

**LOS ANGELES UNION STATION
FORECOURT AND ESPLANADE IMPROVEMENTS PROJECT**

ADDENDUM NO. 2 TO THE ENVIRONMENTAL IMPACT REPORT

STATE CLEARINGHOUSE NUMBER 2016121064

**LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY
ONE GATEWAY PLAZA
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TABLE OF CONTENTS

SECTION 1.0 APPROVED PROJECT OVERVIEW AND BACKGROUND 1
SECTION 2.0 PURPOSE OF ADDENDUM #2 TO THE EIR 4
SECTION 3.0 PREVIOUS ENVIRONMENTAL REVIEW 6
SECTION 4.0 PROJECT DESCRIPTION AND PROPOSED MODIFICATIONS 7
SECTION 5.0 IMPACT DISCUSSION 16
SECTION 6.0 STAKEHOLDER ENGAGEMENT 48
SECTION 7.0 CONCLUSION 49

APPENDIX A TRANSPORTATION TECHNICAL STUDY FOR ADDENDUM NO. 2 TO THE ENVIRONMENTAL
IMPACT REPORT

List of Tables

Table 1 – Utility Removal and Replacements 14

List of Figures

Figure 1 – Project Location 2
Figure 2 – Approved Project Forecourt and Esplanade Plan 3
Figure 3 – Modified Project Plan 11
Figure 4 – Proposed Modifications 12

SECTION 1.0 APPROVED PROJECT OVERVIEW AND BACKGROUND

The Los Angeles Union Station Forecourt and Esplanade Improvements Project (Project) includes a group of perimeter improvements that are intended to enhance pedestrian accessibility, safety, and connectivity (Figure 1, *Project Location Map*) to and from Los Angeles Union Station (LAUS) and the surrounding communities. This Project implements a piece of the Connect US Action Plan, which was finalized in 2015 and identified active transportation improvement projects in the vicinity of Union Station to create safe access for people walking, bicycling and rolling to LAUS. Metro completed California Environmental Quality Act (CEQA) review for the Project in March of 2018 when the Metro Board of Directors certified the Final Environmental Impact Report (FEIR) for the Project. A Subsequent Addendum (Addendum #1) to the FEIR was prepared and filed in July 2018 and the National Environmental Policy Act (NEPA) environmental review required as part of the grant application for Active Transportation Program (ATP) funds was approved June 2020.

The Project consists of four general Project components: the Alameda Street Esplanade, the Forecourt Improvements, the partial closure of Los Angeles Street, and repurposing a travel lane on Arcadia Street (Figure 2, *Approved Project Plan*). As part of the ongoing design process, several modifications to the Project were identified and described in Addendum #1. These modifications included changes to the phasing of geotechnical and utility investigations, extending the maximum depth of excavation, an updated Project schedule, consolidating underutilized existing bus stops, and clarifications to mitigation measures pertaining to the geotechnical and utility investigations. The Project which is being modified by the improvements covered in this Addendum #2 includes Alternative 3 from the FEIR and the modifications from Addendum #1 (Approved Project).

Figure 1 – Project Location

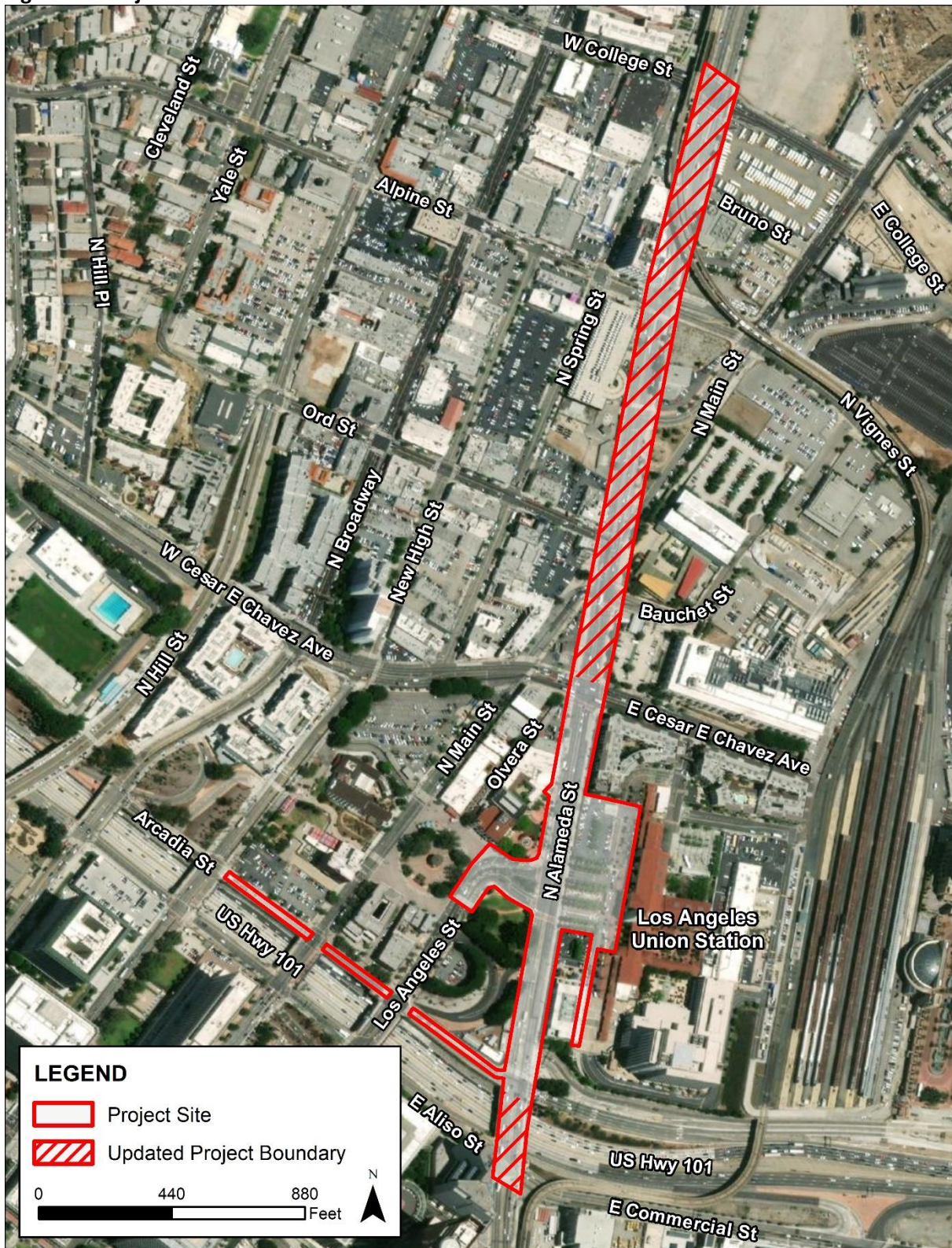


Figure 2 – Approved Project Forecourt and Esplanade Plan



SECTION 2.0 PURPOSE OF ADDENDUM #2 TO THE EIR

The purpose of Addendum #2 to the previously certified Los Angeles Union Station Forecourt and Esplanade Improvements Project FEIR and Addendum #1 is to document and evaluate Approved Project element changes and additions and associated revisions based upon the advanced design plans developed since Certification of the Project FEIR and Addendum #1.

The CEQA Guidelines Section 15164(a) states, “The lead agency or responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred.”

Section 15162 calls for the preparation of a Subsequent EIR when any of the following have occurred:

- Substantial changes are proposed in the Project which will require major revisions of the previous EIR;
- Substantial changes occur with respect to the circumstances under which the Project is undertaken which will require major revisions of the previous EIR; or
- New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified, such as:
 - a. One or more significant effects was not discussed in the previous EIR;
 - b. Significant effects previously examined will be substantially more severe;
 - c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the Project; or
 - d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects.

Pursuant to the above CEQA directive, this Addendum #2 has been prepared. Addendum #2 reflects refinements identified through the design process that have occurred subsequent to Certification of the Final EIR and Addendum #1. This design process has resulted in modifications to the Approved Project described in detail in Section 4.0 and summarized as follows:

1. Alameda Esplanade Revisions,
2. Intersection and Roadway Modifications,
3. Removal and Replacement of Streetlights,
4. Removal and Replacement of Additional Utilities, and
5. Redesigned ADA-Compliant Los Angeles Street Pathway

In addition to the above modifications to the Project, CEQA requirements have been updated since certification of the FEIR and Addendum #1 that require updated analysis most notably related to transportation and traffic impacts. The Approved Project did not address any transportation impacts in relation to vehicle miles traveled (VMT) which is now required by CEQA Guidelines Section 15064.3 (b). The City of Los Angeles Transportation Assessment Guidelines (TAG) have also been updated to account for the new CEQA requirements; thus Addendum #2 provides an updated analysis based on the TAG and new CEQA Guidelines. In addition to the transportation-focused changes in the CEQA Guidelines, several other CEQA topics have undergone minor revisions and several new topics have been added to Appendix G of the CEQA Guidelines including wildfire and tribal cultural resources which have been included in this

Addendum#2 to update the analysis of the Approved Project and subsequent modifications described herein.

An Addendum is the appropriate CEQA document to assess and disclose these changes to the Project for the following reasons:

- No substantial changes are proposed to the Project which will require major revisions of the previously certified EIR;
- No substantial changes have occurred with respect to the circumstances under which the Project is being undertaken; and
- No new information of substantial importance has been identified.

The Addendum #2 provides a comparative analysis between the proposed and existing conditions at the affected sites and demonstrates why the potential temporary and/or permanent impacts associated with the Project refinements are consistent with the analysis in the Certified EIR, and it further demonstrates that (a) there are no substantial changes that require major revisions to the Certified EIR, (b) there are no substantial changes to the circumstances under which the Project is being undertaken, and (c) there has been no new information of substantial importance generated. As a result, the Project refinements considered in the Addendum have been determined to not result in new or substantially more adverse significant impacts.

SECTION 3.0 PREVIOUS ENVIRONMENTAL REVIEW

3.1 *Environmental Impact Report*

Metro prepared and circulated a Draft EIR (SCH #2016121064) for the Project for a 45-day public review period, beginning on August 11, 2017, and ending on September 25, 2017. The document was available to the public at Los Angeles Main Library, Chinatown Branch Library, and the Metro project website. Following the close of the public comment period, a FEIR was prepared that included the complete Draft EIR, an Executive Summary, and responses to all written and oral comments received during the public review period for the Draft EIR. Metro certified the FEIR and adopted the Findings of Fact and Statement of Overriding Considerations (FOF/SOC) and Mitigation Monitoring and Reporting Program (MMRP) on March 1, 2018. The Notice of Determination (NOD) was filed with the County Clerk on March 2, 2018. Subsequent to certification of the FEIR, an Addendum #1 to the FEIR was initiated to allow for two phases of geotechnical and utility investigation to inform design and construction, extending the maximum depth of excavation, update the Project schedule, consolidating bus stops along Alameda Street, and clarify mitigation measures pertaining to these investigations. Addendum #1 to the FEIR was approved by the Metro Board on July 26, 2018. The NEPA clearance was received June 2020 for the Alameda Esplanade and Los Angeles Street Improvements, the two federally funded Project elements.

SECTION 4.0 PROJECT DESCRIPTION AND PROPOSED MODIFICATIONS

4.1 Existing Project Description

4.1.1 Location

The Project site is located on approximately 6.7 acres in the City of Los Angeles, in the northern portion of the downtown area. The Project is located adjacent to and within LAUS, in the U.S. Geological Survey Los Angeles 7.5-minute topographic quadrangle. The LAUS property is generally bounded by US 101 to the south, Alameda Street to the west, Cesar E. Chavez Avenue to the north, and Vignes Street to the east. However, the Project site is generally bounded by Alameda Street to the west, Cesar E. Chavez Avenue to the north, LAUS to the east, and Arcadia Street to the south. Specific Project elements are located on Alameda Street from Arcadia Street in the south to Cesar E. Chavez Avenue in the north, Arcadia Street from Alameda Street to Spring Street, Los Angeles Street from El Pueblo de Los Angeles to LAUS, and the LAUS Forecourt area. Adjacent to the Project to the west are the Chinese American Museum at 425 North Los Angeles Street, El Pueblo de Los Angeles State Historic Park at 125 Paseo De La Plaza, and the Avila Adobe Museum at 10 Olvera Street.

4.1.2 Project Objectives

The Project objectives are designed to enhance safety for and compatibility between multi-modal commuters and visitors, including individuals who travel to LAUS to reach local neighborhoods and businesses, as well as those who travel to LAUS to make a connection to another mode of travel. Metro is committed to accommodating existing and future destination and through-transit demands, including those who desire to utilize alternate forms of transit, rather than automobiles. The Project also supports local, regional, and state policies with regard to encouraging multi-modal travel and will enhance connectivity to LAUS by creating a safer, more welcoming experience to transit riders and visitors.

Metro has identified seven primary requisite objectives for the Project:

- Protect and enhance LAUS as a national historic resource by advancing clear sight lines and view sheds to the station.¹
- Prioritize connectivity, convenience, and safety for the most vulnerable users (pedestrians, bicyclists, transit patrons and community stakeholders) to safely navigate to and from the Project site.^{2,3}
- Advance desirable and accessible public space at the LAUS Forecourt that creates a visually porous and permeable connection between Union Station and the surrounding historic and cultural communities.⁴
- Facilitate alternatives to driving by providing infrastructure that enables more walking and bicycling.⁵

¹ National Park Service. 1980. *National Register of Historic Places Inventory Nomination Form*. Available at: <https://npgallery.nps.gov/GetAsset?assetID=c72efa93-90ca-40ba-9ca6-ae3d3515cf37>.

² City of Los Angeles Department of City Planning. 2016. *Mobility Plan 2035*. Available at: <http://planning.lacity.org/documents/policy/mobilityplnmemo.pdf>.

³ Los Angeles County Metropolitan Transportation Authority. 2015. *Connect US Action Plan*. Available at: https://media.metro.net/projects_studies/union_station/images/LAUSMP_Action_Plan_Final_100515.pdf.

⁴ County of Los Angeles Department of Public Health. November 2014. *The Plan for a Healthy Los Angeles*. Available at: http://publichealth.lacounty.gov/place/docs/FINAL_CTG%20HIGHLIGHTS%20Plan%20for%20Healthy%20LA_Nov%202014.pdf.

⁵ Los Angeles County Metropolitan Transportation Authority. June 2012. *Climate Action and Adaptation Plan*. Available at: http://media.metro.net/projects_studies/sustainability/images/Climate_Action_Plan.pdf. Prepared by ICF International.

- Enhance the safety and quality of pedestrian and bicycle connections between the station and El Pueblo Historic Monument, Father Serra Park, Olvera Street, and nearby business and neighborhoods.⁶
- Advance sustainability by providing for reduced consumptive water use in a cost-effective manner⁷ and improving multi-modal facilities that encourage active transportation and reduction in vehicle miles traveled.⁸
- Advance comprehensive planning for LAUS that leverages it as the major regional transportation hub, a destination, and one of the City's foremost landmarks.⁹

4.1.3 Project Elements

The Project focuses on perimeter improvements to improve pedestrian and bicyclist accessibility, safety and connectivity. The Approved Project is Alternative 3 of the EIR. It consists of four general Project components: the Alameda Street Improvements, the Forecourt Improvements, the partial closure of Los Angeles Street, and the Arcadia Street El Pueblo tour bus parking (Figure 2, *Approved Project Plan*).

The Approved Project improvements include:

- The Forecourt Improvements consist primarily of removing the short-term parking northwest of the entrance to LAUS (approximately 60 spaces) to create a new civic plaza with an outdoor seating area and sustainability elements.
- The Alameda Street improvements consist primarily of creating a new esplanade along Alameda Street (between Cesar E. Chavez Avenue and Arcadia Street) by narrowing the roadway and reallocating roadway area for the expanded pedestrian separated bicyclist multiuse, shared pathway on the eastside, and widened sidewalks on the west. The esplanade concept also included the following four changes:
 - Change three travel lanes in each direction and a left turn center lane to two lanes of travel with a left turn lane/center median and curb side drop-off on the east side of Alameda Street.
 - Expand sidewalks on both sides of the street into the roadway and create a shared tree-lined multi-use path for both bicyclists and pedestrians on the east side of Alameda Street.
 - Possibly consolidate bus stop locations on both the east and west side of Alameda Street (Added under Addendum #1).
 - Limit curbside kiss-and-ride drop-off to areas north of the LAUS forecourt.
 - Removal of one drop-off zone
- Reconfiguring the entrance from LAUS to the El Pueblo de Los Angeles State Historic Park by creating a new expanded, raised pedestrian crossing that leads into a new pedestrian plaza that

⁶ Southern California Association of Governments. April 2016. *Southern California Association of Governments 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy*. Available at: <http://scagrtpscscs.net/Documents/2016/final/f2016RTPSCS.pdf>.

⁷ Los Angeles County Metropolitan Transportation Authority. June 2010. *Water Action Plan*. Prepared by ICF International and Brezak & Associates Planning. Available at: http://media.metro.net/projects_studies/sustainability/images/Water_Plan2010_0825.pdf.

⁸ Southern California Association of Governments. April 2016. *Southern California Association of Governments 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy*. Available at: <http://scagrtpscscs.net/Documents/2016/final/f2016RTPSCS.pdf>

⁹ City of Los Angeles Department of City Planning. 2016. *Mobility Plan 2035*. Available at: <http://planning.lacity.org/documents/policy/mobilityplnmemo.pdf>. Policy 3.6, p. 88.

includes a two-way off-street bicycle path through the expanded El Pueblo plaza area near the west side of Los Angeles Street

- Providing pedestrian safety and additional connectivity through the partial closure of Los Angeles Street and closure of the northern LAUS driveway on Alameda Street
- Repurposing the northernmost travel lane on Arcadia Street (adjacent to El Pueblo) between Alameda Street and Spring Street into a tour bus parking area designated for El Pueblo

4.1.4 Construction

As described in the Certified EIR, construction for the Approved Project was anticipated to last seven months starting in the spring of 2020. The Project will adhere to local noise ordinances and specified construction Best Management Practices (BMPs), which will reduce impacts from construction on sensitive receptors. Since certification of the FEIR, the construction start date has been moved further into the future as discussed in the next section.

4.2 Proposed Modifications to the Project

The Project modifications discussed within this Addendum #2 include several components which can be summarized as:

1. Alameda Esplanade Revisions,
2. Intersection and Roadway Modifications,
3. Removal and Replacement of Streetlights,
4. Removal and Replacement of Additional Utilities, and
5. Redesigned ADA-Compliant Los Angeles Street Pathway (**Figure 3**, Modified Site Plan, and **Figure 4**, Proposed Modifications)

In addition, the original construction schedule has been revised to begin early 2022 to account for several delays to the Project. Construction phasing and duration remain unchanged from those disclosed in the Certified EIR. Each Project modification is described in detail as follows:

4.2.1 Alameda Esplanade Revisions

The Approved Project Alameda Esplanade concept in the Certified EIR included the removal of two vehicular travel lanes on Alameda Street, widening of the eastern and western sidewalks, and a new shared pedestrian and bicyclist multi-use path on the eastern sidewalk. As part of the Modified Project under this addendum, two vehicular travel lanes on Alameda Street would still be removed, but all the gained area within the right-of-way would be shifted to the eastern sidewalk to accommodate a separated bicycle and pedestrian path with mixing zones¹⁰ on the eastern sidewalk. Mixing zones will be adequately designed to provide users with advanced notice of the end of the separated paths of travel and the start of a shared, mixed area for pedestrians and bicyclists.

