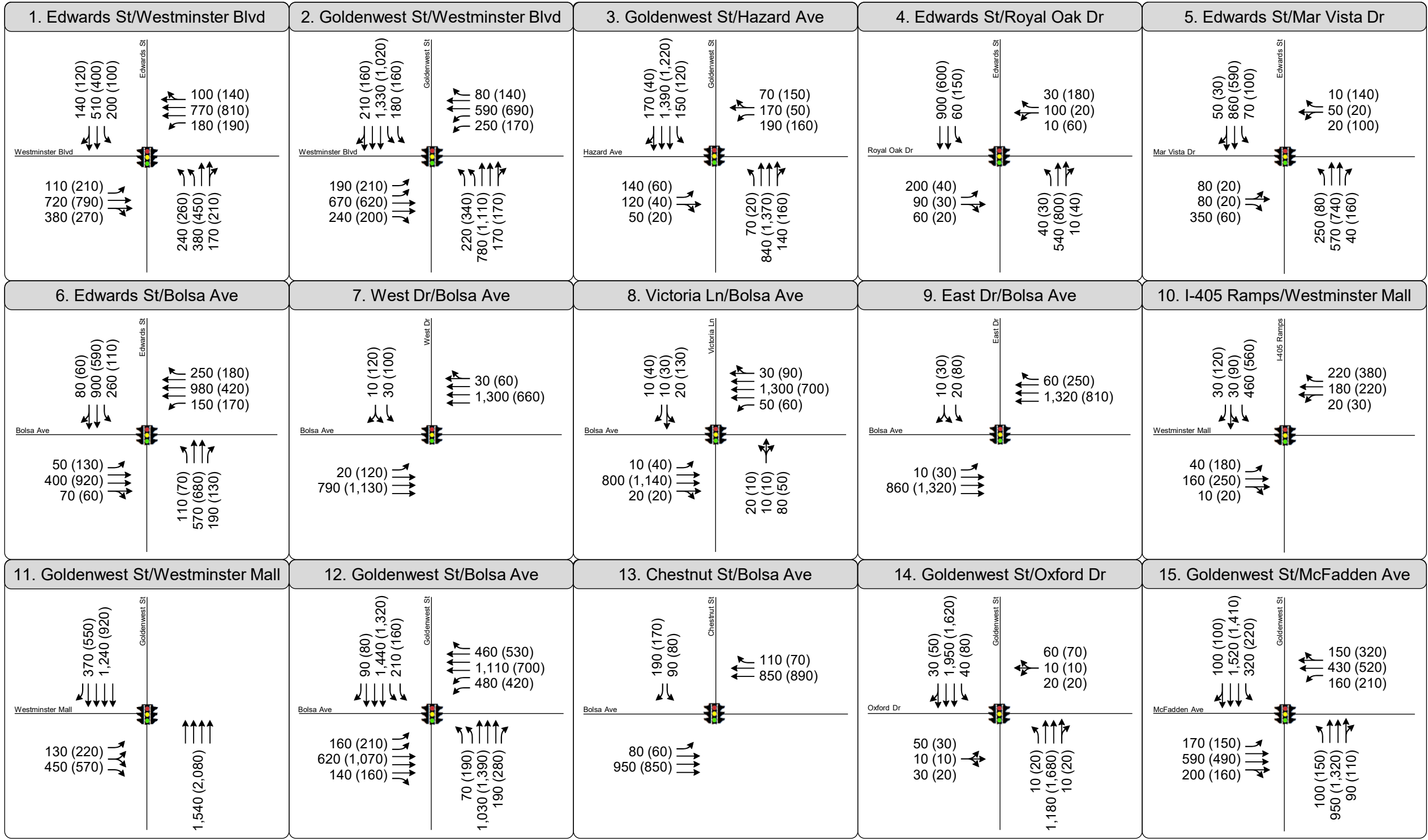
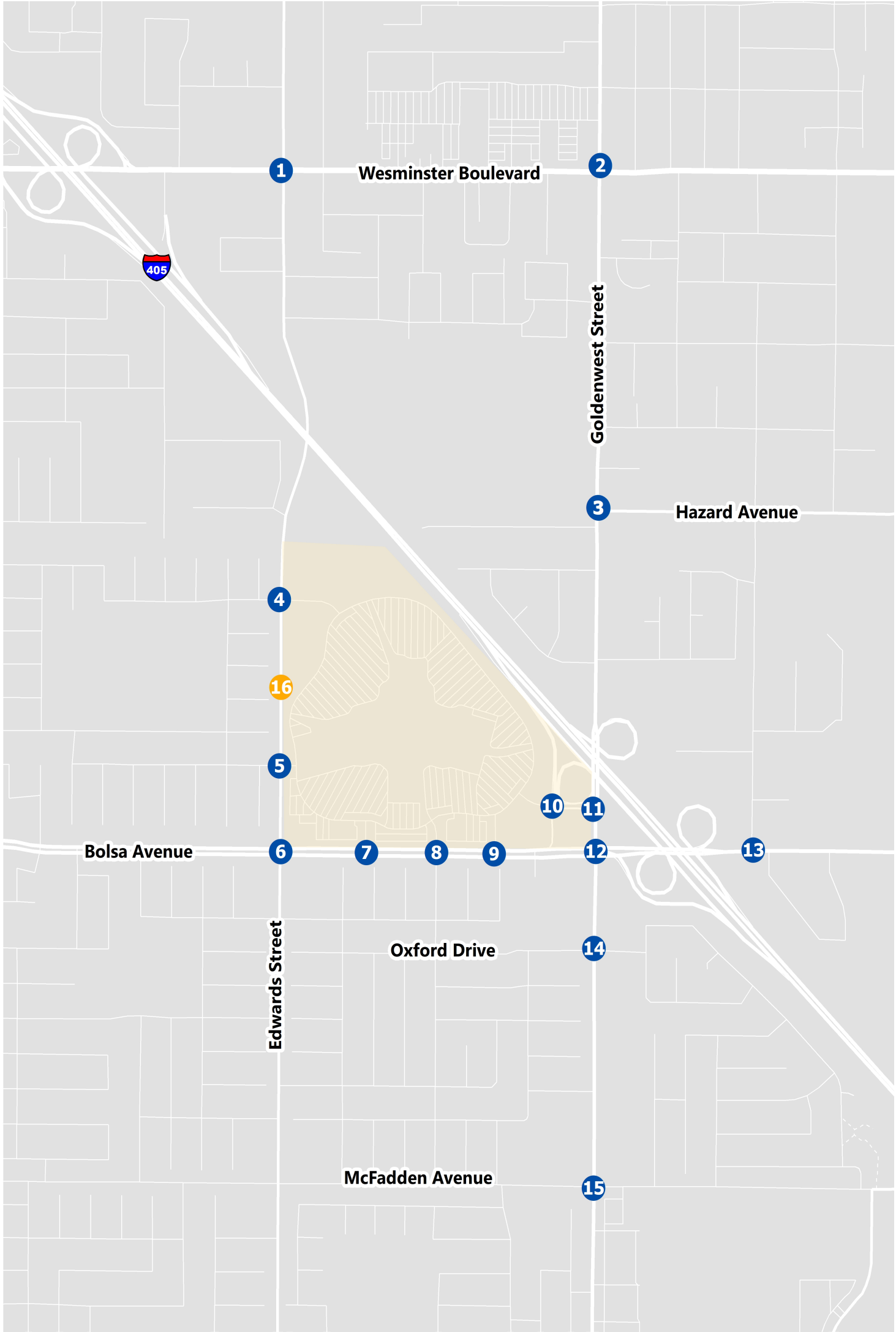