The western sidewalks will be replaced but will be maintained at the same width. Additionally, minor modifications to the sidewalk and pavement leading up to the El Pueblo building face along the west side of Alameda Street would be required under the Modified Project. At the location, the existing pavement slope would be lowered to maintain proper stormwater flow and ADA slope recommendations resulting in a minor expansion (approximately 235 square feet) of the project limits. In addition, the current design depicts a single row of trees along the length of the proposed Alameda Esplanade, while the Approved Project proposed a double row of trees totaling 54 trees within the Esplanade. Though the design has been revised since the Approved Project to address City of Los Angeles concerns related to stormdrain root invasion, Metro is maintaining the original double tree row envelope as part of the Project to provide flexibility. The changes have been advanced because of direction from the City of Los Angeles.

¹⁰ Mixing zones are areas where bicycles and pedestrians share right-of-way.

Figure 3 – Modified Project Plan

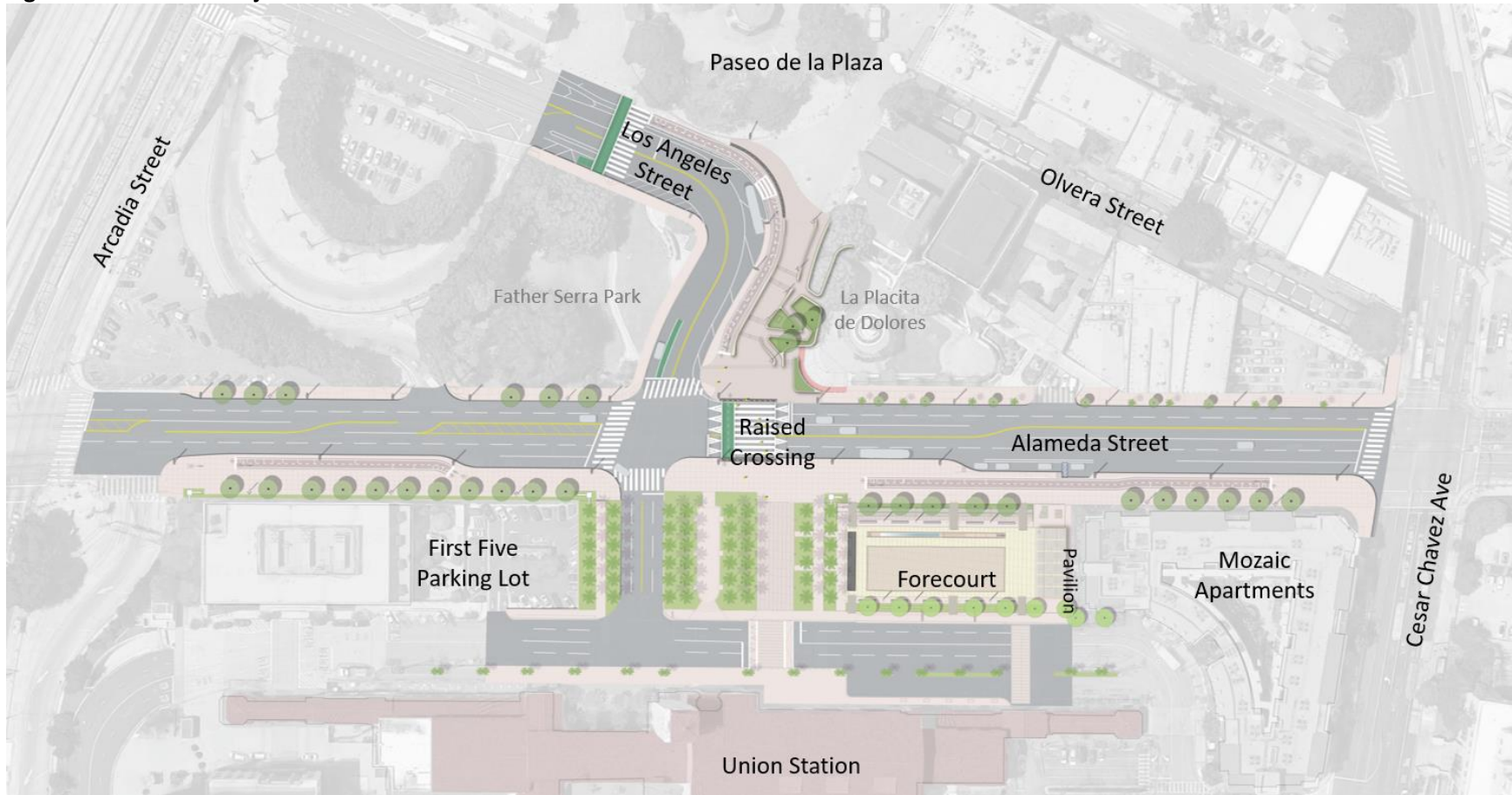
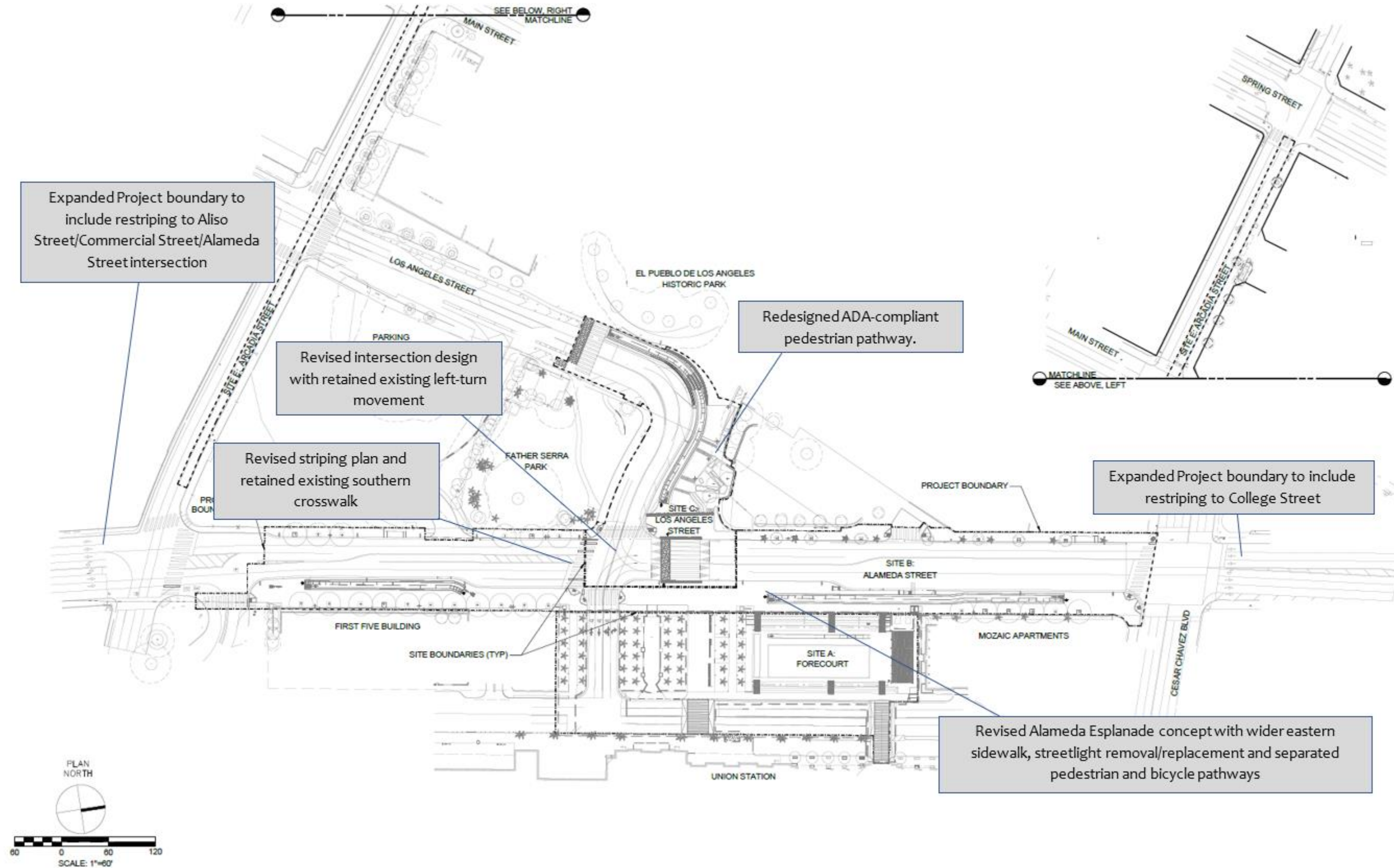


Figure 4 – Proposed Modifications



4.2.2 *Intersection and roadway modifications*

Per the direction of the Los Angeles Department of Transportation (LADOT), the existing crosswalk on the south leg of the intersection of Alameda Street and Los Angeles Street, which connects Father Serra Park and Union Station, will be retained at its current location as part of the Project. The Approved Project proposed to remove it to consolidate the pedestrian and bicyclist crossing at the northern portion of the intersection adjacent to the new raised crossing. It is also noted that the Approved Project allowed for a raised crossing measuring 50 feet in width tabletop and eight inches in height representing a maximum envelope for the Approved Project. While the current design reflects a crosswalk with reduced dimensions to meet City of Los Angeles street design requirements, the Project is maintaining the original design envelope to provide flexibility.

The Approved Project proposed to remove the existing eastbound Los Angeles Street left-turn lane to northbound Alameda Street in order to eliminate a movement that would conflict with the raised crosswalk and was found to generate more traffic impacts. However, per direction from LADOT, out of concern over safety impacts associated with potential driver non-compliance with the left-turn restriction, the left-turn will be retained as part of the Modified Project. The signal phasing for the intersection of Los Angeles Street and Alameda Street will be revised to include this movement. In addition, LADOT has required that the design maintain the existing northbound Alameda Street through/right-turn movement along the curbside lane rather than converting the lane to a right-turn-only lane under the Approved Project.

As part of this Addendum #2, several roadway Project elements will be added to the design beyond the northern and southern Project boundaries along Alameda Street based on direction from LADOT. In order to eliminate the potential for a trap-left turn lane for the southbound approach of Alameda Street at Cesar E. Chavez Avenue, LADOT directed Metro to revise the striping plan to provide a more gradual transition resulting in further reduction in roadway capacity compared to the Approved Project. This Addendum #2 includes the removal of a southbound peak period travel lane from Alpine Street to Cesar E. Chavez Avenue, whereas the Approved Project did not include this peak period lane reduction.

On Alameda Street, the southbound curb lane would be an all-day parking lane as opposed to a off-peak parking lane as was originally proposed as part of the Approved Project. The existing southbound peak period travel lane will be preserved north of Alpine Street, and a trap-right-turn only lane will be introduced at the southbound approach of Spring Street (the continuation of Alameda Street north of Alpine Street) at Alpine Street. No other roadway modification north of the area of restriping needed for the southbound right-turn lane are expected. Other elements included as part of these modifications include the addition of one post mounted sign, modifications to signs on existing sign posts, streetlights, and/or traffic signal poles, and the potential removal and replacement of traffic loops on Alameda Street from Ord Street to Cesar E. Chavez Avenue.

Additionally, to improve safety on the Alameda Street Bridge over the US 101 Freeway (between Arcadia Street and Aliso Street/Commercial Street) and to ensure alignment with the proposed northbound striping north of Arcadia Street, LADOT directed Metro to remove a southbound travel lane from Alameda Street between Arcadia Street and Aliso Street/Commercial Street in order to widen the travel lanes and adjust the northbound alignment. This work may include the potential removal and replacement of traffic loops on Alameda Street. As a separate Project, LADOT may implement a signal modification in this location, which could include the construction of new signal poles.

Based on coordination with LADOT, the extent of lane reconfiguration and resulting striping, loop reconfiguration and sign modification along Alameda Street has been expanded to Aliso Street/Commercial Street to the south and Alpine Street to the north.

4.2.3 Removal and replacement of historic streetlights with replica lights

The Project will require the removal and replacement of ten existing historic streetlights and 14 additional streetlights with replica lights along Alameda Street. The replacement streetlights would be moved to the City’s standard distance from the curb and would be modernized with light emitting diode (LED) lighting.

4.2.4 Removal and replacement of additional utilities

Given that the project has advanced design, additional information has been gained that calls for the removal, relocation, and replacement of several utility facilities not previously known or identified during preparation of the Certified EIR. The Certified EIR assumed that there could be some utility relocation. This Addendum refines the detail and certainty of utilities to be relocated. As utility investigations progress additional facilities may require relocation or minor modification; however, such activities would occur within the defined Project boundaries identified in Figure 1 and would not exceed the maximum depth of excavation (20 feet) disclosed in the Certified EIR/Addendum #1. All utility relocation work would be carried out as part of regular Project construction activities described in the Certified EIR/Addendum #1 and this Addendum #2 as applicable. Table 1 provides a summary of the affected facilities and associated relocation activities.

TABLE 1 – UTILITY REMOVAL AND REPLACEMENTS			
Utility Type	Location	Owner	Description
Forecourt (Site A) stormdrain catch basins	Surrounding LAUS driveways from Alameda Street	Metro	Removal of six catch basins and installation of three new catch basins
Forecourt (Site A) stormdrain manholes	Near existing bus parking lot, east of the proposed Forecourt	Metro	Two manholes to be removed and reconstructed to adjust to new grade.
Forecourt (Site A) sewer manholes	East of proposed Forecourt	Metro	Two manholes to be removed and reconstructed to adjust to new grade.
Forecourt (Site A) Domestic water service line	Adjacent to Mozaic apartments	Private	Two service lines would be rerouted to connect to relocated backflow preventers.
Forecourt (Site A) Underground electrical lines	Throughout Forecourt area and curb	Metro/Private/First Five	Four service lines feeding Union Station, Mozaic, and First Five. Associated hand hole would be adjusted to grade.
Alameda Street water main	Within Alameda Street	LADWP	Relocation of 8-inch water main.
Alameda Street backflow preventers, fire department connection	Adjacent to Mozaic apartments	Mozaic	Relocation of two 8-inch backflow preventers, one irrigation backflow, one fire department connection.
Los Angeles Street storm drain catch basins	Within Los Angeles Street	City of Los Angeles	Removal of three existing catch basins and installation of one new catch basin.

TABLE 1 – UTILITY REMOVAL AND REPLACEMENTS

Utility Type	Location	Owner	Description
Los Angeles Street water main	Within Los Angeles Street	LADWP	Relocation of the 12-inch water main

4.2.5 ADA compliant pathway leading to El Pueblo

The Approved Project included the reconfiguration of Los Angeles Street from LAUS to the El Pueblo de Los Angeles State Historic Park to create additional pedestrian space on the north side of Los Angeles Street. This reconfigured entrance space would include a consolidated sidewalk to provide additional pedestrian and bicycle connectivity, new granite bollards to match existing ones, and contrasting and decorative pavers align with the Secretary of Interior Historic Standards for Preservation of Historic Places. Through the course of design coordination with the City, Metro was advised that the pedestrian pathway exceeded 5% slope and thus would not be compliant with ADA standards. This Addendum #2 includes implementing universal design¹¹ on Los Angeles Street by incorporating a path of travel that meets Americans with Disability Act (ADA) standards. In addition, as part of this modified design, the Project boundary has been revised to include minor additional work in front of the Biscailuz Building, to the west of the proposed pedestrian pathway. The additional work consists of installation of an ADA-required curb ramp and associated cross slope modifications along the existing sidewalk which would remove an existing tree well and require the temporary removal of a bronze medallion currently installed in the concrete.

¹¹ Universal design is a philosophy that simply seeks to design products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.

SECTION 5.0 IMPACT DISCUSSION

The analyses provided below address each of the environmental issues analyzed in the Approved Project and focus on the potential changes in environmental impacts due to proposed modifications to the Project.

The analysis of each environmental issue first summarizes the findings of the Certified EIR, and then discusses the potential physical effects of the proposed modifications, which in this case is:

1. The Alameda Esplanade Revisions,
2. Intersection and Roadway Modifications,
3. Removal and Replacement of Streetlights,
4. Removal and Replacement of Additional Utilities, and
5. Redesigned ADA-Compliant Los Angeles Street Pathway.

Impacts to Agriculture and Forestry Resources, Air Quality, Greenhouse Gas Emissions, Biological Resources, Energy, Geology and Soils, Hazards and Hazardous Materials, Mineral Resources, Population and Housing, Public Services, Recreation, and Utilities and Service Systems would be applicable to the entire Project area, and the proposed modifications would not change the conclusions of the Certified FEIR and Addendum #1 relating to these CEQA topics. Accordingly, discussion of the proposed modifications relative to these environmental topics has been generalized and does not discuss each modification in detail. Impacts to Aesthetics, Hydrology and Water Quality, Cultural Resources, Tribal Cultural Resources, Noise, and Transportation and Traffic would vary by Project modification, and therefore further discussion is warranted regarding the impacts of each Project modification. The mitigation measures are the same as in the Certified EIR.

5.1 Aesthetics

The Modified Project does not introduce new above ground visual elements other than replacement streetlights, and a modified design of the Los Angeles Street pedestrian path. The Modified Project would not affect the viewsheds of the 20 City-identified scenic views/vistas (historic features) within a one half-mile radius of the Project identified in the Certified EIR/Addendum #1. Accordingly, there is no potential for the Modified Project to have an adverse effect on to a scenic vista. The proposed modifications to the Project, cannot be viewed from officially designated or eligible state scenic highways, historic parkways, or County scenic highways, due to their substantial distance from the Project site, intervening topography, and intervening buildings. The Modified Project, as with the Approved Project, would be consistent with the LAUS Master Plan which provides visual quality design elements for the LAUS area. The Modified Project would not change existing zoning or otherwise conflict with existing land use requirements related to scenic quality. None of the proposed modifications to the Project contain any elements that would result in a new source of nighttime light or daytime glare. Therefore, the Modified Project would not result in new or substantially more severe impacts to aesthetics than the Approved Project, and no additional mitigation would be required.

5.1.1 Alameda Esplanade Revisions

The Modified Project would be constructed at ground level and does not contain vertical structures or objects that would obstruct the viewshed of any scenic vistas or historic features in the Project area. The revised esplanade concept would be consistent with the visual character and design of the Approved Project and would benefit the visual character of the Project area by expanding and improving walkable areas. These elements would not result in any impacts to any trees along Alameda Street that were not

already accounted for in the Approved Project. Therefore, the Alameda Esplanade revisions would result in no impacts to aesthetics.

5.1.2 Intersection and Roadway Modifications

Intersection and roadway modifications would be constructed at ground level and contain no vertical structures or objects that would obstruct the viewshed of any scenic vistas or historic features in the Project area. Therefore, the esplanade expansion and facility modifications would result in no impacts to aesthetics.

5.1.3 Removal and Replacement of Streetlights

The Modified Project would result in the removal and replacement of ten existing historic streetlights and 14 additional streetlights with replica streetlights that would be moved to the City's standard distance from the curb and modernized with LED lighting. While the lighting characteristics may differ somewhat between modernized LED lighting and the existing streetlights, these differences are not expected to be significant, and the illumination and glare produced by the replica streetlights are expected to be similar to the existing streetlights. Therefore, the replica streetlights would not result in a new source of substantial light or glare or impact daytime or nighttime views, and impacts would be less than significant. By replicating the style of the historic streetlights, the replica streetlights would not significantly affect the visual character of the Project area, including the viewshed of any scenic vistas or historical features. Therefore, the removal and replacement of the streetlights would result in less-than-significant impacts to aesthetics.