Figure 9  
Peak Hour Traffic Volumes and Lane Configurations  
Future Year (2040) No Project Conditions



**TABLE 13**  
**CUMULATIVE YEAR (2040) CONDITIONS INTERSECTION LEVEL OF SERVICE**

#	Intersection	Traffic Control	Peak Hour	Delay	LOS
1	Edwards St & Westminster Blvd	Signalized	AM	49.3	D
			PM	45.8	D
2	Goldenwest St & Westminster Blvd	Signalized	AM	37.4	D
			PM	38.1	D
3	Goldenwest St & Hazard Ave	Signalized	AM	26.6	C
			PM	30.1	C
4	Edwards St & Royal Oak Dr	Signalized	AM	21.1	C
			PM	14.8	B
5	Edwards St & Mar Vista Dr	Signalized	AM	27.9	C
			PM	14.4	B
6	Edwards St & Bolsa Ave	Signalized	AM	35.0	C
			PM	38.8	D
7	West Dr & Bolsa Ave	Signalized	AM	1.7	A
			PM	7.3	A
8	Victoria Ln & Bolsa Ave	Signalized	AM	4.7	A
			PM	17.0	B
9	East Dr & Bolsa Ave	Signalized	AM	1.1	A
			PM	3.3	A
10	I-405 Ramps & Westminster Mall	Signalized	AM	5.9	A
			PM	7.6	A
11	Goldenwest St & Westminster Mall	Signalized	AM	5.8	A
			PM	6.1	A
12	Goldenwest St & Bolsa Ave	Signalized	AM	25.3	C
			PM	35.2	D



**TABLE 13**  
**CUMULATIVE YEAR (2040) CONDITIONS INTERSECTION LEVEL OF SERVICE**

#	Intersection	Traffic Control	Peak Hour	Delay	LOS
13	Chestnut St & Bolsa Ave	Signalized	AM	13.1	B
			PM	16.9	B
14	Goldenwest St & Oxford Dr	Signalized	AM	4.1	A
			PM	6.5	A
15	Goldenwest St & McFadden Ave	Signalized	AM	39.4	D
			PM	46.6	D
16	Edwards St & Project Driveway <sup>3</sup>	Signalized	AM	-	-
			PM	-	-

**Notes:**

- 1- Intersections were analyzed using HCM 6<sup>th</sup> Edition methodology.
- 2- **Bold** indicates a LOS below the acceptable threshold.
- 3- Intersection of Edwards St & Project Driveway does not exist in the no project scenario.

Source: Fehr & Peers, 2020

## FREEWAY OPERATION ANALYSIS

**Table 14** presents the results of the freeway basic, merge, and diverge assessment for the I-405 freeway. LOS calculation worksheets for freeway segments are provided in **Appendix C**. As shown in **Table 14**, all the freeway segment operates acceptably (LOS D or better) during the AM and PM Peak Hours.