5.1.4 Removal and Replacement of Additional Utilities

The removal and replacement of additional utilities, the majority of which would be located along Alameda Street and Los Angeles Street, would be primarily contained underground and out of sight of the viewshed of any scenic vistas or historical features in the Project area. Therefore, the removal and replacement of the utilities would result in less-than-significant impacts to aesthetics.

5.1.5 Redesigned ADA-Compliant Los Angeles Street Pathway

The modified Los Angeles Street pathway would involve a modified design consistent with ADA standards as well as decorative pavers, hand rails, and replacement landscaping. These elements of the Modified Project would be constructed at ground level and contain no vertical structures or objects that would obstruct the viewshed of any scenic vistas or historic features in the Project area. Creating an ADA accessible pathway would benefit pedestrian safety and comfort in the Project area and serve the needs of users of all ages and abilities. Therefore, the ADA compliant pathway leading to El Pueblo would result in no impacts to aesthetics.

5.1.7 Addendum #2 Findings

Would the Project have a substantial adverse effect on a scenic vista?

Certified EIR/Addendum #1 Finding: Less-Than-Significant Impact

Addendum #2 Finding: Less-Than-Significant Impact

Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Certified EIR/Addendum #1 Finding Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

In non-urbanized areas, would the Project substantially degrade the existing visual character or quality of the site and its surroundings? If the Project is in an urbanized area, would the Project conflict with applicable zoning or other regulations governing scenic quality?

Certified EIR/Addendum #1 Finding : Less-Than-Significant Impact

Addendum #2 Finding: Less-Than-Significant Impact

Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: *Less-than-Significant Impact (See 5.1.3, Removal and Replacement of Streetlights)*

5.2 Agriculture and Forestry Resources

As with the Approved Project, the proposed Modified Project would result in no impacts in regard to agriculture and forestry resources because the Project is located within an urban and built-up land area with no existing agricultural or forest land use, and all pre-construction and construction activities would be undertaken within the urban and built-up land area.

5.2.1 Addendum #2 Findings

Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project result in the loss of forest land or conversion of forest land to non-forest uses?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

5.3 Air Quality

As with the Approved Project, the proposed Modified Project would result in less than significant impacts in regard to conflicting with or obstructing implementation of applicable air quality plans, having a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment, exposing sensitive receptors to substantial pollutant concentrations, and exposing a substantial number of people to objectionable odors.

Air quality emissions in the Approved Project were well below the applicable South Coast Air Quality Management District (SCAQMD) thresholds, and the proposed modifications would not result in new or substantially more adverse impacts to air quality. Fuel use by construction equipment for the proposed modifications would not substantially increase from what was previously determined in the Approved Project. Each element of the Modified Project would use the same equipment and construction phasing as previously disclosed in the Certified EIR; however, construction would occur at the later start date of January 2022. Generally, emissions factors on construction equipment and vehicles improve each year. While it cannot be assumed that newer equipment than what was assumed in the FEIR and Addendum #1 would be used to construct the Modified Project, there is no potential for emissions factors to worsen; therefore, construction emissions associated with the Modified Project would be unchanged or potentially improved compared to the Approved Project. The proposed Modified Project contain no stationary sources for industry or any large-scale utility project and therefore would not create any significant long-term operational emissions. As discussed in Section 5.16 of this Addendum #2, the proposed modifications would not generate additional vehicle miles traveled (VMT) in the study area and would therefore be consistent with the Southern California Association of Governments (SCAG) 2016 RTP/SCS. None of the Modified Project elements would change the conclusions of the Certified EIR/Addendum #1, and no proposed modification requires further discussion in relation to air quality. Therefore, the proposed modifications would not result in new or substantially more adverse impacts related to air quality, and impacts would be less-than-significant.

5.3.1 *Addendum #2 Findings*

Would the Project conflict with or obstruct implementation of the applicable air quality plan?

Certified EIR/Addendum #1 Findings: Less-Than-Significant Impact

Addendum #2 Finding: Less-Than-Significant Impact

Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Certified EIR/Addendum #1 Finding : Less-Than-Significant Impact

Addendum #2 Finding: Less-Than-Significant Impact

Would the Project expose sensitive receptors to substantial pollutant concentrations?

Certified EIR/Addendum #1 Finding : Less-Than-Significant Impact

Addendum #2 Finding: Less-Than-Significant Impact

Would the Project create objectionable odors affecting a substantial number of people?

Certified EIR/Addendum #1 Finding : Less-Than-Significant Impact

Addendum #2 Finding: Less-Than-Significant Impact

5.4 ***Greenhouse Gas Emissions***

As with the Approved Project, the proposed Modified Project would result in less than significant impacts regarding generating greenhouse gas (GHG) emissions, either directly or indirectly, that may have a significant effect on the environment. As with the Approved Project, the proposed Modified Project would result in no impact in regard to conflicting with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. As demonstrated in Section 5.3, construction of the proposed Modified Project would not result in substantially more severe impacts to energy consumption and therefore no proposed modification requires further discussion in relation to GHG emissions. The proposed Modified Project would not affect the conclusions in the Certified EIR and Addendum #1 regarding GHG emissions resulting from such energy use, impacts to GHG emissions would be less than significant, and mitigation would not be required.

5.4.1 *Addendum #2 Findings*

Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Certified EIR/Addendum #1 Finding : Less-Than-Significant Impact

Addendum #2 Finding: Less-Than-Significant Impact

Would the Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Certified EIR/Addendum #1 Finding : Less-Than-Significant Impact

Addendum #2 Finding: Less-Than-Significant Impact

5.5 Biological Resources

As with the Approved Project, the proposed Modified Project would result in no impacts in regard to biological resources because the proposed Modified Project would remain within an urban context with no known sensitive biological resources. The Project area lacks habitats suitable for supporting sensitive or special status species. There are no federal- or state-designated sensitive communities or riparian habitats, wetlands, or blue-line drainages within the Project area. Suitable habitat is not present to support wildlife movement corridors at the Project site. The Modified Project would not require the removal of any trees that have not been previously accounted for in the FEIR. There are no Habitat Conservation Plans or Natural Community Conservation Plans with boundaries that intersect the Project site. The proposed Modified Project would not change the conclusions of the Certified EIR and Addendum #1, and no proposed modification requires further discussion in relation to biological resources. However, as with the Approved Project, non-native trees present at and around the Project site have the potential to serve as temporary nesting sites for birds protected under the Migratory Bird Treaty Act (MBTA). As with the Approved Project, implementation of **MM-BIO-1** would avoid conflicts with the MBTA. Therefore, the proposed Modified Project would not result in new or substantially more severe impacts to biological resources than the Approved Project, and implementation of **MM-BIO-1** would be required during nesting bird season (February 1 to August 31).

5.5.1 Addendum #2 Findings

Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact with Mitigation Incorporated

Addendum #2 Finding: Less-than-Significant Impact with Mitigation Incorporated

Would the Project Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State Habitat Conservation Plan?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

5.6 Cultural Resources

As with the Approved Project, the proposed Modified Project would result in less than significant impacts after mitigation in regard to historic resources, archaeological resources, and the potential presence human remains. Similar to Approved Project, the proposed Modified Project would result in potential changes to the settings of historical resources identified in the Certified EIR, specifically LAUS and the El Pueblo District, which are set on opposite sides of Alameda Street. However, none of the proposed modifications would impact the ability of the Los Angeles Union Station and El Pueblo de Los Angeles properties to convey their historic purposes, nor would they physically affect character-defining features of these resources. All of the proposed modifications would remain compliant with the Secretary of the Interior’s Standards.

The proposed modifications would also potentially affect cultural resources not included in the Certified EIR/Addendum #1, specifically the streetlights located along on Alameda Street, encircling La Plaza within the El Pueblo District historic boundary, and along Los Angeles Street. While these streetlights contain historically-significant design elements, none of these streetlights are considered CEQA historical resources in their own right, either because their date of installation falls outside of Union Station or El Pueblo District’s period of historic significance or because they are not unique among other ornamental lighting in the City. Project modifications to reconfigure Alameda Street necessitate the removal and replacement of the original streetlights with replica lights at approximately the same locations along the north-south Alameda Street axis as the originals. The replica streetlights would be installed several feet east of their current locations at the City’s standard distance from the curb and would feature LED lighting. The replica streetlights would be in-kind with respect to design and materials, including the character-defining features described above. Their installation would reproduce the visual rhythm of the originals with respect to spacing and in the context of the historic. Because the design, materials, and placement of the light standards would be substantially replicated, a less-than-significant impact on Union Station’s setting would occur as a result of this change. Further details are provided in the following discussion.

The analysis presented below provides a detailed discussion of the proposed work in terms of its potential to alter Union Station’s and the El Pueblo District’s settings in a material way.

The proposed Modified Project involves potential changes to the settings of historical resources identified in the Certified EIR/Addendum #1 specifically LAUS (Union Station) and the El Pueblo District, which are

set on opposite sides of Alameda Street. None of the proposed modifications physically affect character-defining features of these resources. Rather, the modifications would primarily occur along Alameda Street between the two resources. Because the two resources are adjacent to each other, they share general surroundings, including the downslope of Los Angeles Street as it curves from north to east between the El Pueblo District and Father Serra Park; replica streetlights set along the east/south side of Los Angeles Street; the relatively flat terrain of Alameda Street, which divides the two resources; sidewalks along Los Angeles and Alameda Streets; and a mix of commercial buildings in the vicinity. Other features between the two historical resources include a set of recent concrete steps leading to the Antonio Aguilar Courtyard (Plaza Dolores), a landscaped median within the middle of Los Angeles Street, a scored concrete sidewalk, and mature tree specimens along the north shoulder of Los Angeles Street. None of these aspects of Union Station's or the El Pueblo District's setting are character-defining.

One feature that is character-defining to Union Station's setting, however, would be affected by the Project modifications: although located outside its historic property boundary, the 10 streetlights set along the east side of Alameda Street are character-defining features of Union Station's setting. The Alameda Street lights, as an aspect of Union Station's setting, are not identified in either its National Register of Historic Places (NRHP) nomination form or in the Certified EIR/Addendum #1. According to the City of Los Angeles SurveyLA historic context statement for Los Angeles Streetlighting, the 10 historic-era streetlights are a unique "dual pendant" (UM-40006Y-1) variation coupled with a "trolley pole" (UM 40006) standard. Though trolley pole light fixtures are seen elsewhere throughout the City, their pairing with dual pendant lamps is an arrangement that is unique to this location, for which they appear to have been purposefully designed.

Aside from their dual pendants and the use of a thin trolley pole, their other character-defining features include: teardrop-shaped glass globes that include a pointed nub in the center of their lower portion, metal as a primary material, fluted columns, decorative brackets with plant-like design elements, two-part finial, and flared base with panel motif and multi-ringed decorative molding. The spacing between the poles, of approximately 125 feet, is closer than that of present-day streetlights. This closeness is due to a historically dimmer light than that now afforded by present technology. The streetlights have experienced an important alteration, however, the addition of LED bulbs. The color temperature emitted by historic streetlights is warmer than the cool light emitted by contemporary LED bulbs. The brightness and warmth of the original streetlights contributed to Union Station's original setting. The LED bulbs present in the Alameda streetlights provide brighter but cooler light that is incompatible with the original light.

Other aspects of the of El Pueblo District's setting are implicated by proposed changes. The El Pueblo District's period of significance is 1818–1932 and contains a concrete sidewalk with an all-over and consistent scoring pattern that emanates from the center of La Plaza, which the sidewalk encircles. Though the exact year of this sidewalk is unknown, the square-patterned scoring is a feature seen on other interwar-era sidewalks and is a character-defining feature of La Plaza assumed to date from within the El Pueblo District's period of significance.

5.6.1 Alameda Esplanade Revisions

Proposed work would occur on the east and west sidewalks of Alameda Street and within the street right-of-way outside of the historic property boundaries of the two previously identified historic resources in the Project area: LAUS and the El Pueblo District. Although no physical changes to Union Station or the El

Pueblo District would occur, the proposed changes have the potential to impact the settings of those resources.

Transitioning the full Alameda Esplanade to the east sidewalk would not affect the findings in the Certified EIR/Addendum #1 because the potential impacts on archaeological resources associated with the Project modifications are the same or comparable to those evaluated in the Certified EIR/Addendum #1.

Results of the Phase I geotechnical investigations on the Forecourt site were used to prepare a Cultural Resources Management Plan (**MM-CULTURAL-2**) that includes a research design and archaeological testing plan. As with the Approved Project, implementation of **MM-CULTURAL-1** through **MM-CULTURAL-4** would reduce impacts to below the level of significance. Therefore, the proposed Modified Project would result in no new or substantially more adverse impacts related to archaeological resources or to human remains.

5.6.2 Intersection and Roadway Modifications

No physical changes to either LAUS or the El Pueblo District would result from this modification. Some changes proposed in the Approved Project will not now occur. Specifically, the existing crosswalk connecting Father Serra Park to Union Station and the left-turn lane from North Los Angeles Street to North Alameda Street will be retained rather than removed. No additional or more intense impacts would occur as a result of these changes.

The width, striping, lane definitions, and parking allocation of Alameda Street north of Cesar E. Chavez and south of Arcadia Street are not character-defining features of the setting of the El Pueblo District or Union Station. Therefore, no impact would result from changes to these features of Alameda Street.

The addition of post-mounted signs has the potential to block some views of Union Station from Alameda Street. Given the extent of Union Station's street frontage, however, the addition of signage would create a proportionally insignificant blockage.

Existing signs and traffic signal poles are not character-defining features of the historical resources' settings, so changes to them would not constitute an impact. Streetlights along the west side of Alameda are replicas that are not character-defining to the settings. Changes to the streetlights on the west side of Alameda Street would not cause an impact. (See below for discussion of streetlights on the east side of Alameda Street.)

Constructed in 1952, the traffic loop has not been established as a historical resource for the purposes of CEQA Guidelines Section 15064.5(a). It was added outside of Union Station's period of significance and is not a character-defining feature. The proposed work, therefore, would result in no impact on LAUS or the El Pueblo District.

The proposed roadway modifications would not exceed the depths of excavation described in the Approved Project. Potential impacts on archaeological and tribal cultural resources, paleontological resources, and human remains would be similar to those described in the Approved Project. As with the Approved Project, implementation of **MM-CULTURAL-1** through **MM-CULTURAL-4** would reduce impacts to below the level of significance. Therefore, the proposed modifications related to expansion of the City

of Los Angeles roadway modifications would result in no new or substantially more adverse impacts related to archaeological resources or to human remains.

5.6.3 Removal and Replacement of Streetlights

Alameda Street Lights

The Certified EIR/Addendum #1 did not analyze whether the 10 streetlights along Alameda Street constitute a CEQA historical resource in their own right. The City of Los Angeles SurveyLA historic resources survey identified the subject streetlights as eligible for City of Los Angeles Historic-Cultural Monument (HCM) status under Criteria 1 and 3 with a period of significance of 1900–1980 with the Community Planning and Development; Art area significance.¹² SurveyLA did not identify the streetlights as California Register of Historical Resources (CRHR) or NRHP eligible.

The subject row of streetlights in front of LAUS are one of only two of pre-war era “pendant type” designs highlighted in the SurveyLA Streetlights historic context statement that still exist in situ within the City’s commercial areas.¹³ This particular grouping was intentionally designed for Union Station. The practice of intentionally designing streetlights for a specific location within the City was common after World War I. The Alameda Street lights’ features reflect their era but are not unique among other ornamental Los Angeles streetlights. Therefore, the Alameda Street lights are not eligible for listing in the CRHR either individually or as a grouping. As posited by SurveyLA, the grouping of 10 Alameda Street lights may be eligible as an HCM. A resource eligible for local register listing, as opposed to actually being listed in a local register, does not meet the threshold set forth in CEQA Section 15064.5(a)(2) for the definition of a historical resource. The Alameda Street lights are not, therefore, a CEQA historical resource in their own right.

The Alameda streetlights are character-defining features of the Union Station setting. The Bureau of Street Lighting installed the 10 streetlights contemporaneous with Union Station’s 1939 completion and grand opening. The reconfiguration of Alameda Street described above would necessitate the removal of the original streetlights. Replica streetlights are proposed for installation at approximately the same locations along the north-south Alameda Street axis as the originals. The replica streetlights, however, would be installed several feet east of their current locations. The replacement streetlights would be installed at the City’s standard distance from the curb and would feature LED lighting.

The replica streetlights would be regarded as “in-kind” with respect to their design and materials, including the character-defining features described above. Their installation would reproduce the visual rhythm of the originals with respect to spacing. Because the design, materials, and placement of the light standards would be substantially replicated, a less-than-significant impact on Union Station’s setting would occur as a result of this change.

Los Angeles Street Lights

The streetlights along Los Angeles Street are 2009 replicas of the Union Metal Company of Canton, Ohio, “UM-1906” dual-lamp electrolier seen throughout Los Angeles. The UM-1906 model originally dated to

¹² Prosser, Daniel. 2017. *SurveyLA Citywide Historic Context Statement: Public and Private Institutional Development/Government Infrastructure and Services/ Public Works/Street Lights and the Bureau of Street Lighting, 1900-1980*. Technical report. Los Angeles, CA: City of Los Angeles Department of City Planning, Office of Historic Resources, June, 2017: 31

¹³ Prosser, 4–25.

the 1920s. The UM-1906 appears to be a common, stock replica type seen on major streets throughout Los Angeles. Because of their ubiquity, their status as replica lights, and their 2009 date, the subject UM-1906 streetlights at Los Angeles Street are not historical resources in their own right. They are also not character-defining features of the setting of either Union Station or the El Pueblo District.

The additional streetlights to be replaced as part this Modified Project are less than 50 years old. They include six cobra-head lights along the west shoulder of Alameda Street and south of Los Angeles Street; six pre-existing dual pendant trolley pole replica lights along the west shoulder of Alameda Street, north of Los Angeles Street; and two additional circa 2000 replica streetlights along the north shoulder of Los Angeles Street, between Alameda Street and La Plaza. None are historical resources, and none contribute to the setting of a historical resource. The removal and replacement of these 14 streetlights, which include historic replicas from 2003, cobra head lights, and standard issue City lights installed circa 2000, would result in no new or more substantially adverse impacts to historic resources.

The removal and replacement of historic streetlights with replica lights would not exceed the maximum depth of excavation described in the Approved Project. Potential impacts resulting from ground disturbance on archaeological and tribal cultural resources, paleontological resources, and human remains would be similar to those described in the Certified EIR/Addendum #1. As with the Approved Project, implementation of **MM-CULTURAL-1** through **MM-CULTURAL-4** would reduce impacts to below the level of significance. Therefore, removal and replacement of historic streetlights with replica lights would result in no new or substantially more adverse impacts related to archaeological resources or human remains.

5.6.4 Removal and Replacement of Additional Utilities

None of the utilities subject to removal and replacement along Alameda Street have been identified as character-defining elements of Union Station's setting or the El Pueblo District's setting. Proposed relocation of utilities would not materially impact character-defining features of the setting of either Union Station or the El Pueblo District. There would be no impact, and no mitigation measures are required.

The removal, relocation, and replacement of Los Angeles Department of Water and Power (LADWP) utilities not accounted for in previous environmental documents would require a greater amount of subsurface ground disturbance and would, therefore, increase the potential for encountering archaeological resources, tribal cultural resources, paleontological resources, and potentially, human remains. However, an increase in the extent of excavation would not affect the findings in the Certified EIR/Addendum #1 because the Cultural Resources Mitigation Measures will be implemented for the construction activities when required. As with the Approved Project, implementation of **MM-CULTURAL-1** through **MM-CULTURAL-4** would reduce impacts to below the level of significance. Therefore, the proposed additional utility work would result in no new or substantially more adverse impacts related to archaeological resources or human remains.

5.6.5 Redesigned ADA-Compliant Los Angeles Street Pathway

The vast majority of the subject changes would be between but outside of the historic property boundaries of the two built environment resources: LAUS and the El Pueblo District. However, several Project modifications would require a shallow encroachment extending approximately 60 feet in length

along the El Pueblo District's historic property boundary near La Plaza's northeast portion. These are discussed below.

A circular bronze plaque approximately 16 inches in diameter honoring the Mesa Family as one of El Pueblo's founding families (Los Pobladores) is proposed for relocation. Though present within the historic boundary, this plaque appears to have been installed within the last 20 years, outside the El Pueblo District's period of significance. The plaque is not a historical resource. The plaque is already present within the District and moving it to a new location within the District would not introduce a new or more severe impact.

A new streetlight would be placed approximately halfway between two of the La Plaza Streetlights. The proposed streetlight to be added is a "KM77-9 Pedestrian Pole." This light standard, approximately 33 feet high with an acorn lamp, fluted pole, ornamental capital, and flared base, incorporates design elements seen on interwar-era light standards. It is compatible with and differentiated within its immediate setting. Located at the edge of the El Pueblo District, the new streetlight is a peripheral and inconsequential feature within the larger district. Although installation of the new streetlight would require some disturbance of the existing scored concrete sidewalk, the 10-inch streetlight base, coupled to a surround with a 3-inch clearance for a total diameter of 16 inches, would represent an insubstantial change to the concrete sidewalk. The impact on the district would be less than significant. No mitigation is required.

The grouping of La Plaza Streetlights is an assumed CEQA historical resource. The installation of a new light fixture between two of the La Plaza Streetlights would change the visual rhythm of the grouping. However, several other existing elements already intervene between the streetlights that constitute the circle, and introduction of the streetlight would not impair the composition. The addition of the new streetlight poses no physical alteration, new relocation, or other material impairment to the light standards themselves, and their character-defining features. The impact would be less than significant. No mitigation is required.

Construction of an ADA-compliant pathway on Los Angeles Street to El Pueblo would not exceed the maximum depth of excavation described in the Approved Project. Potential impacts resulting from ground disturbance on archaeological and tribal cultural resources, paleontological resources, and human remains would be similar to those described in the Certified EIR. As with the Approved Project, implementation of **MM-CULTURAL-1** through **MM-CULTURAL-4** would reduce impacts to below the level of significance. Therefore, construction of an ADA-compliant pathway on Los Angeles Street would result in no new or substantially more adverse impacts related to archaeological, paleontological, and tribal cultural resources, or human remains.

5.6.7 Addendum #2 Findings

Would the Project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact with Mitigation Incorporated

Addendum #2 Finding: Less-than-Significant Impact with Mitigation Incorporated

Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact with Mitigation Incorporated

Addendum #2 Finding: Less-than-Significant Impact with Mitigation Incorporated

Would the Project disturb any human remains, including those interred outside of dedicated cemeteries?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact with Mitigation Incorporated

Addendum #2 Finding: Less-than-Significant Impact with Mitigation Incorporated

5.7 Energy

As with the Approved Project, the proposed Modified Project would result in no conflict with adopted energy conservation and other sustainability metrics in local plans. As with the Approved Project, the proposed Modified Project would result in less than significant impacts regarding using energy resources in a wasteful and inefficient manner and decreasing reliance on fossil fuels such as coal, natural gas, and oil. As discussed in Section 5.3, each proposed modification would use the same equipment and construction phasing as previously discussed for the Approved Project, and construction equipment fuel use for the proposed modifications would not substantially increase from what was previously disclosed in the Certified EIR/Addendum #1. None of the Project modifications would change the conclusions of the Certified EIR/Addendum #1, and no proposed modification requires further discussion in relation to energy. The proposed Modified Project would result in no new or substantially more severe impacts to energy than the Approved Project, impacts would be less than significant, and mitigation would not be required.

5.7.1 Addendum #2 Findings

Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Certified EIR/Addendum #1 Finding : Less-Than-Significant Impact

Addendum #2 Finding: Less-Than-Significant Impact

Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Certified EIR/Addendum #1 Finding : Less-Than-Significant Impact

Addendum #2 Finding: Less-Than-Significant Impact

5.8 Geology and Soils

As with the Approved Project, the proposed Modified Project would result in less than significant impacts in regard to exposing people or structures to potential adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking; exposing people or structures to potential substantial

adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction; substantial soil erosion or the loss of topsoil; being located on a geologic unit or soil that is unstable or that would become unstable as a result of the Project; and being located on an expansive soil. As with the Approved Project, the proposed Modified Project would result in no impacts in regard to exposing people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides; and to having soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems.

All structures will be designed in accordance with appropriate industry standards, including established engineering and construction practices and methods. While the study area is located within a CGS-mapped liquefaction zone, previous geotechnical investigations^{14,15} have found the area unlikely to be susceptible to liquefaction. Based on the type of soils identified in the Project area, expansive soils are not expected to be a concern. The Project's sanitary sewer flows will be connected to municipal sewer systems, and no septic tanks or alternative wastewater disposal systems are proposed. Based on the relatively level topography of the Project area, the landslide potential is low. The proposed modifications would not change the conclusions of the Certified EIR/Addendum #1, and no proposed modification requires further discussion in relation to geology and soils. Construction of the proposed modifications would include ground disturbance and excavation activities that have the potential to result in significant impacts to paleontological resources as defined in Section 15064.5(b) of the CEQA Guidelines. Mitigation Measure **MM-Cultural-3** is required.

5.8.1 Addendum #2 Findings

Would the Project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

- a) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

- b) Strong seismic ground shaking?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact

Addendum #2 Finding: Less-than-Significant Impact

- c) Seismic-related ground failure, including liquefaction?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact

¹⁴ Diaz Yourman & Associates. Revised 29 October 2009. Geotechnical Investigation, Union Station, Mail Dock Conversion to Passenger Platform, Los Angeles, California.

¹⁵ Diaz Yourman & Associates. Revised 4 August 2010. *Preliminary Foundation Report, Union/Patsaouras Plaza Busway Station, 07-LA-10PM 17.20, LA Busway Bridge OH, Bridges Nos. 53-2673 & 53-New (POC), Los Angeles, California.*

Addendum #2 Finding: Less-than-Significant Impact

d) Landslides?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact

Addendum #2 Finding: Less-than-Significant Impact

Would the Project result in substantial soil erosion or the loss of topsoil?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact

Addendum #2 Finding: Less-than-Significant Impact

Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact

Addendum #2 Finding: Less-than-Significant Impact

Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact

Addendum #2 Finding: Less-than-Significant Impact

Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact with Mitigation Incorporated

Addendum #2 Finding: Less-than-Significant Impact with Mitigation Incorporated

5.9 Hazards and Hazardous Materials

As with the Approved Project, the proposed modifications to the Project are not located on a site which is included on a list of hazardous materials sites compiled pursuant to California Government Code Section 65962.5; or located within an airport land use plan, or within two miles of a public airport or public use airport; or impairing implementation or physically interfering with an emergency response plan or emergency evacuation plan; and or exposing people or structures to a significant risk of loss, injury, or

death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. The review of the California Department of Toxic Substances Control (DTSC) environmental regulatory database compilation indicates that the Project site is not included on a list of hazardous materials sites compiled pursuant to the Government Code Section 65962.5. However, the Environmental Data Resources, Inc. (EDR) report identifies sites at LAUS that are associated with rail and bus operations. As stated in the Certified EIR, a total of 63 hazardous materials sites are located within one-quarter mile of the Project site.¹⁶ There are two existing schools located within one-quarter mile of the Project area. There are no public airports or public use airports within two miles of the Project area and the Project area is not located within an airport land use plan. Based on information obtained from the City of Los Angeles Fire Department, the Project site is not included in any emergency response plan or any emergency evacuation plan.¹⁷ Based on the review of fire severity hazard zone maps developed by the California Department of Forestry and Fire Protection (CAL FIRE), the Project site is not located within a severe fire hazard zone.¹⁸ The Project area potentially contains the presence of hydrocarbons, metals, and persistent pesticides, elevated concentrations of lead and lead chromate, subsurface pollutants, naturally occurring oil or soil impacted by oil seepage, and contaminated soil. The potential to encounter these hazards during construction and expose workers and the surrounding general public and land uses to such substances constitutes a significant impact warranting the consideration of mitigation measures. The proposed modifications would not change the conclusions of the Certified EIR/Addendum #1, and the Modified Project does not require further discussion in relation to hazards and hazardous materials.

As with the Approved Project, the proposed Modified Project would result in less than significant impacts in regard to the routine transport, use, or disposal of hazardous materials. The transport, use, and storage of hazardous materials are governed by a range of federal, state, and local statutes and regulations. As a public agency, Metro is required to have an adopted Business Plan that regulates the use, storage, and transport of materials such as cleaning supplies, fuels, herbicides, and pesticides. The purpose of a Business Plan is to prevent or minimize the damage to public health and safety and the environment from a release or threatened release of hazardous materials. It also satisfies community right-to-know laws. Businesses that handle hazardous materials in quantities equal to or greater than 55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of compressed gas, or extremely hazardous substances above the threshold planning quantity must (1) inventory their hazardous materials, (2) develop a site map, (3) develop an emergency plan, and (4) implement a training program for employees. Businesses must submit this information electronically to the statewide information management system (California Environmental Reporting System, or CERS). As with the Approved Project, implementation of **MM-HAZ-1**, **MM-HAZ-2**, **MM-HAZ-3**, and **MM-HAZ-4** would be required at the location of the former railroad tracks along Alameda Street and the Forecourt..

¹⁶ Kleinfelder. 2 August 2017. Hazardous Waste Initial Site Assessment The Los Angeles Union Station Forecourt and Esplanade Improvements Project.

¹⁷ Humphrey, Brian, Los Angeles Fire Department, Public Service Officer. 9 December 2013. Telephone conversation with André Anderson, Sapphos Environmental, Inc., Senior Environmental Compliance Specialist, Pasadena, CA.

¹⁸ State of California Department of Forestry and Fire Protection (CAL FIRE). 2007. Very High Fire Hazard Safety Zone Map, Los Angeles, CA. Sacramento, CA.

5.9.1 Addendum #2 Findings

Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact

Addendum #2 Finding: Less-than-Significant Impact

Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact with Mitigation Incorporated

Addendum #2 Finding: Less-than-Significant Impact with Mitigation Incorporated

Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact with Mitigation Incorporated

Addendum #2 Finding: Less-than-Significant Impact with Mitigation Incorporated

Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the project area?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

5.10 Hydrology and Water Quality

As with the Approved Project, the proposed Modified Project would result in less than significant impacts in regard to violation of any water quality standards or waste discharge requirements; and no impacts in regard to substantially depleting groundwater supplies, altering the existing drainage pattern of the site or area that would result in substantial erosion or siltation off site, or substantially increase the rate or amount of surface runoff that would result in flooding on site or off site, create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or providing substantial additional sources of polluted run-off, otherwise substantially degrade water quality, place housing or structures in a 100-year flood hazard area that would impede or redirect flood flows, expose people or structures to significant risk from the failure of a levee or dam, and inundation by seiche, tsunami, or mudflow.

The Alameda Esplanade revisions and redesigned ADA-compliant Los Angeles Street pathway have design elements that have the potential to impact surface runoff, ground water replenishment, and stormwater pollution control in the Project area. As with the Approved Project, the proposed Modified Project would be subject to the required provisions of the Stormwater Pollution Prevention Plan (SWPPP) that would minimize the potential for erosion and siltation. As a result, any potential sources of polluted runoff would be effectively controlled. As with the Approved Project, the proposed modifications to the Project would not create or contribute runoff water that would exacerbate any existing deficiencies in the storm drain system or provide substantial additional sources of polluted runoff. As with the Approved Project, stormwater or any runoff waters would be directed into existing storm drains or relocated storm drain facilities under the Modified Project. As with the Approved Project, the proposed Modified would occur in accordance with the Los Angeles Building Code Sections 91.7000 through 91.7016, which require necessary permits, plan checks, and inspections to reduce the effects of sedimentation and erosion. Additionally, the proposed Modified Project would occur in accordance with standard procedures established by the Regional Water Quality Control Board (RWQCB) and Project compliance with the City's Standard Urban Stormwater Mitigation Plan (SUSMP) requirements. As with the Approved Project, the Modified Project are not located within a 100- or 500-year floodplain, or within inundation and tsunami hazard areas delineated in the City of Los Angeles Safety Element. Therefore, the proposed Modified Project would not result in new or substantially more adverse impacts to hydrology and water quality than the Approved Project, and mitigation would not be required.

5.10.1 Alameda Esplanade Revisions

Under the revised esplanade concept, a small section of sidewalk (approximately 235 square feet), would be lowered to improve drainage flow surrounding the El Pueblo building; however, the amount of permeable surface would remain unchanged. As with the Approved Project, the Alameda Esplanade would utilize porous paving materials, including volcanic porphyry pavers and porous concrete to promote a porous ground plane and enhance pedestrian circulation. The Modified Project would not change the amount of permeable surfaces proposed as part of the Approved Project but would rather alter the configuration of these surfaces as the revised esplanade concept would expand the eastern sidewalk further while leaving the western sidewalk at its existing width. Stormwater would be directed to existing

or relocated storm drains and no change to potential groundwater recharge or runoff rate is anticipated to result from the Modified Project as compared to the Approved Project. The total Project site encompasses approximately 6.71 acres, and therefore, as with the Approved Project, construction activities associated with the Project modifications would be subject to the requirements of a NPDES Permit issued by the RWQCB, as well as City LID requirements and BMPs. Compliance with City SUSMP requirements would percolate up to 0.75 inch of captured rainfall over a 24-hour period to provide additional recharge. The Project also complies with the objectives of Metro's Water Action Plan. Thus, the Project modification would result in less-than-significant impacts to hydrology and water quality.

5.10.2 Intersection and Roadway Modifications

The intersection and roadway modifications would reconfigure the existing roadway, the construction of which would require ground disturbance and excavation activities under existing paved roadway. As with the Approved Project, construction activities for the Modified Project would be subject to the requirements of a NPDES Permit issued by the RWQCB, as well as City LID requirements and BMPs. Compliance with City SUSMP requirements would percolate up to 0.75 inch of captured rainfall over a 24-hour period to provide additional recharge. The expanded project boundary under the Modified Project would not require additional BMPs as construction activities occurring in the expanded boundary would consist primarily of roadway restriping and no ground disturbance or exposed soils are anticipated north of Caesar E. Chavez Avenue and South of Arcadia Street. The Project also complies with the objectives of Metro's Water Action Plan. Thus, the Modified Project would result in less-than-significant impacts to hydrology and water quality.

5.10.3 Removal and Replacement of Streetlights

The removal and replacement of the historic streetlights on Alameda Street would not remove or replace any existing paved roadway, sidewalk, or other surface, and therefore would not result in any additional effects to surface runoff, site drainage, ground water replenishment, and stormwater pollution control not already been accounted for in the Certified EIR/Addendum #1. Therefore, the removal and replacement would result in no impacts to hydrology and water quality.

5.10.4 Removal and Replacement of Additional Utilities

The removal, relocation, and replacement of additional utilities would require ground disturbance and excavation activities during construction. Paved roadway, sidewalk, or other surfaces would be disturbed to implement the Project modification. As with the Approved Project, where applicable, repaved surfaces would be constructed with porous paving materials to maximize underground percolation. As with the Approved Project, construction activities for the Modified Project would be subject to the requirements of a NPDES Permit issued by the RWQCB, as well as City LID requirements and BMPs. Compliance with City SUSMP requirements would percolate up to 0.75 inch of captured rainfall over a 24-hour period to provide additional recharge. The Project also complies with the objectives of Metro's Water Action Plan. Thus, the Modified Project would result in less-than-significant impacts to hydrology and water quality.

5.10.5 Redesigned ADA-Compliant Los Angeles Street Pathway

The ADA compliant pathway would be constructed with materials previously disclosed as part of the Approved Project, including, where possible, porous materials such as decomposed granite and other porous paving materials, volcanic porphyry pavers and porous concrete, to promote a porous ground plane and enhance pedestrian circulation. Therefore, the proposed Modified Project would not alter percolation rates or groundwater recharge. The total project site encompasses approximately 6.71 acres, and therefore, as with the Approved Project, construction activities for the Modified Project would be

subject to the requirements of a NPDES Permit issued by the RWQCB, as well as City's LID requirements and BMPs. Compliance with City's SUSMP requirements would percolate up to 0.75 inch of captured rainfall over a 24-hour period to provide additional recharge. The Project also complies with the objectives of Metro's Water Action Plan. Thus, the Modified Project would result in less-than-significant impacts to hydrology and water quality.

5.10.7 Addendum #2 Findings

Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact

Addendum #2 Finding: Less-than-Significant Impact

Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

a) *Result in a substantial erosion or siltation on- or offsite;*

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

b) *Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;*

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

c) *Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or*

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

d) *Impede or redirect flood flows?*

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project be located in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

5.11 Mineral Resources

As with the Approved Project, the Modified Project to the Project would result in no impacts in regard to mineral resources. There are no active or abandoned mines, oil fields, or extraction facilities on or adjacent to the Project site. As stated in the Certified FEIR/Addendum #1, the Project site is located within a CGS-designated Mineral Resources Zone (MRZ)-3, which contains known mineral occurrences of undetermined mineral resources significance underground. However, this MRZ-3 zone inaccessible in the existing condition and would continue to be inaccessible after construction of the Project. The nearest mineral resource site is an active oil field located approximately one-quarter mile south of the Project site. The proposed modifications would not change the conclusions of the Certified EIR/Addendum #1, and no proposed modification requires further discussion in relation to mineral resources. Therefore, the proposed Modified Project would not result in new or substantially more severe impacts to mineral resources than the Approved Project, and mitigation would not be required.

5.11.1 Addendum #2 Findings

Would the Project result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

5.12 Noise

As with the Approved Project, the proposed Modified Project would result in less than significant impacts in regard to exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies, and a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project. As with the Approved Project, the proposed Modified Project would result in no impacts in regard to noise in relation to public airports or private airstrips as the Project is not located near a public or private airport. Project design features and BMPs consistent with the City of Los Angeles Municipal Code requirements articulated in Section 112.05 and Section 41.40 would be implemented to reduce the temporary increase in noise levels from construction of the proposed Project modifications to less than significant levels. The use of temporary noise mufflers barriers and blankets or similar would reduce noise levels for construction equipment by up to 15 A-weighted decibels (dBA). Each proposed modification would use the same equipment and construction phasing as previously disclosed in the Approved Project; therefore, the conclusions in the Final EIR/Addendum #1 would not change, and no proposed modification requires further discussion in relation to noise. Therefore, the proposed Modified Project would not result in new or substantially more severe impacts to noise than the Approved Project, and mitigation would not be required.

5.12.1 Addendum #2 Findings

Would the Project result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact

Addendum #2 Finding: Less-than-Significant Impact

Generation of excessive groundborne vibration or groundborne noise levels?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

5.13 Population and Housing

As with the Approved Project, the proposed Modified Project would result in no impacts in regard to population and housing. The proposed Modified Project would not induce population growth or displace existing housing or people as the excavation activities would not extend infrastructure and would be limited to nonresidential areas within roads or rights-of-way. The proposed Modified Project would not displace existing residents at Mozaic Apartments located to the north of LAUS. The proposed modifications would not change the conclusions of the Final EIR, and no proposed modification requires

further discussion in relation to population and housing. Therefore, the proposed Modified Project would not result in new or substantially more severe impacts to population and housing than the Approved Project, and no mitigation would be required.