**TABLE 14 FREEWAY OPERATIONS-CUMULATIVE YEAR (2040) CONDITIONS**

Segment	Type	AM			PM		
		V/C	Density	LOS	V/C	Density	LOS
I-405 Southbound							
Between Westminster Blvd On-Ramp and Goldenwest St Off-Ramp	Basic	0.53	20.67	C	0.68	26.63	D
Goldenwest St Off-Ramp	Diverge	0.62	25.41	C	0.74	30.17	D
Goldenwest St Off-Ramp to Bolsa Ave On-Ramp	Basic	0.46	17.77	B	0.60	23.26	C
Bolsa Ave On-Ramp	Merge	0.54	20.79	C	0.65	24.67	C
Between Bolsa Ave On-Ramp and Beach Blvd Off-Ramp	Basic	0.46	17.77	B	0.59	23.10	C
I-405 Northbound							
Between Beach Blvd On-Ramp and Bolsa Ave Off-Ramp	Basic	0.68	26.63	D	0.69	26.95	D
Bolsa Ave Off-Ramp	Diverge	0.73	29.63	D	0.75	30.38	D
Bolsa Ave Off-Ramp to Goldenwest St On-Ramp	Basic	0.61	23.66	C	0.61	23.63	C
Goldenwest St On-Ramp	Merge	0.59	22.64	C	0.65	24.55	C
Between Goldenwest St On-Ramp and Westminster Blvd Off-Ramp	Basic	0.68	26.72	D	0.75	29.31	D

**Notes:**

1. Calculated using methodologies consistent with the HCM 6<sup>th</sup> Edition
2. Density reported as passenger cars per mile per lane. Therefore, Density is not report for LOS F.
3. **Bold** indicates unacceptable operations

Source: Fehr & Peers, 2020





## 8.0 CUMULATIVE (2040) PLUS PROJECT CONDITIONS

This chapter summarizes the Cumulative Year (2040) Plus Project Conditions as outlined in Chapter 3. This scenario consists of traffic generated by the proposed project added to the Cumulative (2040) No Project.

### TRAFFIC VOLUMES

Traffic volumes for the Cumulative Year (2040) Plus Project Conditions scenario consist of volumes from the Cumulative Year (2040) Conditions plus volumes generated by the proposed project as described in Chapter 3. The Cumulative Year (2040) Plus Project traffic volumes are shown in **Figure 10**.

### PLANNED INTERSECTION IMPROVEMENTS

The I-405 freeway improvement project, Westminster General Plan Update, and WMSP intersection improvements, described in Chapter 3, are assumed to be implemented under the Cumulative Year (2040) Plus Project scenario.

### INTERSECTION OPERATIONS

The intersection LOS results are summarized in **Table 15** for Cumulative Year (2040) Plus Project Conditions. The Cumulative Year (2040) Plus Project LOS report is provided in **Appendix B**.



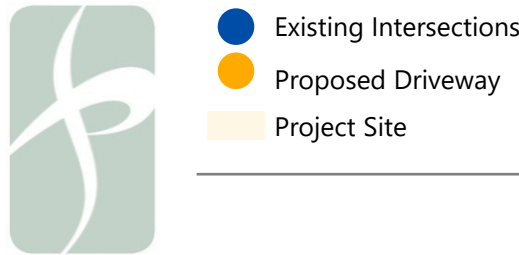
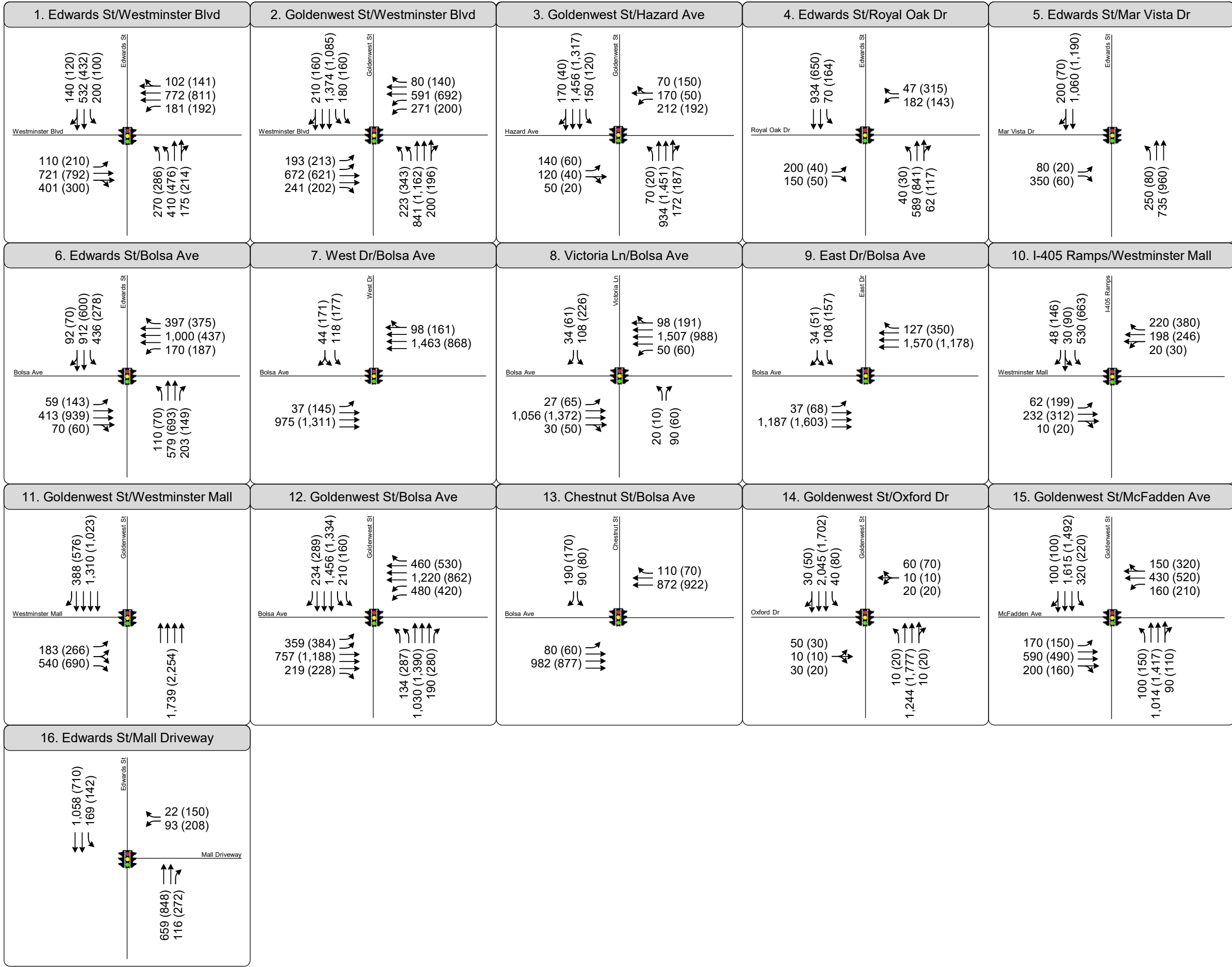
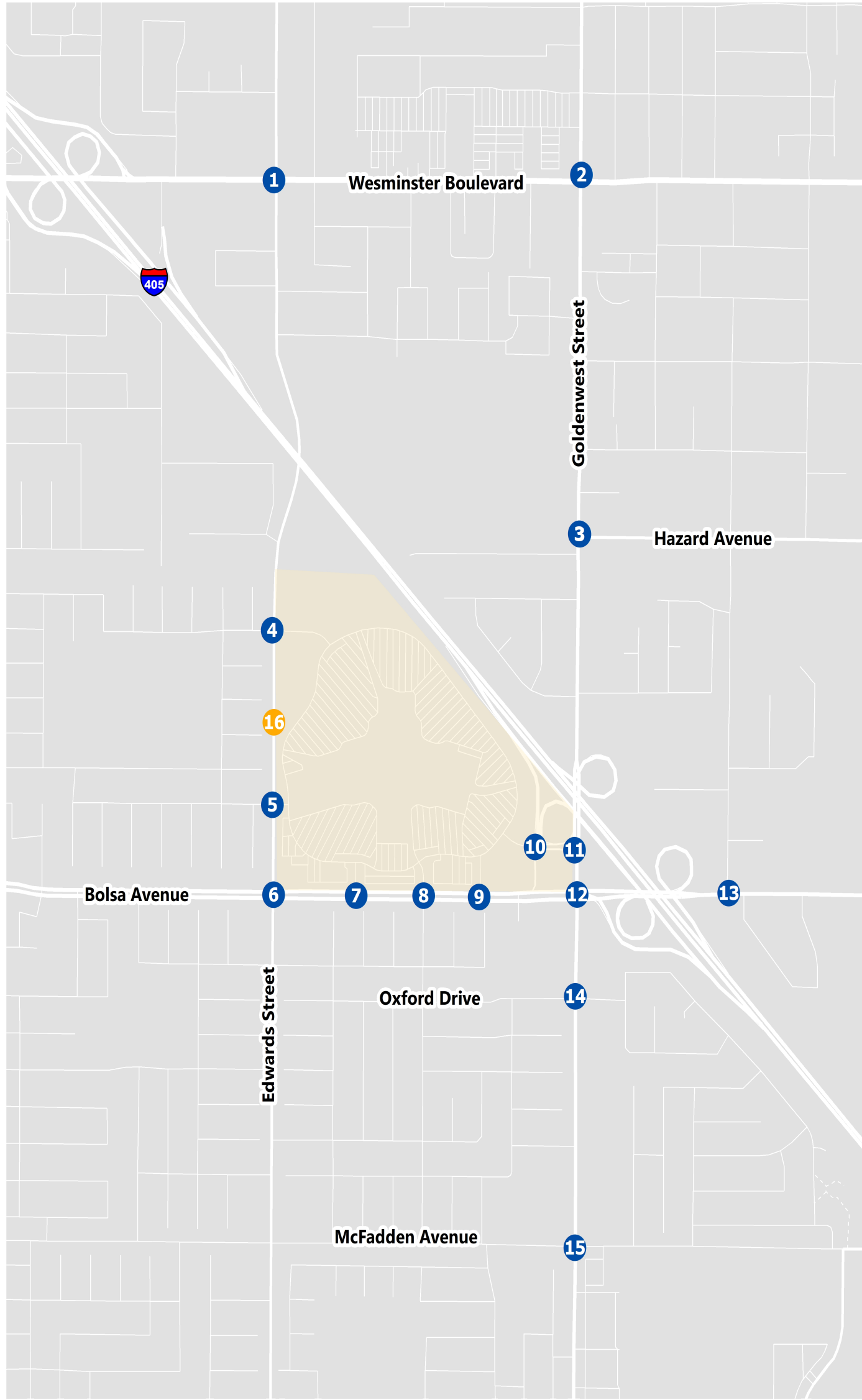