5.13.1 Addendum #2 Findings

Would the Project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

5.14 Public Services

As with the Approved Project, the proposed modifications to the Project would result in no impacts related to public services. As with the Approved Project, the proposed modifications to the Project would not induce population growth and would not involve or require the construction of new or physically altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives. The proposed modifications would not change the conclusions of the Final EIR/Addendum #1, and no proposed modification requires further discussion in relation to public services. Therefore, the proposed Modified Project would not result in new or substantially more severe impacts to public services than the Approved Project, and no mitigation would be required.

5.14.1 Addendum #2 Findings

Would the Project Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

a) Fire Protection?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

b) Police Protection?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

c) *Schools?*

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

d) *Parks?*

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

e) *Other Public Facilities?*

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

5.15 Recreation

As with the Approved Project, the proposed Modified Project would result in no impacts in regard to recreation. The proposed modifications to the Modified Project would not induce population growth. The proposed modifications would not change the conclusions of the Final EIR/Addendum #1, and no proposed modification requires further discussion in relation to recreational resources. Therefore, the proposed Modified Project would not result in new or substantially more severe impacts to recreation than the Approved Project, and no mitigation would be required.

5.15.1 Addendum #2 Findings

Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

5.16 Transportation and Traffic

Changes to the regulatory framework and CEQA Appendix G: Environmental Checklist Form since the adoption of the Final EIR and Addendum #1 have created changes to the appropriate thresholds of significance used to assess the potential for the Project impacts regarding transportation and traffic. Accordingly, in addition to review of the Project modifications, the transportation and traffic analysis has been updated based on key updates in the regulatory framework that governs the preparation of transportation impact studies for environmental documents in the State of California and in the City of

Los Angeles. The updated analysis is included in Appendix A and provides both the updated CEQA-required analysis as well as an updated review of the City of Los Angeles Transportation Analysis Guidelines (TAG) that describe the approach, screening options, methodology, and impact criteria that should be applied to transportation studies. The TAG was updated on July 8, 2020. This Addendum does not assess potential impacts regarding disruption to traffic during construction or changes in air traffic patterns as these areas of analysis are no longer required under CEQA. Additional analysis no longer required under CEQA but consistent with that contained in the Certified EIR and as required by the TAG is also provided in Appendix A under the Non-CEQA Transportation Assessment Section.

As with the Approved Project, the proposed Modified Project would result in no impact in regard to substantially increasing hazards due to a design feature or incompatible uses; and inadequate emergency access. The Modified Project no longer would result in significant and unavoidable impacts in regard to conflicting with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system as the updated CEQA requirements and TAG no longer utilize delay as a metric for determining plan consistency. Specifically, as discussed in Appendix A, the Modified Project would result in additional queuing along Los Angeles Street which is anticipated to affect bus schedule adherence beyond that identified for the Approved Project. Effect on bus schedule adherence are not required under CEQA or the TAG and the overall improvements in transit connectivity, convenience, and safety presented by the Project would offset any minor effect on bus schedule adherence. The Modified Project would have no effect on emergency access. The Project would continue to be consistent with the Congestion Management Program for Los Angeles County and policies, plans and programs for transit and active transportation. As with the Approved Project, the proposed modifications would follow the Los Angeles Municipal Code for the hours of construction and adhere to the construction management standard practices.

The Approved Project did not address any transportation impacts in relation to VMT as is now required by CEQA Guidelines Section 15064.3(b). Analysis of the transportation impacts resulting from the Approved Project with the proposed modifications determined the Modified Project would not generate VMT; the proposed modifications are not adding vehicle capacity and are in fact reducing vehicle capacity. The Modified Project as a whole would include multi-modal infrastructure which will provide improved travel options to driving that help to further reduce VMT. The proposed Modified Project would add a minimal number of trips per day compared to the 22 peak daily trips stated in the Certified EIR, and construction-related traffic effects would remain temporary. Therefore, the proposed Modified Project would not result in new or substantially more severe impacts to transportation and traffic than the Approved Project.

5.16.1 Alameda Esplanade Revisions

The proposed Modified Project would reconfigure the Alameda Street Esplanade, which would enhance the safety and capacity of bicycle and pedestrian facilities around the station, and is therefore expected to have a positive impact on these facilities. These Project features will substantially enhance pedestrian and bicycle facilities in the study area, and will have a positive effect on these transportation modes. Therefore, the modification would not result in significant transportation impacts.

5.16.2 Intersection and Roadway Modifications

The Modified Project would retain the existing crosswalk on the south leg of the intersection of Alameda Street and Los Angeles Street. The raised crossing is proposed to operate without any vehicle-pedestrian conflicts. By following the City's Design Guide, the raised crossing will not introduce any substantially increased hazard.

Per direction from LADOT, the existing eastbound left turn lane from eastbound Los Angeles Street to northbound Alameda Street will be retained. This modification was made to address concerns with driver non-compliance with the left-turn movement restrictions, thus potentially eliminating a hazard associated with the Approved Project. The signal phasing for the intersection of Los Angeles Street and Alameda Street will be revised to include this movement. Compared with the Approved Project, the Modified Project will not require the rerouting of transit routes on Los Angeles Street because the left turn lane will remain. However, as discussed, PM peak hour queueing on Los Angeles Street is expected to affect transit schedule adherence, similar to the evaluation of Project impacts for the Approved Project.

As part of this Addendum #2, the extent of lane reconfiguration and resulting striping, loop reconfiguration and sign modification along Alameda Street has been expanded to Aliso Street/Commercial Street to the south and Alpine Street to the north. However, these elements would not increase vehicle capacity and would therefore not result in additional transportation impacts. Therefore, the Modified Project would not result in significant transportation impacts beyond those described for the Approved Project.

5.16.3 Removal and Replacement of Streetlights

The construction activities required for the removal and replacement of historic streetlights along Alameda Street and Los Angeles Street may result in temporary transportation impacts. However, as with the Approved project, LADOT generally considers construction-related traffic to cause adverse but not significant impacts because construction-related traffic effects are temporary. Following the implementation of a construction-period traffic management plan would ensure that any construction-related effects are minimized to the greatest extent possible. Therefore, the modification would not result in significant transportation impacts.

5.16.4 Removal and Replacement of Additional Utilities

The construction activities required for the removal and replacement of additional utilities may result in temporary transportation impacts. However, following the implementation of a construction-period traffic management plan would ensure that any construction-related effects are minimized to the greatest extent possible. Therefore, the modification would not result in significant transportation impacts.

5.16.5 Redesigned ADA-Compliant Los Angeles Street Pathway

The proposed Modified Project includes enhancing ADA compliance in the El Pueblo Historic District through the provision of an ADA path adjacent to Los Angeles Street. This Project modification will substantially enhance pedestrian facilities in the Project area and positively affect pedestrian mobility for users of all ages and abilities. Therefore, the modification would not result in significant transportation impacts.

5.16.7 Addendum #2 Findings

Would the Project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Certified EIR/Addendum #1 Finding : Significant and Unavoidable Impact

Addendum #2 Finding: No Impact

Would the Project conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?

Certified EIR/Addendum #1 Finding : Not Applicable

Addendum #2 Finding: No Impact

Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project result in inadequate emergency access?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

5.17 Utilities and Service Systems

As with the Approved Project, the Modified Project would result in no impacts in regard to exceeding wastewater treatment requirements of the applicable regional water quality control board; requiring or resulting in the construction of new water or wastewater treatment facilities; requiring or resulting in the construction of new stormwater drainage facilities or expansion of existing facilities; having sufficient water supplies available to serve the Project from existing entitlements and resources; resulting in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments; being served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs; and compliance with federal, state, and local statutes and regulations related to solid waste. The proposed Modified Project would not induce substantial population growth directly or indirectly that would result in exceedance of wastewater treatment requirements, require new water supplies, result in an increase in the need for wastewater treatment, or increase solid waste.

The Certified EIR concluded that no impacts to existing storm water drainage would result from the Project; however, with more developed utility plans it has been determined that some water-related utility facilities would require relocation. The Modified Project would require the removal and reconstruction of several manholes, storm drain lines and catch basins, and backflow preventers. The Project would require the construction of a new 12' storm drain line to connect to the existing storm drain line on Alameda Street. However, these utilities would be located below ground and would therefore not impact above ground activities and the potential environmental effects of these utility relocations have been captured by the analysis

conducted for the Approved Project; therefore, a less-than-significant impact related to the relocation of utility facilities would result from the Project. Additionally, the Project modifications would not increase demand for these utilities nor require the construction of any additional utility facilities. The Project site would continue to be adequately serviced by existing City of Los Angeles water and wastewater utility lines and stormwater and solid waste facilities. The Modified Project would not change the conclusions of the Approved Project, and no proposed modification requires further discussion in relation to utilities and service systems. Therefore, the Modified Project would not result in new or substantially more severe impacts to utilities and services systems than the Approved Project, and mitigation would not be required.

5.17.1 Addendum #2 Findings

Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: Less-than-Significant Impact

Would the Project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Certified EIR/Addendum #1 Finding : No Impact

Addendum #2 Finding: No Impact

5.18 Tribal Cultural Resources

The Certified EIR and Addendum #1 included analysis of tribal cultural resources in the Cultural Resources analyses and associated sections of those documents. Since preparation of the Certified EIR and Addendum #1, CEQA Guidelines have been revised to include tribal cultural resources as a separate topic for analysis and discussion. The Certified EIR and Addendum #1 identified significant potential for tribal cultural resources to be present in and around the Project site as past excavations have encountered tribal cultural resources and there is known presence of a Native American cemetery in the Project site for the Approved Project. The Certified EIR and Addendum #1 identified potentially significant impacts to tribal cultural resources regarding excavation activities within the Approved Project boundaries.

Construction of the Modified Project would result in similar potential for impacts to tribal cultural resources as excavations would occur in the same areas as those described for the Approved Project and the maximum depth of excavation has not changed since preparation of Addendum #1 which revised the maximum depth of excavation from 15 feet to 20 feet below ground. Changes to the Project boundaries proposed as part of the Project Modifications would not result in new potential for impacts to tribal cultural resources as the expanded project boundary encompasses restriping activities along Alameda Street which will not require excavation. Additional changes to the project boundary include and minor curb and sidewalk alterations of a limited area, one along the west side of Alameda Street and one west of Los Angeles Street, which would require shallow excavations consistent with other Project construction activities. As with the Approved Project, implementation of **MM-CULTURAL-1** and **MM-CULTURAL-2** would reduce potential impacts to tribal cultural resources below the level of significance. Tribal consultation activities required under Assembly Bill 52 (AB 52) are ongoing and were initiated and carried out as part of the EIR process. No further consultation beyond those activities currently underway are required.

5.18.1 Addendum #2 Findings

Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact with Mitigation Incorporated

Addendum #2 Finding: Less-than-Significant Impact with Mitigation Incorporated

Would the Project cause a substantial adverse change in the significance of a tribal cultural resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

Certified EIR/Addendum #1 Finding : Less-than-Significant Impact with Mitigation Incorporated

Addendum #2 Finding: Less-than-Significant Impact with Mitigation Incorporated

5.19 Wildfire

The Certified EIR and Addendum #1 included analysis of wildfire hazards in the Public Services analyses and associated sections of those documents. Since preparation of the Certified EIR and Addendum #1, CEQA Guidelines have been revised to include wildfire risks as a separate topic for analysis and discussion. The

Certified EIR and Addendum #1 stated that there was no risk of wildfire posed by the Project as Project site is not located within a wildfire hazard area according to the City of Los Angeles General Plan, Safety Element.¹⁹ While the Certified EIR and Addendum #1 identified no impact regarding fire protection services and response times the analysis did not make impact conclusions related to wildfire hazards and risks.

The Board of Forestry and Fire Protection is a Governor-appointed body, whose mission is to lead California in developing policies and programs that serve the public interest in environmentally, economically and socially sustainable forest and rangeland management; and a fire protection system that protects and serves the people of the state. One of its statutory responsibilities is to provide direction and guidance to the California Department of Forestry and Fire Protection (CAL FIRE) manages and protects California's natural resources through ongoing assessment and study of the State's fire risks. CAL FIRE maintains maps of each major city within California with recommendations for areas to be considered Very High Fire Hazard Severity Zones (VHFHSZ). According to the CAL FIRE mapping for Los Angeles County, the Project site is not located within a VHFHSZ and the nearest VHFHSZ is within Elysian Park, approximately 0.8 mile to the north of the Project site. Therefore, risk of wildfire to people or property within the Project site is low and the project poses no risk of exacerbating existing fire hazards.²⁰

The Proposed Project involves several improvements along Alameda Street which is a designated emergency/disaster route,²¹ Los Angeles County has developed an emergency response plan and the Proposed Project would not impede public access to emergency/disaster routes and would not interfere with an adopted emergency response plan or emergency evacuation plan, including the Los Angeles County Operational Area Emergency Response Plan. Consistent with the analysis presented in the Certified EIR, a construction traffic management plan would be developed to reduce potential project construction impacts on emergency access and evacuation plans. Upon completion of construction, the Project would not affect emergency evacuation plans. The Project is located on a relatively flat urbanized area and there is no risk of post-fire downslope flooding or landslide from the Project.

5.19.1 Addendum #2 Findings

Would the Project substantially impair an adopted emergency response plan or emergency evacuation plan?

Certified EIR/Addendum #1 Finding: Not Applicable

Addendum #2 Finding: Less-than-Significant Impact

¹⁹ City of Los Angeles Department of City Planning. November 1996. Safety Element of the Los Angeles City General Plan. Available at: <http://cityplanning.lacity.org/cwd/gnlpln/saftyelt.pdf> Safety Element Exhibit D: Selected Wildfire Hazard Areas in the City of Los Angeles. Page 53.

²⁰ California Department of Forestry and Fire Protection, September 2011. Very High Fire Hazard Severity Zones in LRA as Recommended by CAL FIRE, Los Angeles. Available: https://osfm.fire.ca.gov/media/5830/los_angeles.pdf.

²¹ Los Angeles County Department of Public Works, August 2008. Disaster Routes, City of Los Angeles – Central Area. Available: <https://dpw.lacounty.gov/dsg/DisasterRoutes/city.cfm>

Would the Project due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Certified EIR/Addendum #1 Finding: Not Applicable

Addendum #2 Finding: No Impact

Would the Project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Certified EIR/Addendum #1 Finding: Not Applicable

Addendum #2 Finding: No Impact

Would the Project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Certified EIR/Addendum #1 Finding: Not Applicable

Addendum #2 Finding: No Impact

5.20 Mandatory Findings of Significance

Under Section 15065(a) of the CEQA Guidelines, a CEQA finding of significance is required if certain conditions would occur as a result of a project. This Addendum #2 discloses environmental impacts and the level of CEQA significance after the incorporation of mitigation measures. This section discusses whether the project would result in any conditions that trigger mandatory findings of significance under CEQA.

Does the project have the potential to degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare or threatened species; or eliminate important examples of the major periods of California history or prehistory?

No. As discussed throughout this Addendum #2, the Modified Project would not result in new or more severe impacts to biological resources compared to the Approved Project. There are no special status species or sensitive habitat within the Project site as the Project is located in a heavily urbanized part of the City of Los Angeles.

Does the project have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals?

No. The Modified Project would not result in long-term significant impacts to elements of the built or natural environment other than those identified for the Approved Project in the Certified EIR/Addendum #1. The Project is intended to improve transit connectivity, convenience, and safety for pedestrians bicyclists, and transit patrons accessing LAUS. The Modified Project is expected to result in long-term

improvements in VMT, air quality, and greenhouse gas emissions as transit ridership and active transportation will be promoted through implementation of the Project.

Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

No. The Modified Project would not result in any new potentially significant impacts that could contribute to a cumulatively considerable effect. The Certified EIR/Addendum #1 did not identify any significant cumulative impacts posed by the Approved Project and, based on the evaluation of potential impacts posed by the Modified Project discussed in this Addendum #2, the conclusions of the Certified EIR/Addendum #1 continue to be valid regarding cumulative impacts.

Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

No. The Modified Project, like the Approved Project, would improve safety and convenience for pedestrians, bicyclists, transit patrons, and other community stakeholders.

SECTION 6.0 STAKEHOLDER ENGAGEMENT

The draft Addendum No. 2 was released for a 30-day public comment period between July 27 - August 26, 2020. E-blasts were sent July 27, August 3, August 11 and August 24 notifying stakeholders of the opportunity to comment on the Addendum No. 2 and of the August 13th public meeting that would cover the Addendum No. 2 and the upcoming utility and geotechnical investigations, cleared as part of Addendum No. 1.

In addition, staff met with El Pueblo de Los Angeles management, El Pueblo Commission, Metropolitan Water District, First 5LA, Mozaic Apartments, LA Walks, Homeboy Industries, FilmLA and local elected offices. A virtual public meeting was held with 71 attendees on August 13th to provide a project update and brief stakeholders on the Addendum No. 2.

During the Draft Addendum No. 2 public comment period, a total of 28 comments were received. With the exception of the left-hand turn movement at the Los Angeles Street/Alameda Street intersection, most public comments did not focus on the elements included in the Addendum. Based upon review of public comments received, minor clarifications and corrections to the description of the proposed modifications were made in this Addendum No. 2. None of the comments identified new significant impacts or aspects of the proposed modifications that would require major revisions to the FEIR and associated analyses.

SECTION 7.0 CONCLUSION

As required by CEQA Guidelines Section 15164, an addendum to a previously Certified EIR shall be prepared if some changes or additions to a Project are necessary and none of the conditions warranting the preparation of a subsequent EIR are present. As demonstrated in the analysis included in Section 5.0, this Addendum #2 is the appropriate document to analyze the proposed modifications to the Project related to the revised Alameda Esplanade concept, intersection and roadway modifications, removal and replacement of streetlights, removal and replacement of additional utilities, and the redesigned ADA-compliant Los Angeles Street pathway:

- No substantial changes are proposed to the Project which will require major revisions of the previously prepared Certified EIR/Addendum #1;
- No substantial changes have occurred with respect to the circumstances under which the Project is being undertaken; and
- No new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified, has been identified.

APPENDIX A

TRANSPORTATION TECHNICAL STUDY FOR ADDENDUM NO. 2 TO THE ENVIRONMENTAL IMPACT REPORT

**LOS ANGELES UNION STATION
FORECOURT AND ESPLANADE IMPROVEMENTS PROJECT**

*TRANSPORTATION TECHNICAL STUDY FOR ADDENDUM NO. 2 TO THE
ENVIRONMENTAL IMPACT REPORT*

STATE CLEARINGHOUSE NUMBER 2016121064

**LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY
ONE GATEWAY PLAZA
MAIL STOP 99-23-4
LOS ANGELES, CA 90012**

JULY 16, 2020





TABLE OF CONTENTS

Section 1.0 CEQA Transportation Impact Assessment 1

Section 2.0 Non-CEQA Assessment 19

References 36

List of Tables

2.1-1 Level of Service Definitions 24

2.1-2 Existing Level of Service 25

2.1-3 Future with Project LOS & Operational Effect Analysis 30

1.0 CEQA Transportation Impact Assessment

This transportation technical report for the Los Angeles Union Station Forecourt and Esplanade Improvements Project Addendum Environmental Impact Report #2 (AEIR) analyzes changes to the potential impacts to transportation and traffic from construction, operation, and maintenance of the proposed Forecourt and Esplanade Improvements Project (“Approved Project”), based on the revisions to the project subsequent to the certification of the Final Environmental Impact Report (FEIR) (“Modified Project”), as well as to key updates in the regulatory framework that governs the preparation of transportation impact studies for environmental documents in the State of California and in the City of Los Angeles.