Figure 10  
Peak Hour Traffic Volumes and Lane Configurations  
Future Year (2040) Plus Project Conditions

**TABLE 15**  
**CUMULATIVE YEAR (2040) PLUS PROJECT CONDITIONS INTERSECTION LEVEL OF SERVICE**

#	Intersection	Traffic Control	Peak Hour	Delay	LOS
1	Edwards St & Westminster Blvd	Signalized	AM	51.1	D
			PM	47.4	D
2	Goldenwest St & Westminster Blvd	Signalized	AM	38.0	D
			PM	38.7	D
3	Goldenwest St & Hazard Ave	Signalized	AM	28.8	C
			PM	31.3	C
4	Edwards St & Royal Oak Dr	Signalized	AM	17.9	B
			PM	14.0	B
5	Edwards St & Mar Vista Dr	Signalized	AM	27.2	C
			PM	6.3	A
6	Edwards St & Bolsa Ave	Signalized	AM	37.7	D
			PM	46.2	D
7	West Dr & Bolsa Ave	Signalized	AM	4.1	A
			PM	8.5	A
8	Victoria Ln & Bolsa Ave	Signalized	AM	27.7	C
			PM	19.9	B
9	East Dr & Bolsa Ave	Signalized	AM	3.4	A
			PM	4.5	A
10	I-405 Ramps & Westminster Mall	Signalized	AM	6.2	A
			PM	8.6	A
11	Goldenwest St & Westminster Mall	Signalized	AM	6.3	A
			PM	6.9	A
12	Goldenwest St & Bolsa Ave	Signalized	AM	30.7	C
			PM	38.1	D
13	Chestnut St & Bolsa Ave	Signalized	AM	13.0	B
			PM	17.1	B



**TABLE 15**  
**CUMULATIVE YEAR (2040) PLUS PROJECT CONDITIONS INTERSECTION LEVEL OF SERVICE**

#	Intersection	Traffic Control	Peak Hour	Delay	LOS
14	Goldenwest St & Oxford Dr	Signalized	AM	4.0	A
			PM	6.3	A
15	Goldenwest St & McFadden Ave	Signalized	AM	39.7	D
			PM	48.5	D
16	Edwards St & Project Driveway	Signalized	AM	9.8	A
			PM	8.8	A

**Notes:**

- 1- Intersections were analyzed using HCM 6<sup>th</sup> Edition methodology.
- 2- **Bold** indicates a LOS below the acceptable threshold.

Source: Fehr & Peers, 2020

## INTERSECTION IMPACTS

Under the Cumulative Year (2040) Plus Project Conditions, no intersections were identified as operating at a deficient level based on the criteria discussed in Chapter 3.

## FREEWAY OPERATION ANALYSIS

**Table 16** presents the results of the freeway basic, merge, and diverge assessment for the I-405 freeway. LOS calculation worksheets for freeway segments are provided in **Appendix C**. As shown in **Table 16**, five study freeway segments on I-405 are forecast to operate below acceptable LOS D during at least one peak hour.



**TABLE 16 FREEWAY OPERATIONS-CUMULATIVE YEAR (2040) PLUS PROJECT CONDITIONS**

Segment	Type	AM			PM		
		V/C	Density	LOS	V/C	Density	LOS
I-405 Southbound							
North of Goldenwest St Off-Ramp	Basic	0.54	21.24	C	0.69	27.11	D
Goldenwest St Off-Ramp	Diverge	0.64	26.21	C	0.77	31.27	D
Goldenwest St Off-Ramp to Bolsa Ave On-Ramp	Basic	0.46	18.16	C	0.60	23.27	C
Bolsa Ave On-Ramp	Merge	0.60	22.81	C	0.67	25.49	C
South of Bolsa Ave On-Ramp	Basic	0.47	18.31	C	0.60	23.44	C
I-405 Northbound							
South of Bolsa Ave Off-Ramp	Basic	0.69	26.89	D	0.70	27.31	D
Bolsa Ave Off-Ramp	Diverge	0.75	30.32	D	0.77	31.38	D
Bolsa Ave Off-Ramp to Goldenwest St On-Ramp	Basic	0.60	23.58	C	0.60	23.51	C
Goldenwest St On-Ramp	Merge	0.62	23.58	C	0.67	25.35	C
North of Goldenwest St On-Ramp	Basic	0.69	27.08	D	0.76	29.74	D

**Notes:**

1. Calculated using methodologies consistent with the HCM 6<sup>th</sup> Edition
2. Density reported as passenger cars per mile per lane
3. **Bold** indicates unacceptable operations

Source: Fehr & Peers, 2020

Under the Cumulative Year (2040) Plus Project Conditions, no freeway segments were identified as operating at a deficient level based on the criteria discussed in Chapter 3.





## 9.0 VEHICLE MILES TRAVELED (VMT) ANALYSIS

Senate Bill 743 (SB 743), signed by the Governor in 2013, changed the way transportation impacts are identified. The legislative intent of SB 743 is to balance the needs of congestion management with statewide goals for infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions. The legislation has directed the Office of Planning and Research (OPR) to look at different metrics for identifying transportation as a CEQA impact.

The Final OPR guidelines, released in December 2018, identify vehicle miles of travel (VMT) as the preferred metric for traffic impact analysis moving forward. The Natural Resources Agency completed the rule making process to modify the CEQA guidelines and all CEQA impacts, by July 2020, shall be based on VMT for transportation assessment.