Pertinent changes to the project, regulatory framework, and resulting changes in the transportation analysis approach are documented in this technical report. Data, analysis, and conclusions that are unaffected by the project changes or regulatory framework changes are incorporated by reference to the FEIR and are not duplicated in this document.

1.1 Regulatory Framework Changes Subsequent to FEIR Certification

Senate Bill 743

Senate Bill (SB) 743 was signed into California law in September 2013. SB 743 eliminates auto delay and level of service as transportation impact metrics in CEQA analyses. The text of the bill states the following as the intent of the legislature:

(1) Ensure that the environmental impacts of traffic, such as noise, air pollution, and safety concerns, continue to be properly addressed and mitigated through the California Environmental Quality Act.

(2) More appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.

Subsequent to the FEIR The Governor’s Office of Planning Research (OPR) completed a rule-making process, including guidelines, to implement the impact analysis changes for determining significant impacts associated with transportation, per SB 743. Impact metrics related to vehicle miles travelled (VMT) are the required new metrics. Compliant with this requirement, CEQA Guidelines section 15064.3(a) was adopted in December 2018 and states “ a project’s effect on automobile delay does not constitute a significant environmental impact.” New CEQA Guidelines Section 15064.3(c) states that the provisions of Section 15064.3 shall apply statewide beginning on July 1, 2020, and that a lead agency may choose to be governed by its provisions immediately upon adoption.

Individual lead agencies are ultimately responsible for identifying VMT related impact criteria. On July 30, 2019, the City adopted vehicle miles traveled (VMT) as part of its CEQA Transportation Thresholds and

approved the updated Transportation Analysis Guidelines (TAG) that describe the approach, screening options, methodology, and impact criteria. The proposed project is consistent with goals related to reducing VMT as a project that would enhance non-automobile travel modes and improve access to transit. An update to the TAG was published on July 8, 2020.

Regional

Metro Congestion Management Program (CMP)

Metro, the local CMP agency, had established an approach to implement the statutory requirements of the CMP. With the adoption of SB 743, shift away from LOS, and local agencies revisiting their transportation analysis approaches, enough cities with sufficient population to disband the CMP framework voted to do so through individual council actions. These actions were shared with Metro and the CMP is no longer in effect and does not apply for this project.

City of Los Angeles Transportation Analysis Guidelines

In 2019, the City adopted the TAG, which is a document providing information on the approach, screening, methodology, analysis requirements, and impact criteria for transportation analysis in the City of Los Angeles. Consistent with SB743, a transportation project would be considered to have a potential significant impact if it induces additional VMT. The TAG also includes a refinement to the analysis approach for determining whether a project conflicts with Plans, Programs, Ordinances, or Policies (PPOP), as well as the evaluation of hazards.

City of Los Angeles Supplemental Street Design Guide

In 2020 the Los Angeles Department of Transportation (LADOT) and Bureau of Engineering (LABOE) adopted the *Supplemental Street Design Guide*, which provides implementation criteria and design guidance for the types of complete street policies and measures that the City adopted in the *Mobility Plan 2035*. The Design Guide includes specify guidance for the applicability and design of raised crossings.

1.2 Affected Environment/Existing Conditions

The following details key changes to the existing conditions in the study area following FEIR certification. Existing conditions, if not specified, reflect conditions at the time of FEIR certification and are incorporated by reference.

- **Main Street** is a designated Avenue II in the study area. It features two lanes in each direction north of Alameda Street with parking on both sides of the street. It is designated as part of the Transit Enhanced Network and of the Bicycle Enhanced Network. Subsequent the FEIR adoption, Main Street was redesigned to include three northbound travel lanes, parking on one side of the street, and a two-way protected bikeway on the west side of the street south of Aliso Street. Between Aliso Street and Paseo Luis Olivares Main Street includes two northbound travel lanes and a two-way protected bikeway on the west side of the street, without any on-street parking.

North of Paseo Luis Olivares and up to Cesar E. Chavez Avenue, Main Street provides three northbound travel lanes and a one-way southbound protected bikeway.

1.3 Thresholds of Significance

Changes to the regulatory framework since the adoption of the FEIR have created changes to the appropriate thresholds of significance used to assess the potential for transportation related impacts.

LADOT has established screening criteria, analysis methodology, and threshold criteria to determine significant traffic impacts of a proposed project in its jurisdiction through the City's *Transportation Assessment Guidelines* (City of Los Angeles, July 2020 [TAG]).

The first chapter provides screening guidelines that determine whether a transportation assessment is needed. For a transportation project analysis would be required for projects that meet the following criteria:

“If a Transportation Project is likely to either (1) induce additional vehicle miles traveled by increasing vehicle capacity; or (2) reduce roadway through lane capacity on a street that exceeds 750 vehicles per hour per lane for at least two (2) consecutive hours in a 24-hour period after the project is completed”

If the project meets these criteria for further analysis, there is a CEQA section that identifies the four areas of analysis that could be required. These areas of potential analysis and associated impact criteria are listed below:

- a) Conflicting with Plans, Programs, Ordinances, or Policies (Threshold T-1)
 - o Screening Criteria:
 - i. “Does the project require a discretionary action that requires the decision maker to find that the decision substantially conforms to the purpose, intent and provisions of the General Plan?
 - ii. Is the project known to directly conflict with a transportation plan, policy, or program adopted to support multimodal transportation options or public safety?
 - iii. Is the project required to or proposing to make any voluntary modifications to the public right-of way (i.e., dedications and/or improvements in the right-of-way, reconfigurations of curb line, etc.)?”
 - o Impact Criteria:
 - i. Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadways, bicycle, and pedestrian facilities?

- b) Causing substantial Vehicle Miles Traveled (Threshold T-2.1)
 - o Screening Criteria:



- i. “Would the land use project generate a net increase of 250 or more daily vehicle trips?
 - ii. Would the project generate a net increase in daily VMT?”
 - o Impact Criteria:
 - There are no specified impact criteria for transportation projects.
- c) Substantially Inducing Additional Automobile Travel (Threshold T-2.2)
 - o Screening Criteria:
 - i. “For a transportation project, would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)(2)?
 - ii. Would the project include the addition of through traffic lanes on existing or new highways, including general purpose lanes, high-occupancy vehicle (HOV) lanes, peak period lanes, auxiliary lanes, and lanes through grade-separated interchanges (except managed lanes, transit lanes, and auxiliary lanes of less than one mile in length designed to improve roadway safety)?

Transit and active transportation projects and projects that reduce roadway capacity generally reduce VMT and, therefore, are presumed to cause a less-than-significant impact.”

- o Impact Criteria:
 - i. The project will increase the project area 25 VMT, as measurable by the City’s base year TDF model plus an induced travel elasticity factor per lane mile.
 - d) Substantially Increasing Hazards Due to a Geometric Design Feature or Incompatible Use (Threshold T-3)
 - o Screening Criteria:
 - “Is the project proposing new driveways, or introducing new vehicle access to the property from the public right-of-way?

“Is the project proposing to make any voluntary or required modifications to the public right-of way (i.e., street dedications, reconfigurations of curb line, etc.)?”

- o Impact criteria:
 - i. “Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
 - a. Preliminary project access plans are to be reviewed in light of commonly accepted traffic engineering design standards to ascertain whether any deficiencies are apparent in the site access plans which would be considered significant. The determination of significance shall

be on a case-by-case basis, considering the following factors:

- i. The relative amount of pedestrian activity at project access points.
- ii. Design features/physical configurations that affect the visibility of pedestrians and bicyclists to drivers entering and exiting the site, and the visibility of cars to pedestrians and bicyclists.
- iii. The type of bicycle facilities the project driveway(s) crosses and the relative level of utilization.
- iv. The physical conditions of the site and surrounding area, such as curves, slopes, walks, landscaping or other barriers, that could result in vehicle/pedestrian, vehicle/bicycle, or vehicle/vehicle safety hazards.
- v. The project location, or project-related changes to the public right-of-way, relative to proximity to the High Injury Network or a Safe Routes to School program area.
- vi. Any other conditions, including the approximate location of incompatible uses that would substantially increase a transportation hazard.”

The TAG also includes screening and evaluation for non-CEQA analyses:

- a) Pedestrian, bicycle, and transit access assessment
 - o Screening criteria (all questions must be a “yes’):
 - i. “Does the land use project involve a discretionary action that would be under review by the Department of City Planning?
 - ii. Does the land use project include the construction, or addition of: o 50 (or more) dwelling units or guest rooms or combination thereof, or o 50,000 square feet (or more) of non-residential space?
Would the project generate a net increase of 1,000 or more daily vehicle trips, or is the project’s building frontage encompassing an entire block along an Avenue or Boulevard (as designated in the City’s General Plan)?”
 - o Evaluation criteria:
 - i. “Would a project directly or indirectly result in a permanent removal or modification that would lead to the degradation of pedestrian, bicycle, or transit facilities, such as:
 1. Removal or degradation of existing sidewalks, crosswalks, pedestrian refuge islands, and/or curb extensions/bulbouts
 2. Removal or degradation of existing bikeways and/or supporting facilities (e.g., bikeshare stations, on-street bike racks/parking, bike corrals, etc.)
 3. Removal or degradation of existing transit and/or local circulator facilities

- including stop, bench, shelter, concrete pad, bus lane, or other amenities
- 4. Removal of other existing transportation system elements supporting sustainable mobility
- 5. Increase street crossing distance for pedestrians; increase in number of travel/turning lanes; increase in turning radius or turning speeds
- 6. Removal, degradation, or narrowing of an existing sidewalk, path, crossing, or pedestrian access way
- 7. Removal or narrowing of existing sidewalk-street buffering elements (e.g., curb extension, parkway, planting strip, street trees, etc.)
- ii. Would a project intensify use of existing pedestrian, bicycle, or transit facilities, such as:
 - 1. Increase in pedestrian or vehicle volume, and thereby increase the need or attraction to cross a street at unmarked pedestrian crossings or unsignalized or uncontrolled intersections where a crossing is not available without significant rerouting. Refer to the Guidelines for Marked Crosswalks Across Uncontrolled Locations, in LADOT's Manual of Policies and Procedures (MPP) Section 344, or Guidelines for Traffic Signals in MPP Section 353 to determine approval and warrant criteria for an additional crossing.
 - 2. Result in new pedestrian demand between project site entries/exits and major destinations or transit stops expected to serve the development where there are missing pedestrian facilities (e.g., gaps in the sidewalk network) or substandard pedestrian facilities (e.g., narrow or uneven sidewalks, no crosswalks at intersections or mid-block, no marked crossing, or push button crossing rather than actuated, etc.).
 - 3. Increase transit demand at bus stops that lack marked crossings, with insufficient sidewalks, or are in isolated, unshaded, or unlit areas.
- b) Project Access, Safety, and Circulation Evaluation Criteria
 - o Screening criteria:
 - i. "Does the transportation project reduce travel lane capacity on a road that would be expected to carry more than 750 vehicles per hour per lane for at least two (2) consecutive hours in a 24-hour period?"
 - o Evaluation Criteria:
 - i. Operational Evaluation:
 - 1. "Spill over from turn pockets into through lanes
 - 2. Block cross streets or alleys
 - 3. Contribute to "gridlock" congestion. For the purposes of this section gridlock is defined as the condition where traffic queues between closely-spaced intersections and impede the flow of traffic through upstream intersections."

ii. Safety Evaluation:

1. “For transportation projects, the Transportation Assessment should identify if the project would result in changes to the operations of the roadway that would be expected to improve or reduce safety for vulnerable road users.”

iii. Passenger Loading Evaluation:

1. “The demand for curbside space has substantially increased due to the continued expansion of driver-for hire transportation network companies (TNCs) and shared mobility services. The Transportation Assessment should characterize the on-site loading demand of the project frontage and answer these questions: Would the project result in passenger loading demand that could not be accommodated within any proposed on-site passenger loading facility? Would accommodating the passenger loading demand create pedestrian or bicycle conflicts? Which curbside management options should be explored to better address passenger loading needs in the public right-of-way?”

c) Project construction

- Screening criteria: If the answer is yes to any of the following questions, further analysis will be required to assess if the project could negatively affect existing pedestrian, bicycle, transit, or vehicle circulation:
 - i. Would a project that requires construction activities to take place within the right-of-way of a Boulevard or Avenue (as designated in the Mobility Plan 2035) which would necessitate temporary lane, alley, or street closures for more than one day (including day and evening hours, and overnight closures if on a residential street?)
 - ii. Would a project require construction activities to take place within the right-of-way of a Collector or Local Street (as designated in the Mobility Plan 2035) which would necessitate temporary lane, alley, or street closures for more than seven days (including day and evening hours, and including overnight closures if on a residential street?)
 - iii. Would in-street construction activities result in the loss of regular vehicle, bicycle, or pedestrian access, including loss of existing bicycle parking to an existing land use for more than one day, including day and evening hours and overnight closures if access is lost to residential units?
 - iv. Would in-street construction activities result in the loss of regular ADA pedestrian access to an existing transit station, stop, or facility (e.g., layover zone) during revenue hours?
 - v. Would in-street construction activities result in the temporary loss for more than one day of an existing bus stop or rerouting of a bus route that serves the project

site?

- Evaluation criteria:
 - i. “Would construction of a project substantially interfere with pedestrian, bicycle, transit, or vehicle circulation and accessibility to adjoining areas? Factors to be considered are the location of the project site, the functional classification of the adjacent street, the availability of alternate routes or additional capacity, temporary loss of bicycle parking, temporary loss of bus stops or rerouting of transit lines, the duration of temporary loss of access, the affected land uses, and the magnitude of the temporary construction activities.”
- d) Residential street cut-through analysis
 - Screening criteria:
 - i. “For transportation projects, if the answer is yes to the following question, further analysis may be required to assess whether the project would negatively affect project access and circulation:
 1. Does the transportation project reduce travel lane capacity on a road that would be expected to carry more than 750 vehicles per hour per lane for at least two (2) consecutive hours in a 24-hour period after the project is completed?”
 - “In addition, for transportation projects, when selecting residential street segments for analyses during the transportation assessment study scoping process, all of the following conditions must be present:
 - i. The transportation project will reduce automobile capacity on a Boulevard, Avenue, or Collector (as designated in the City’s General Plan) such that motorists traveling on the Boulevard, Avenue, or Collector may opt to divert to a parallel route through a Local Street,
 - ii. The project is projected to cause a shift of a substantial amount of traffic to alternative route(s), and
 - iii. Nearby local residential street(s) (defined as Local streets as designated in the City’s General Plan passing through a residential neighborhood) provide motorists with a viable alternative route. A viable alternative route is defined as one which is parallel and reasonably adjacent to the primary route as to make it attractive as an alternative to the primary route. LADOT has discretion to define which routes are viable alternative routes, based on, but not limited to, features such as geography and presence of existing traffic control devices, etc.”
 - Evaluation criteria:
 - i. “A local residential street shall be deemed excessively burdened based on an increase in the projected average daily traffic (ADT) volumes as shown in Table 3.5-1 of the TAG.”

1.4 Future Transportation Network

The impact analysis presented in the FEIR used a 2029 horizon year to analyze the potential for project traffic impacts on surrounding street system. This was the anticipated opening year for the California High Speed Rail and the Link US projects at LAUS. While the project is expected to be constructed earlier, these two projects represent the most substantial planned changes to traffic conditions in the study area; and so the use of 2029 as an analysis year for the project represents a “worst case” analysis of the potential for project impacts. The future baseline transportation network changes and forecast traffic conditions used in the FEIR are also used in this Addendum to provide consistent comparisons the Approved Project in order to identify how the Modified Project could vary from the FEIR findings. Per the TAG this is a non-CEQA analysis.

Future with Project (2029) Scenario

Proposed Project Transportation Network Changes

Several elements of the Approved Project have changed through the design process since the certification of the FEIR based on the review of the design plans through the City of Los Angeles bureaus, and more detailed understanding of site conditions. The following key project changes are now incorporated into the Modified Project that affect the transportation network relative to the Approved Project:

- The Approved Project included the removal of two vehicular travel lanes on Alameda Street, widening of the eastern and western sidewalks, and a new shared pedestrian and bicyclist multi-use path on the eastern sidewalk. As part of the Modified Project changes, two vehicular travel lanes on Alameda Street would still be removed, but all the gained area within the right-of-way would be shifted to the eastern sidewalk.
- The expanded sidewalk on the east side now allows for sufficient space to create an esplanade with a separated pedestrian and bicycle facility, with mixing zones at intersections (the Approved Project did not provide a separated pedestrian and bicycle facility)
- For the southbound approach of Alameda Street at Cesar E. Chavez Avenue, the lane configurations for the Modified Project are revised to include a southbound left turn only lane, one southbound through lane, and a southbound shared through/right turn lane. Under the Approved Project, the previous configuration included a southbound right-turn only lane instead of the shared through/right lane. For the northbound approach of Alameda Street at Cesar E. Chavez Avenue, the lane configurations for the Modified Project are revised to include a northbound through-right lane, two through lanes, and a dedicated left turn lane. The configuration analyzed in the Approved Project included a left turn lane, a through lane, and a through-right lane.
- Per the request of the Los Angeles Department of Transportation (LADOT), the existing crosswalk on the south leg of the intersection of Alameda Street and Los Angeles Street, which connects Father Serra Park and Union Station, will be retained at its current location as part of the Modified project. The Approved Project had proposed to remove it.



- The Approved Project had proposed to remove the existing eastbound left turn lane from Los Angeles Street to northbound Alameda Street in order to eliminate a movement that would conflict with the raised crosswalk and was found to generate more traffic impacts as identified with the analysis of the Project in the DEIR. However, per direction from LADOT, out of concern over safety impacts associated with potential driver non-compliance with the left turn restriction, the left turn will be retained. The signal phasing for the intersection of Los Angeles Street and Los Angeles Street will be revised to include this movement.
- In order to eliminate the potential for a trap-left turn lane for the southbound approach of Alameda Street at Cesar E. Chavez Avenue, LADOT directed Metro to increase the extent of the southbound traffic capacity reduction compared with the Approved Project. The Modified Project now includes the removal of a southbound peak period travel lane from Alpine Street to Cesar E. Chavez Avenue, whereas the Approved Project did not include this peak period lane reduction. All day parking will be provided along the western curbface, instead of the existing off-peak parking. The existing southbound peak period travel lane will be preserved north of Alpine Street, and a trap-right turn only lane will be introduced at the southbound approach of Spring Street (the continuation of Alameda Street north of Alpine Street) at Alpine Street. No other roadway modification north of the area of restriping needed for the southbound right turn lane are expected. Other elements included as part of these modifications include the addition of one post mounted sign, modifications to signs on existing sign posts, street lights, and/or traffic signal poles, and the potential removal and replacement of traffic loops on Alameda Street from Ord Street to Cesar Chavez Avenue.
- Additionally, in order to address LADOT's concern about existing lane widths on the Alameda Street Bridge over the US 101 Freeway (between Arcadia Street and Aliso Street/Commercial Street) and alignment with the proposed northbound project striping north of Arcadia Street, LADOT directed Metro to remove a southbound travel lane from Alameda Street between Arcadia Street and Aliso Street/Commercial Street in order to widen the travel lanes and adjust the northbound alignment. This work may include the potential removal and replacement of traffic loops on Alameda Street. As a separate project, LADOT may implement a signal modification in this location, which could include the construction of new signal poles.