This chapter discusses VMT assessment for identifying CEQA impacts associated with project for transportation.

### VMT ANALYSIS METHODOLOGY

VMT can be estimated for a project or region with a travel demand model that forecasts travel patterns by trip purpose on typical weekdays consistent with City VMT estimation guidance. Fehr & Peers utilized the Orange County Transportation Analysis Model (OCTAM) to estimate VMT for the Project. We utilized the origin-destination (O-D) methodology for analysis of the VMT and its effect on the region. The O-D VMT estimates incorporate the “full accounting” methodology, which accounts for the complete length of the trip from the origin transportation analysis zone (TAZ) to the destination TAZ and assigns 100% of that trip distance to the Project or region, as appropriate. To estimate the potential VMT impacts, we estimated VMT for the following scenarios:

- Baseline (2019) No Project
- Baseline (2019) With Project
- Cumulative Year (2040) No Project
- Cumulative Year (2040) With Project

The Base Year (2019) conditions were created by interpolating VMT results between the Base Year (2016) outputs and Future Year (2040) outputs. To compare scenarios with different land use totals, VMT is normalized by dividing it by the total service population (SP), which represents residential population plus employment in the study area.



Based on the City of Westminster draft VMT guidance, a significant impact would occur if either the listed conditions below are met:

- **Project Level Impact:** The total daily VMT per service population (VMT/SP) of the project is higher than 15% below the existing total daily VMT/SP for the County. This is also referred to as project generated VMT.
- **Cumulative Effect on VMT:** The buildout of the project causes total daily VMT/SP within the City to be higher than the No Project alternative under cumulative conditions. This is also referred to as the project-effect on VMT.

## PROJECT GENERATED VMT ASSESSMENT

Project level VMT was analyzed using the base year and future year travel demand model and were interpolated to represent the baseline conditions (Existing Year (2019) Conditions). **Table 17** summarizes the VMT/SP for both the Project and for Orange County. VMT assessment outputs are in **Appendix D**.

**TABLE 17**  
**PROJECT-GENERATED VMT PER SERVICE POPULATION**

Scenario	VMT/SP
Orange County Existing (2019) Conditions	29.75
Project Generated VMT	28.66
<b>Comparison</b>	<b>(-1.09) -4%</b>

Source: Fehr & Peers, 2020

The project, at full buildout, will generate VMT at a rate that is approximately 4% below the County average. Based on the City's guidelines, the Project would generate VMT/SP higher than 15% below the Orange County average. Therefore, the project *will* result in a significant impact for project generated VMT even though it will reduce the total VMT to/from the mall site



## PROJECT EFFECT ON VMT

The project's effect on VMT was calculated using the Cumulative Year (2040) No Project and With Project model results to determine if the project increases VMT/SP in the city. The WMSP is located close in close proximity to the City of Huntington Beach and, if VMT per service population was only calculated within the City limits, the true effect outside of those City limits may not be fully accounted for in this analysis. As such, VMT on all roadways within a ten-mile radius of the project were evaluated for the project's cumulative effect on VMT. This boundary area is shown on **Figure 11**. **Table 18** summarizes the results of the VMT calculations. In many respects, cumulative effect on VMT is a more informative metric as it demonstrates how the project effects VMT in a regional setting (e.g. does the Project make travel more or less efficient for the City or sub regional boundary as a whole).

**TABLE 18**  
**10-MILE INFLUENCE AREA CUMULATIVE VMT PER SERVICE POPULATION**  
**BOUNDARY METHOD**

Scenario	Future Year Plus Project
Future (2040) No Project	13.93
Future (2040) Plus Project	13.92
Change	-0.01 (-1%)

*Fehr & Peers, 2020*

The development of the project will reduce the WMSP influence area's VMT/SP by approximately 1%. Based on the City's significant criteria, the project *will not* in a significant project-effect impact based on the project.

## VMT IMPACTS AND MITIGATION MEASURES

Implementation of the WMSP would result in the following impacts.

**PROJECT GENERATED VMT IMPACT – Implementation of the WMSP would decrease VMT per service population by less than 15 percent compared to baseline countywide conditions. This impact is considered significant.**

The development of the WMSP would result in a VMT per service population that is approximately 4% lower than the Orange County baseline. Based on the City's TIA guidelines, the project results in a significant impact.



**MITIGATION MEASURE : TDM PROGRAMS. – Implement TDM strategies to reduce the number of project vehicle trips or reduce trip lengths**

The WMSP proposes the establishment of a Transportation Management Association (TMA) or Transportation Management Organization (TMO) that will encourage property owners and tenants to work together to monitor trip generation and implement TDM strategies and programs. All projects with new construction that will generate more than 50 peak hour trips shall be required to develop and submit a TDM plan. The TDM strategies and programs shall be designed to reduce daily and peak hour vehicle trips, as forecast for the project in this transportation impact assessment.

Unfortunately, TDM programs are very tenant and employer specific. For example, providing a shuttle service to office use can vary extensively based on the tenant of that office building. As such, at the time of entitlement, it is very difficult to fully capture the actual VMT reduction associated with implementation of the TDM program.

Fehr & Peers did test a potential TDM program using the methodology identified by the California Air Pollution Control Officers Association (CAPCOA) with updated VMT reduction information from research prepared for the California Air Resources Board (CARB). Strategies tested include:

1. Implement parking restrictions to limit visitors parking in nearby neighborhoods
2. Develop carpool and vanpool programs
3. Promote unbundled parking programs that would allow parking spaces to be sold or rented separately without inclusion into rental cost
4. Encourage shared parking between property owners and renters to increase parking utilization during off-peak parking demand hours
5. Consider a parking reduction of up to 15% of the required spaces including a parking study to support reduction
6. Market programs to educate visitors, residents, and employees about alternatives to driving
7. Develop bicycle connections that will provide access to proposed bicycle facilities outlined in the City's Active Transportation Plan, such as the proposed Navy Trail facility, which is located within the project area
8. Encourage the development of programs that subsidize transit for employees to reduce project vehicle trips
9. Incentivize and promote Carshare programs
10. Promote paid parking programs for on-site parking spaces to promote high turnover at the most desirable locations, especially curbside spaces along a potential internal Main Street area.



Implementation of the TDM strategies and programs noted above were estimated to reduce the project's overall VMT from 7% to 22%, depending on the tenant of the complex. The TDM reduction summary report is provided in **Appendix D**.

The CAPCOA methodology does not account for the following TDM strategies that may also be included in the TDM plan of this project:

1. Provide telecommuting or work-at-home programs, where appropriate
2. Develop a "park once" policy to encourage employees, residents, and visitors to park once and walk to multiple destinations within the project area

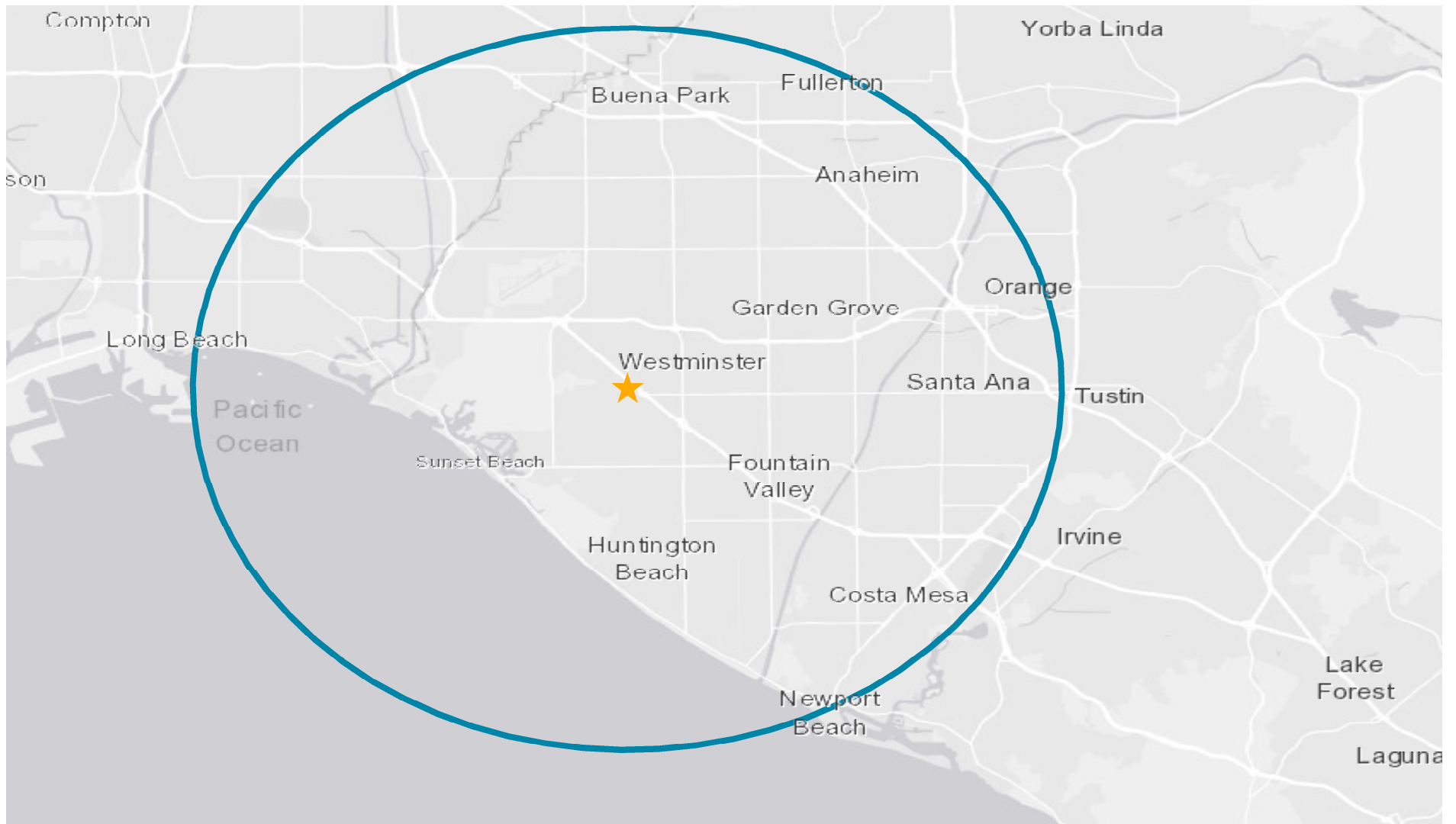
Implementation of these TDM strategies may further reduce VMT for the project. It should also be noted that, the TDM strategies evaluated do not take into consideration some foreseeable travel changes, including increased use of transportation network companies, such as Uber and Lyft, nor the potential for autonomous vehicles. Although the technology for autonomous vehicles is expected to be available over the planning horizon, the federal and State legal and policy frameworks are uncertain. Initial modeling of an autonomous future indicates that with automated and connected vehicles, the capacity of the existing transportation system would increase as vehicles can travel closer together; however, these efficiencies are only realized when a high percentage of vehicles on the roadway are automated and connected. There is also the potential for vehicle travel to increase with zero-occupancy vehicles on the roadway.