Future with Project (2029) Traffic Volumes

Consistent with the Approved Project, the Modified Project is not anticipated to generate new trips, but the following changes to traffic routing are expected near the station:

- Because the eastbound left turn from Los Angeles Street to northbound Alameda Street will be retained in the Modified Project (proposed to be removed with the Approved Project), traffic shifts associated with the left turn removal would no longer be included. However, because of a substantial increase in queueing expected because of retaining the left turn during the PM peak hour, some amount of traffic redistribution is expected as motorists seek other corridors that would have better operations than Los Angeles Street. No redistribution is expected during the

AM peak hour, or off peak periods.

1.5 City of Los Angeles Transportation Analysis Guidelines Screening

CEQA Screening

The TAG first screens projects to determine whether a transportation assessment is needed. As detailed above, a transportation project analysis would be required for projects that meet the following criteria:

If a Transportation Project is likely to either (1) induce additional vehicle miles traveled by increasing vehicle capacity; or (2) reduce roadway through lane capacity on a street that exceeds 750 vehicles per hour per lane for at least two (2) consecutive hours in a 24-hour period after the project is completed

While the Project has always included this capacity reduction and is therefore not an element exclusive to the Modified Project, this analysis is being conducted due to the TAG guidelines now adopted by the City. The project meets the screening criteria #2 above and requires a transportation assessment due to the changes to lane capacity on Alameda Street, inclusive of both the original lane capacity changes as well as the additional lane capacity changes associated with the Modified Project. The TAG CEQA section then identifies the four areas of analysis that could be required to be evaluated in a CEQA analysis. These areas of potential analysis and associated impact criteria are listed below:

- a) Conflicting with Plans, Programs, Ordinances, or Policies (Threshold T-1)
 - “Does the project require a discretionary action that requires the decision maker to find that the decision substantially conforms to the purpose, intent and provisions of the General Plan?”
 - Is the project known to directly conflict with a transportation plan, policy, or program adopted to support multimodal transportation options or public safety?
 - Is the project required to or proposing to make any voluntary modifications to the public right-of way (i.e., dedications and/or improvements in the right-of-way, reconfigurations of curb line, etc.)?”

Finding: The project has the potential to conflict with plans, programs, ordinances, or policies and is analyzed below for significant impacts. Key plans, programs, ordinances and policies are discussed in this report, and the PPOP checklist is included as an appendix.

- b) Causing substantial Vehicle Miles Traveled (Threshold T-2.1)
 - “Would the land use project generate a net increase of 250 or more daily vehicle trips?”
 - Would the project generate a net increase in daily VMT?”

Finding: As a transportation network project, the Modified Project will not generate VMT, and is expected to slightly reduce regional VMT by facilitating pedestrian and bicycle travel and



access to transit. No further analysis is required for these criteria as the project is assumed to be less than significant.

- c) Substantially Inducing Additional Automobile Travel (Threshold T-2.2)
- “For a transportation project, would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)(2)?
 - Would the project include the addition of through traffic lanes on existing or new highways, including general purpose lanes, high-occupancy vehicle (HOV) lanes, peak period lanes, auxiliary lanes, and lanes through grade-separated interchanges (except managed lanes, transit lanes, and auxiliary lanes of less than one mile in length designed to improve roadway safety)?

Transit and active transportation projects and projects that reduce roadway capacity generally reduce VMT and, therefore, are presumed to cause a less-than-significant impact.”

Finding: As a transportation network project, the Modified Project will not increase additional automobile travel or VMT, and by facilitating pedestrian and bicycle travel and access to transit, and reduce traffic capacity, it is likely to reduce automobile travel. No further analysis is required for this criterion as the project is assumed to be less than significant.

- d) Substantially Increasing Hazards Due to a Geometric Design Feature or Incompatible Use (Threshold T-3)
- a. “Is the project proposing new driveways, or introducing new vehicle access to the property from the public right-of-way?
 - b. “Is the project proposing to make any voluntary or required modifications to the public right-of way (i.e., street dedications, reconfigurations of curb line, etc.)?”

Finding: The Modified Project has the potential to increase hazards and is analyzed below for significant impacts.

Under LADOT’s TAG, the project meets the screening criteria that require analysis of conflicting with plans, programs, ordinances, or policies, and substantially increasing hazards due to a geometric design. The impact criteria described above is applied in Section 1.6 below. The other CEQA areas in the TAG are not required per the screening criteria.

Non-CEQA Screening

Additionally, the TAG also includes non-CEQA sections pertaining to access and circulation that provide analysis regarding operational impacts relating to the Project:

- a) Pedestrian, bicycle, and transit access assessment



- Screening criteria:
 - i. “Does the land use project involve a discretionary action that would be under review by the Department of City Planning?
 - ii. Does the land use project include the construction, or addition of: ○ 50 (or more) dwelling units or guest rooms or combination thereof, or ○ 50,000 square feet (or more) of non-residential space?
 - iii. Would the project generate a net increase of 1,000 or more daily vehicle trips, or is the project’s building frontage encompassing an entire block along an Avenue or Boulevard (as designated in the City’s General Plan)?”

Finding: The Modified Project does not meet the screening criteria and no further analysis for these criteria are required.

b) Project access, safety, and circulation evaluation

- Screening criteria: Does the transportation project reduce travel lane capacity on a road that would be expected to carry more than 750 vehicles per hour per lane for at least two (2) consecutive hours in a 24-hour period?

Finding: The Modified Project meets the screening criteria and analysis is provided below in the Non-CEQA section.

c) Project construction

- Screening criteria: If the answer is yes to any of the following questions, further analysis will be required to assess if the project could negatively affect existing pedestrian, bicycle, transit, or vehicle circulation:
 - i. Would a project that requires construction activities to take place within the right-of-way of a Boulevard or Avenue (as designated in the Mobility Plan 2035) which would necessitate temporary lane, alley, or street closures for more than one day (including day and evening hours, and overnight closures if on a residential street?)
 - ii. Would a project require construction activities to take place within the right-of-way of a Collector or Local Street (as designated in the Mobility Plan 2035) which would necessitate temporary lane, alley, or street closures for more than seven days (including day and evening hours, and including overnight closures if on a residential street?)
 - iii. Would in-street construction activities result in the loss of regular vehicle, bicycle, or pedestrian access, including loss of existing bicycle parking to an existing land use for more than one day, including day and evening hours and overnight closures if access is lost to residential units?
 - iv. Would in-street construction activities result in the loss of regular ADA pedestrian

access to an existing transit station, stop, or facility (e.g., layover zone) during revenue hours?

- v. Would in-street construction activities result in the temporary loss for more than one day of an existing bus stop or rerouting of a bus route that serves the project site?

Finding: The Modified Project meets the screening criteria and analysis is provided in the non-CEQA section.

d) Residential street cut-through analysis

- o Screening criteria: For transportation projects, if the answer is yes to the following question, further analysis may be required to assess whether the project would negatively affect project access and circulation:
 - i. Does the transportation project reduce travel lane capacity on a road that would be expected to carry more than 750 vehicles per hour per lane for at least two (2) consecutive hours in a 24-hour period after the project is completed?
- o In addition, for transportation projects, when selecting residential street segments for analyses during the transportation assessment study scoping process, all of the following conditions must be present:
 - i. The transportation project will reduce automobile capacity on a Boulevard, Avenue, or Collector (as designated in the City's General Plan) such that motorists traveling on the Boulevard, Avenue, or Collector may opt to divert to a parallel route through a Local Street,
 - ii. The project is projected to cause a shift of a substantial amount of traffic to alternative route(s), and
 - iii. Nearby local residential street(s) (defined as Local streets as designated in the City's General Plan passing through a residential neighborhood) provide motorists with a viable alternative route. A viable alternative route is defined as one which is parallel and reasonably adjacent to the primary route as to make it attractive as an alternative to the primary route. LADOT has discretion to define which routes are viable alternative routes, based on, but not limited to, features such as geography and presence of existing traffic control devices, etc.

Finding: The Modified Project does meet the volume screening criteria, but there are no adjacent local residential streets, so no further analysis for these criteria are required.

1.6 Environmental Impacts/Environmental Consequences

This section assesses potential CEQA transportation impacts associated with the Modified Project under the City of Los Angeles TAG criteria that were met in the screening evaluation above.

- (a) **Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities (Threshold T-1)?**

Impact Analysis

As detailed in the PPOP evaluation checklist in the appendix, the Project does not conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. It implements many of the City's policy actions for complete streets and Vision Zero. Therefore, no significant impact is expected.

Mitigation Measures

No mitigation measures are required.

- (d) **“Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? (Threshold T-3)**

The relative amount of pedestrian activity at project access points

Pedestrian counts were collected in November of 2015 at all legs of the intersection of Alameda Street & Los Angeles Street for Project's EIR. The counts collected at the intersection of Alameda Street & Los Angeles Street showed the following levels of pedestrian activity:

- North leg
 - AM Peak Hour: 268
 - PM Peak Hour: 336
 - Peak period (6:00AM to 9:00AM and 3:00PM to 6:00PM) total: 1,495
- South leg
 - AM Peak Hour: 72
 - PM Peak Hour: 97
 - Peak period (6:00AM to 9:00AM and 3:00PM to 6:00PM) total: 419
- West leg
 - AM Peak Hour: 30
 - PM Peak Hour: 49
 - Peak period (6:00AM to 9:00AM and 3:00PM to 6:00PM) total: 223
- East leg
 - AM Peak Hour: 56
 - PM Peak Hour: 60
 - Peak period (6:00AM to 9:00AM and 3:00PM to 6:00PM) total: 313

The Project is located adjacent to Union Station which is a substantial pedestrian generator with high numbers of people arriving or departing the site on foot. The location is near pedestrian destinations and offers various travel options including bus, rail, foot, bike, personal mobility devices, transportation network companies, and/or personal vehicle. The area serves a high number of pedestrians and pedestrian infrastructure that is serving these volumes of pedestrians.

Design features/physical configurations that affect the visibility of pedestrians and bicyclists to drivers entering and exiting the site, and the visibility of cars to pedestrians and bicyclists

The project will enhance safety by widening sidewalks to accommodate pedestrians and cyclists, shorten pedestrian crossings, improving pedestrian and cyclist visibility in a high-visibility raised crossing, and will slow vehicle travel speeds via the lane repurposing on Alameda Street. Therefore, the project will enhance safety as a result of the project's design features.

The type of bicycle facilities the project driveway(s) crosses and the relative level of utilization.

The Project will provide protected bicycle facilities on Alameda Street and Los Angeles Street, and a dedicated bicycle crossing will be provided across Alameda Street. Expected utilization will be at the level of existing conditions or greater due to the improved facilities.

Based on counts from November of 2015 bicycle activity at the Alameda Street & Los Angeles Street intersection was as follows:

- AM Peak Hour: 36
- PM Peak Hour 25
- AM and PM Peak periods: 221

The physical conditions of the site and surrounding area, such as curves, slopes, walks, landscaping or other barriers, that could result in vehicle/pedestrian, vehicle/bicycle, or vehicle/vehicle safety hazards

The raised crossing is proposed to operate without any vehicle-pedestrian conflicts. Right turn on red will be prohibited across the crossing for southbound Alameda Street, and the westbound right turn out of the Union Station driveway, which will be controlled by a protected right turn phase. Both the southbound and eastbound left turn phases will be protected, so no permissive turns will be allowed. Because of the proposed signal operations, all conflicting movements will be eliminated, and the crossing will operate essentially as an exclusive phase.

Los Angeles Street has a slope downward as it veers eastward and approaches the intersection with Alameda Street. The slope and roadway alignment are not being modified on this segment of Los Angeles Street. Along the curb and slope is where the protected bicycle facility is being moved to the west/north side of the roadway. The design of Los Angeles Street minimizes landscaping or barriers that would negatively impact roadway users.

The project portion along Alameda Street is on a segment that is straight and level. This segment of the roadway will include a new protected bicycle facility and expanded sidewalk on the east side. These design treatments are intended to minimize conflicts between the different modes along the roadway. Barriers or landscaping would not be installed in a way that obstructs pathways or visibility for roadway users.

Finally, the modifications to the design of the Alameda Street & Los Angeles Street intersection provide

crossings that are not obstructed by curbs, barriers, or landscaping. The raised crosswalk introduces vertical deflection to slow vehicles at this key crossing.

The project location, or project-related changes to the public right-of-way, relative to proximity to the High Injury Network (HIN) or a Safe Routes to School program area

This segment of Alameda Street, and the intersection of Alameda Street and Los Angeles Street, are part of the HIN due to a demonstrated crash history that has resulted in significant injuries and fatalities. Project related changes include a protected bicycle facility and improved crossings that will provide safety benefits for all roadway users.

The Union Station driveway along Alameda Street will be modified to provide a shortened crossing distance across all legs. The north/south crossings across the eastern and western legs of the intersection will have marked crosswalks that serve pedestrians and bicyclists. The eastern leg is anticipated to serve a substantial number of bicyclists and the pedestrian crosswalk will serve bicyclists as the protected bicycle facility becomes a mixing zone approaching the intersection.

The raised crossing will also connect the protected bicycle facilities on Alameda Street & Los Angeles Street. LADOT and LABOE recently published the Supplemental Street Design Guide (SSDG) As indicated in the research summarized in the Design Guide (Page 70-71), a raised crossing:

- “Increases motorists yielding to pedestrians in crosswalks”
- “Reduces motorist crashes with bicyclists operating in protected bike lanes”
- “Provides accessible and convenient crossings for pedestrians, especially those with mobility and visual impairments by minimizing elevation changes at curb ramps”
- “Improves motorists’ awareness of crosswalks and visibility of pedestrians”
- “Supports traffic calming”
- “Crash reductions associated with the installation of raised crosswalks will reduce emergency response needs”

The Design Guide also suggests that raised crossings may be beneficial at “intersection or midblock locations which have direct access to schools, hospitals, senior housing, community centers, parks, transit stations, shared use trail crossings, and other pedestrian-heavy destinations.”]

The Modified Project raised crossing is being designed to be consistent with the SSDG, and so will not introduce any substantially increased hazard.

Any other conditions, including the approximate location of incompatible uses that would substantially increase a transportation hazard.

Because the Project would not increase the number of driveways, the location of those driveways is a modification from the current placement, and the intersection is designed with multimodal features to



minimize conflicts and enhance comfort, the Project would not substantially contribute to an increase in hazards for this condition.

Based on the above criteria, no significant impacts are expected to occur based on these criteria.

Mitigation Measures

No mitigation measures are required.

2.0 Non-CEQA Transportation Assessment

This section assesses the outcome of additional analysis prepared for informational purposes outside of CEQA requirements associated with the Modified Project. If necessary, this section also identifies measures that could be considered to address operational deficiencies. The methodology implemented in this assessment consists of evaluating analysis results against non-CEQA standards to understand how the project may affect transportation in the area. Based on the non-CEQA screening criteria of the City of Los Angeles TAG, the following evaluation criteria are evaluated:

b) Project Access, Safety, and Circulation Evaluation Criteria

a. Operational Evaluation:

1. “Spill over from turn pockets into through lanes
2. Block cross streets or alleys
3. Contribute to “gridlock” congestion. For the purposes of this section gridlock is defined as the condition where traffic queues between closely-spaced intersections and impede the flow of traffic through upstream intersections.”

b. Safety Evaluation:

1. “For transportation projects, the Transportation Assessment should identify if the project would result in changes to the operations of the roadway that would be expected to improve or reduce safety for vulnerable road users.”

c. Passenger Loading Evaluation:

1. “The demand for curbside space has substantially increased due to the continued expansion of driver-for hire transportation network companies (TNCs) and shared mobility services. The Transportation Assessment should characterize the on-site loading demand of the project frontage and answer these questions: Would the project result in passenger loading demand that could not be accommodated within any proposed on-site passenger loading facility? Would accommodating the passenger loading demand create pedestrian or bicycle conflicts? Which curbside management options should be explored to better address passenger loading needs in the public right-of-way?”

c) Project Construction

- i. “Would construction of a project substantially interfere with pedestrian, bicycle, transit, or vehicle circulation and accessibility to adjoining areas? Factors to be considered are the location of the project site, the functional classification of the adjacent street, the availability of alternate routes or additional capacity, temporary loss of bicycle parking, temporary loss of bus stops or rerouting of transit lines, the duration of temporary loss of access, the affected land uses, and

the magnitude of the temporary construction activities.”

2.1 Project Access, Safety, and Circulation Evaluation

Operational Evaluation

In the FEIR, a detailed transportation simulation was prepared to evaluate what was then the required transportation impact analysis metric, level of service. In order to address the above non-CEQA TAG criteria, the same methodology and tools were used for the analysis of the Modified Project, in order to provide consistency with the FEIR analysis, and provide additional, non-CEQA information about how the project changes associated with the Modified Project will affect the operational performance of the roadway system.

Existing Traffic Volumes and Level of Service

This section presents existing (base year 2015) peak hour traffic volumes, describes the methodology used to assess the traffic conditions at each intersection, and analyzes the resulting operating conditions at each; indicating average served volume (vehicles per hour), average delay (seconds per vehicle), and levels of service (LOS).

Traffic Analysis Study Area

For the FEIR forty-one intersections were selected for analysis in consultation with agency staff for evaluation. Because of the Modified Project changes, three additional signalized study intersections were added (intersection 42-44):

1. Hill Street & Alpine Street
2. Broadway & Alpine Street
3. North Spring & Alpine Street
4. Alameda Street & Alpine Street
5. Main Street & Alpine Street/Vignes Street
6. Bauchet Street & Vignes Street
7. Cesar Chavez Avenue & Vignes Street
8. Lyon Street & Vignes Street
9. Mission Road & Vignes Street
10. Alameda Street & Alhambra Avenue
11. Hill Street & Ord Street
12. Broadway & Ord Street
13. Alameda Street & Main Street/Bauchet Street
14. Broadway & Cesar Chavez Avenue
15. Spring Street/New High Street & Cesar Chavez Avenue
16. Main Street & Cesar Chavez Avenue
17. Alameda Street & Cesar Chavez Avenue
18. LAUS Driveway & Cesar Chavez Avenue
19. Alameda Street & Los Angeles Street

20. Broadway & Arcadia Street
21. Spring Street & Arcadia Street
22. Main Street & Arcadia Street
23. Los Angeles Street & Arcadia Street
24. Alameda Street & Arcadia Street
25. Vignes Street & Ramirez Street/Patsaouras Transit Plaza
26. Broadway & Aliso Street
27. Spring Street & Aliso Street
28. Main Street & Aliso Street
29. Los Angeles Street & Aliso Street
30. Alameda Street & Aliso Street
31. Geary Street/US 101 Ramps & Commercial Street
32. Broadway & Temple Street
33. Spring Street & Temple Street
34. Main Street & Temple Street
35. Los Angeles Street & Temple Street
36. Judge John Aiso Street & Temple Street
37. Alameda Street & Temple Street
38. Los Angeles Street & 1st Street
39. Judge John Aiso Street /San Pedro Street & 1st Street
40. Central Avenue & 1st Street
41. Alameda Street & 1st Street
- 42. Alameda Street & College Street**
- 43. Broadway & College Street**
- 44. Main Street & Ann Street**

As detailed in the FEIR, counts for intersections 1-41 were conducted in 2015. Counts at intersections 42-44 were conducted in February 2020, when schools were in session. Volumes were balanced through the simulation model network, and the 2020 counts were balanced to the 2015 volumes in order to provide a consistent assessment of the Modified Project with the results previously published in the FEIR.