Additionally, the SB 150 report produced by CARB identified that VMT reductions anticipated in the RTP/SCS's prepared throughout the state have not achieved their anticipated VMT reductions and VMT has largely grown in the state. This can be caused by a variety of factors that are outside of an tenants' control, such as the cost of fuel, income levels, health factors (as seen with the COVID outbreak), among other factors.

Given the uncertainty in tenant participation at the site and the uncertainty in other factors that are outside of the control of the project sponsor, the ability to achieve an additional 7% VMT reduction for the site cannot be guaranteed and the impact is considered significant and unavoidable.

**Significance after Mitigation:** Significant and Unavoidable





Project Site



10 Mile VMT Influence Boundary Area

Figure 11

WMSP VMT Influence Area



## 10.0 IMPACT ANALYSIS AND MITIGATION MEASURES

### CEQA CHECKLIST REVIEW

The following significance criteria, included in Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.), will determine the significance of a traffic impact. Impacts to traffic resources would be significant if the proposed project would:

#### CHECKLIST ITEM A

*a) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?*

As stated in previous chapters, the project plans to develop traffic calming treatments at four study intersections to improve circulation and safety within the study area, outlined in the Circulation Chapter of the Environmental Impact Report. These intersection improvements will include upgrades to ADA and pedestrian facilities. None of these improvements will impact the local bicycle network. As such, this impact is considered less-than-significant.

#### CHECKLIST ITEM B

*b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?*

*"Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152".*

#### **Project-generated Impact**

VMТ assessment reveals the project's VMТ/SP is estimated to be approximately 4% lower than the baseline Orange County regional average, which does not meet the City's threshold of 15% below the county's regional average resulting in a project-generated impact. The WMSP proposes the establishment of a Transportation Management Association (TMA) or Transportation Management Organization (TMO) that will include tenants and property owners; monitor total project trip generation; and implement TDM strategies to reduce trip generation and trip lengths for the project.



The WMSP proposes the following TDM measures to reduce the project's VMT:

1. Provide telecommuting or work-at-home programs, where appropriate
2. Develop a "park once" policy to encourage employees, residents, and visitors to park once and walk to multiple destinations within the project area
3. Implement parking restrictions to limit visitors parking in nearby neighborhoods
4. Develop carpool and vanpool programs
5. Promote unbundled parking programs that would allow parking spaces to be sold or rented separately without inclusion into rental cost
6. Encourage shared parking between property owners and renters to increase parking utilization during off-peak parking demand hours
7. Consider a parking reduction of up to 15% of the required spaces including a parking study to support reduction
8. Market programs to educate visitors, residents, and employees about alternatives to driving
9. Develop bicycle connections that will provide access to proposed bicycle facilities outlined in the City's Active Transportation Plan, such as the proposed Navy Trail facility, which is located within the project area
10. Encourage the development of programs that subsidize transit for employees to reduce project vehicle trips
11. Incentivize and promote Carshare programs
12. Promote paid parking programs for on-site parking spaces to promote high turnover at the most desirable locations, especially curbside spaces along the internal Main Street area.

Implementation of these TDM strategies may further reduce VMT for the project. It should also be noted that, the TDM strategies evaluated do not take into consideration some foreseeable travel changes, including increased use of transportation network companies, such as Uber and Lyft, nor the potential for autonomous vehicles. Although the technology for autonomous vehicles is expected to be available over the planning horizon, the federal and State legal and policy frameworks are uncertain. Initial modeling of an autonomous future indicates that with automated and connected vehicles, the capacity of the existing transportation system would increase as vehicles can travel closer together; however, these efficiencies are only realized when a high percentage of vehicles on the roadway are automated and connected. There is also the potential for vehicle travel to increase with zero-occupancy vehicles on the roadway.

Additionally, the SB 150 report produced by CARB identified that VMT reductions anticipated in the RTP/SCS's prepared throughout the state have not achieved their anticipated VMT reductions and VMT has largely grown in the state. This can be caused by a variety of factors that are outside of an tenants' control, such as the cost of fuel, income levels, health factors (as seen with the COVID outbreak), among other factors.







Given the uncertainty in tenant participation at the site and the uncertainty in other factors that are outside of the control of the project sponsor, the ability to achieve an additional 7% VMT reduction for the site cannot be guaranteed and the impact is considered *significant and unavoidable*.

#### **Project-Effect on VMT**

The development of the project will reduce the overall VMT per service population in an influence area around the site (set at a 10-mile radius; or roughly double the average trip length anticipated to/from the site) by 1%. Since the project reduces VMT per service population on the overall network, this impact is considered *less than significant*.

### CHECKLIST ITEM C

*c) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

The proposed project does not propose any incompatible uses and will comply with the City roadway standards to ensure the safe and efficient movement for all modes of travel. As such, this impact is considered *less-than-significant*.

### CHECKLIST ITEM D

*d) Result in inadequate emergency access?*

The proposed project will not limit existing emergency access and adequate emergency access has been provided on the proposed project site. As such, this impact is considered *less-than-significant*.