Per typical LADOT procedures, signalized study intersections are analyzed. However, the simulation model includes unsignalized intersections and freeway on-ramps, so traffic congestion on those facilities are accounted for in the simulation results.

Development of Multi-Modal Simulation Model Network

Consistent with the FEIR, to effectively evaluate people's travel behavior and multi-modal network operations, a micro-simulation model was developed using the Vissim software. This was determined to be the appropriate tool to analyzing the traffic effects of the project through ongoing coordination with LADOT.

The outputs of the model include the following:

- Intersection vehicle delay and queue lengths

Unlike most static traffic operations analysis routines, a microsimulation model analysis includes the effects that closely-spaced intersections can have on study intersections such as queuing from adjacent upstream intersections into the study intersection or vehicle platooning from traffic signal coordination at upstream intersections. Microsimulation models also include the effects of other travel modes on network performance including transit vehicles, bicyclists, and pedestrians. The video animation provided by a microsimulation model also helps by visually presenting the corridor queuing and congestion issues, which are used to verify the adequacy of the proposed design concepts in terms of geometrics dimensions and roadway capacity.

The microsimulation model was developed using PTV VISSIM 8.0 software. The VISSIM model was validated to AM and PM peak hour 2015 existing conditions using the criteria contained in Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software (Federal Highway Administration, 2004). The validation criteria emphasize matching existing demand throughout the model and replicating observed queuing and congestion. The VISSIM simulation model was developed as follows:

- The model was constructed from using observed data for:
 - Roadway network (lane configuration)
 - Travel volumes (intersection counts)
 - Traffic controls (traffic signal and ramp meter)
- Driver behavior parameters were adjusted based on field observations, including:
 - Car Following – Safety Distance
 - Lane Change – Safety Distance Reduction Factor
 - Lane Change – Look Ahead and Emergency Stop Distances
 - Permissive Left-Turn Aggressiveness
- The existing intersection and roadway geometry were obtained from aerial photographs and confirmed during site visits conducted in fall 2015 and subsequent site visits in 2016 and 2019

Multi-Modal Simulation Model Data Collection

The AM and PM peak hour intersection traffic counts were collected over several weekdays when school was in session in November 2015 (between 7:00–10:00 AM and 4:00–7:00 PM), as well as a single weekday in February 2020 for the additional study intersections. Traffic volumes used for the analysis of existing conditions represent a network-wide peak hour (7:30–8:30 AM and 5:00–6:00 PM), and volumes were balanced between intersections and driveways within the network. Vehicle volumes were balanced to ensure the model is accurately assigning the correct number of vehicles for each turning movement at intersections within the network. It also ensures continuity between intersections for counts that were taken on different days and provides logical volume estimates for intersections where counts are not available.

Volumes from adjacent intersections were balanced to develop existing volumes at minor (generally

unsignalized) non-study intersections and driveways where counts were not available. At these intersections, vehicles were added or removed to ensure volume consistency between study intersections.

Traffic signal control data (i.e. signal phasing/timings) were provided by the City of Los Angeles. The signal timings were confirmed during field observations and adjusted as necessary to match observed cycle lengths and phase lengths. The ramp meter rates at the eastbound US-101 on-ramps from Los Angeles Street was also observed and incorporated into the model. The posted speed limits for the network were collected during field observations. Traffic controls at unsignalized intersections were taken from aerial photographs and confirmed during field observations.

Multi-Modal Simulation Model Calibration and Validation

The default VISSIM parameters for geometrics and driver behavior were iteratively adjusted at congested intersections until the model was validated to observed conditions. Link speeds were adjusted to better match with vehicle volume throughput; conflict areas and priority rules were altered to better match queueing conditions and to ensure vehicle turning behavior matched observed conditions in the field. The FEIR detailed the validation criteria and findings for the simulation model.

The traffic simulation model was used to generate performance measures consistent with *Highway Capacity Manual* (HCM) (Transportation Research Board, 2010). The following transportation performance metrics are used to evaluate the potential effects of the project:

- Intersection vehicular operating conditions (average vehicle delay and level-of-service)

Existing Traffic Conditions

The analysis of existing traffic conditions is intended to provide a basis for the remainder of this non-CEQA transportation assessment. Because the simulation model has natural variability in each simulation model run, and because intersection operations can be affected by delay at upstream intersections, the model was rerun for all scenarios because the study area was increased to evaluate the traffic capacity reductions directed by LADOT, including the 41 previously analyzed study intersections from the FEIR and the three additional intersections. The existing weekday morning and afternoon peak hour volumes at the three additional study intersections and count sheets for these intersections are contained in Appendix B, *Traffic Data*, to this report.

Level of Service Methodology

Traffic operations for this study are described in terms of level of service (LOS). Intersection LOS is a qualitative measure used to describe perceived traffic operating conditions for motorists based on automobile delay with the application of the HCM 2010 operational method. Each study intersection was evaluated based on the amount of traffic traveling through the intersection, the lane geometries, the signal phasing and other factors affecting operating capacity such as on-street parking, presence of bus operations near the intersection, and pedestrian volumes and interactions at the street crosswalks. These

characteristics are used to evaluate the operation of each signalized intersection, which is described generally in terms of LOS.

The HCM 2010 method measures LOS on the average stopped delay experienced per vehicle. Table 2.1-1 provides LOS definitions for signalized intersections using the HCM methodology. LOS categories range from excellent, nearly free-flow traffic at LOS A to overloaded, stop-and-go conditions at LOS F.

**TABLE 2.1-1
LEVEL OF SERVICE DEFINITIONS**

LOS	Average Intersection Delay	General Description
A	0 – 10.0	Little to no congestion or delays.
B	10.1 – 15.0	Limited congestion. Short delays.
C	15.1 – 25.0	Some congestion with average delays.
D	25.1 – 35.0	Significant congestion and delays.
E	35.1 – 50.0	Severe congestion and delays.
F	> 50.0	Total breakdown with extreme delays.

SOURCE: *Highway Capacity Manual, 2010.*

Existing Levels of Service

This section presents the analysis of existing AM and PM peak hour conditions at all 44 study intersections using the HCM methodology to assess the resulting operating conditions at the intersections.

Table 2.1-2 summarize the existing weekday AM and PM peak hour LOS. As shown, the following eight study intersections operate at LOS E or F during one more both peak hours. The remaining 36 study intersections operate at LOS D or better during both peak hours.

8. Lyon Street & Cesar E. Chavez Avenue
9. Mission Road & Cesar E. Chavez Avenue
18. Union Station Driveway & Cesar E. Chavez Avenue
24. Alameda Street & Arcadia Street / US 101 Northbound Off Ramp
28. North Main Street & Aliso Street
34. North Main Street & Temple Street
35. North Los Angeles Street & Temple Street
38. Los Angeles Street & 1st Street

**TABLE 2.1-2
EXISTING LEVEL OF SERVICE**

#	N/S Street	E/W Street	Existing Conditions			
			AM		PM	
			Delay	LOS	Delay	LOS
1	North Hill Street	Alpine Street	19	B	19	B
2	North Broadway	Alpine Street	21	C	21	C
3	North Spring Street	Alpine Street	21	C	17	B
4	Alameda Street	Alpine Street	32	C	17	B
5	North Main Street	Alpine Street/Vignes Street	21	C	32	C
6	Vignes Street	Bauchet Street	10	A	12	B
7	Vignes Street	Cesar E. Chavez Avenue	31	C	43	D
8	Lyon Street	Cesar E. Chavez Avenue	71	E	23	C
9	Mission Road	Cesar E. Chavez Avenue	118	F	49	D
10	Alameda Street	Alhambra Avenue	9	A	13	B
11	North Hill Street	Ord Street	14	B	13	B
12	North Broadway	Ord Street	21	C	21	C
13	Alameda Street	Main Street/Bauchet Street	14	B	21	C
14	North Broadway	Cesar E. Chavez Avenue	29	C	38	D
15	North Spring Street/New High Street	Cesar E. Chavez Avenue	40	D	30	C
16	North Main Street	Cesar E. Chavez Avenue	17	B	35	D
17	Alameda Street	Cesar E. Chavez Avenue	31	C	31	C
18	Union Station Driveway	Cesar E. Chavez Avenue	92	F	70	E
19	Alameda Street	Los Angeles Street	17	B	30	C
20	North Broadway	Arcadia Street	15	B	12	B
21	North Spring Street	Arcadia Street	24	C	21	C
22	North Main Street	Arcadia Street	18	B	21	C
23	North Los Angeles Street	Arcadia Street	30	C	25	C
24	Alameda Street	Arcadia Street/US 101 Off-Ramps	78	E	22	C
25	Vignes Street	Ramirez Street/Patsaouras Transit Plaza/US 101 Off-Ramps	30	C	31	C
26	North Broadway	Aliso Street/US 101 Off-Ramps	11	B	27	C
27	North Spring Street	Aliso Street	12	B	24	C
28	North Main Street	Aliso Street	11	B	68	E
29	North Los Angeles Street	Aliso Street	18	B	52	D
30	Alameda Street	Aliso Street/Commercial Street	40	D	50	D
31	Garey Street/US 101 Off-Ramps	Commercial Street	23	C	28	C
32	North Broadway	Temple Street	14	B	27	C
33	North Spring Street	Temple Street	17	B	31	C
34	North Main Street	Temple Street	15	C	114	F
35	North Los Angeles Street	Temple Street	33	C	64	E
36	Judge John Aiso Street	Temple Street	13	B	20	B
37	Alameda Street	Temple Street	40	D	37	D
38	Los Angeles Street	1 st Street	14	B	59	E
39	San Pedro Street	1 st Street	11	B	10	A
40	Central Ave	1 st Street	12	B	14	B

**TABLE 2.1-2
EXISTING LEVEL OF SERVICE**

#	N/S Street	E/W Street	Existing Conditions			
			AM		PM	
			Delay	LOS	Delay	LOS
41	Alameda Street	1 st Street	19	B	20	B
42	Alameda Street / Spring Street	College Street	17	B	18	B
43	North Broadway	College Street	26	C	14	B
44	Main Street	Ann Street	20	C	3	A

NOTE: LOS results based on HCM methodology.

SOURCE: Fehr & Peers, 2020.

Future Traffic Conditions

To evaluate the potential impacts of the proposed project on future (Year 2029) conditions, it was necessary to develop estimates of future traffic conditions in the area both without and with the project. First, estimates of traffic growth were developed for the study area to forecast future conditions without the project. These forecasts included traffic increases as a result of both regional ambient traffic growth and traffic generated by specific developments in the vicinity of the project (cumulative development projects) not covered by ambient growth rates. These projected traffic volumes represent Future without Project conditions. In order to provide consistency between the FEIR analysis and the Modified Project the same methods and growth rates detailed in the FEIR were used at the additional study intersections.

Cumulative Traffic Growth

Consistent with the FEIR and the concurrence of LADOT, it was established that an ambient growth factor of 0.2% per year should be applied to adjust the existing base year traffic volumes to reflect the effects of regional growth and development by year 2029. The 0.2% growth rate was validated through a review of the forecast annual growth rate in traffic from the 2016 Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP) travel demand model between the existing baseline and horizon year (2040) for the traffic analysis zones (TAZ) within and adjacent to the study area. Additionally, a list of related projects in the study area was obtained from LADOT. The growth in TAZ land use contained in the SCAG model between the base year and the horizon year was sufficient to cover most of the cumulative development projects on LADOT's list. However, to ensure that the traffic forecasts sufficiently include traffic expected to be generated from the related projects located closest to the station, additional traffic volumes from those projects were added on top of the application of the ambient growth rate to the existing (year 2015) traffic volume data as detailed in the FEIR.

Future without Project (2019) Simulation Model Run

Future without Project weekday AM and PM peak hour traffic volumes were developed with the application of ambient growth and cumulative development project volumes, consistent with the FEIR.

These represent the baseline traffic volumes for analyzing the potential for project-related traffic effects. Future without Project traffic volumes, intersection geometric changes, and other transportation network changes were input into the simulation model, which was run to calculate Future without Project transportation performance metrics, and is used as the baseline to assess the potential for project impacts. Because the simulation model has natural variability in each simulation model run, and because intersection operations can be affected by delay at upstream intersections, the model was rerun for all scenarios because the study area was increased to evaluate the traffic capacity reductions directed by LADOT, including the 41 previously analyzed study intersections from the FEIR and the three additional intersections. Table 2.2-1 includes the Future without Project delay and LOS for the 41 previously analyzed study intersections, as well as the three new study intersections.

Future with Modified Project (2029) Simulation Model Run

Project shift volumes, consistent with the FEIR were added to the Future without Project traffic volumes to develop the Future with Project (2029) traffic volumes. Compared with the FEIR project, the Modified Project has fewer traffic shifts, because the eastbound left turn from northbound Los Angeles Street to northbound Los Angeles Street is retained. The Modified Project-related network changes and traffic volumes were used to modify the Future without Project model and rerun to assess the transportation performance of the Future with Modified Project Scenario.

Future without Project (2029) Intersection Levels of Service

Table 2.1-3 presents the average delay and LOS for each of the analyzed intersections in the AM and PM peak hours under the Future without Project (2029) scenario. As shown, 30 of the 44 study intersections are estimated to operate at LOS D or better during both the AM and PM peak hours. The following 14 intersections are estimated to operate at LOS E or F, during one or both of the analyzed peak hours:

7. North Vignes Street & Cesar E. Chavez Avenue
8. Lyon Street & Cesar E. Chavez Avenue
9. Mission Road & Cesar E. Chavez Avenue
14. Broadway & Cesar E. Chavez Avenue
18. Union Station Driveway & Cesar E. Chavez Avenue
24. Alameda Street & Arcadia Street
25. North Vignes Street & Ramirez Street
28. North Main Street & Aliso Street
30. Alameda Street & Aliso Street
32. Broadway & West Temple Street
34. North Main Street & Temple Street
35. North Los Angeles & East Temple Street
37. Alameda Street & Temple Street
38. North Los Angeles & East 1st Street

Future with Modified Project (2029) Intersection Levels of Service

Table 2.1-3 also presents the average delay and LOS for each of the analyzed intersections in the AM and PM peak hours under the Future with Modified Project (2029) scenario. As shown, 23 of the 44 study intersections are estimated to operate at LOS D or better during both the AM and PM peak hours. The following 21 intersections are estimated to operate at LOS E or F, during one or both of the analyzed peak hours:

4. Alameda Street & Alpine Street
5. North Main Street & Alpine Street/Vignes Street
8. Lyon Street & Cesar E. Chavez Avenue
9. Mission Road & Cesar E. Chavez Avenue
10. Alameda Street & Alhambra Street
14. Broadway & Cesar E. Chavez Avenue
18. Union Station Driveway & Cesar E. Chavez Avenue
19. Alameda Street & Los Angeles Street
24. Alameda Street & Arcadia Street
25. North Vignes Street & Ramirez Street
29. North Los Angeles Street & Aliso Street
30. Alameda Street & Aliso Street
32. Broadway & West Temple Street
34. North Main Street & Temple Street
35. North Los Angeles & East Temple Street
36. Judge John Aiso Street & Temple Street
37. Alameda Street & Temple Street
38. North Los Angeles & East 1st Street
42. Alameda Street/Spring Street & College Street
44. North Main Street & Ann Street

As shown in Table 2.1-3, applying the criteria for assessing operational effects used by LADOT, the Modified Project would have substantive operational effects at 17 intersections under the Future with Modified Project (2029) scenario:

4. Alameda Street & Alpine Street (AM Peak Hour)
5. North Main Street & Alpine Street (Both Peak Hours)
10. Alameda Street & Alhambra Avenue (AM & PM Peak Hours)
13. Alameda Street & North Main Street (AM Peak Hour)
17. Alameda Street & Cesar E. Chavez Avenue (PM Peak Hour)
18. Union Station Driveway & Cesar E. Chavez Avenue (PM Peak Hour)
19. Alameda Street & North Los Angeles Street (Both Peak Hours)
23. North Los Angeles Street & Arcadia Street (PM Peak Hour)
29. North Los Angeles Street & Aliso Street (PM Peak Hour)
32. North Broadway & Temple Street (PM Peak Hour)
33. North Spring Street & Temple Street (PM Peak Hour)
34. North Main Street & Temple Street (PM Peak Hour)
35. North Los Angeles Street & Temple Street (PM Peak Hour)
36. Judge John Aiso & Temple Street (PM Peak Hour)
38. Los Angeles Street & Temple Street (PM Peak Hour)

- 42. Alameda Street/Spring Street & College Street (AM Peak Hour)
- 44. North Main Street & Ann Street (AM Peak Hour)

Compared with the analysis of the Approved Project in the FEIR, the Modified Project has the following additional 12 intersections with a substantive operational effect:

- 4. Alameda Street & Alpine Street
- 5. North Main Street & Alpine Street
- 13. Alameda Street & North Main Street
- 19. Alameda Street & North Los Angeles Street
- 23. North Los Angeles Street & Arcadia Street
- 32. North Broadway & Temple Street
- 33. North Spring Street & Temple Street
- 34. North Main Street & Temple Street
- 36. Judge John Aiso & Temple Street
- 38. Los Angeles Street & Temple Street
- 42. Alameda Street/Spring Street & College Street
- 44. North Main Street & Ann Street

The Modified Project eliminates substantive operational effects at the following six intersections identified in the FEIR for the Approved Project, for a net increase of six intersections:

- 14. Broadway & Cesar Chavez Avenue
- 16. Main Street & Cesar Chavez Avenue
- 21. Spring Street & Arcadia Street
- 24. Alameda Street & Arcadia Street
- 27. Spring Street & Aliso Street
- 28. Main Street & Aliso Street

A total of five intersections have substantive operational effects across both the Approved Project and the Modified Project.

However, because these operational effects are not CEQA related, these do not constitute new significant transportation impacts.

**TABLE 2.1-3
FUTURE WITH MODIFIED PROJECT (2029) LOS AND OPERATIONAL EFFECT ANALYSIS**

#	N/S Street	E/W Street	Future without Project (2029)				Future Year 2029 plus Modified Project							
			AM		PM		AM		PM		AM		PM	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delta	Effect?	Delta	Effect?
1	North Hill Street	Alpine Street	19	B	18	B	18	B	18	B	-1	NO	0	NO
2	North Broadway	Alpine Street	25	C	22	C	21	C	21	C	-4	NO	-1	NO
3	North Spring Street	Alpine Street	23	C	16	B	16	B	16	B	-7	NO	0	NO
4	Alameda Street	Alpine Street	41	D	18	B	134	F	18	B	93	YES	0	NO
5	North Main Street	Alpine Street/Vignes Street	23	C	33	C	138	F	39	D	115	YES	6	YES
6	Vignes Street	Bauchet Street	11	B	13	B	10	B	14	B	-1	NO	1	NO
7	Vignes Street	Cesar E. Chavez Avenue	35	C	56	E	25	C	55	D	-10	NO	-1	NO
8	Lyon Street	Cesar E. Chavez Avenue	114	F	118	F	23	C	113	F	-91	NO	-5	NO
9	Mission Road	Cesar E. Chavez Avenue	185	F	122	F	142	F	115	F	-43	NO	-7	NO
10	Alameda Street	Alhambra Avenue	17	B	13	B	174	F	34	C	157	YES	21	YES
11	North Hill Street	Ord Street	14	B	13	B	14	B	13	B	0	NO	0	NO
12	North Broadway	Ord Street	24	C	25	C	20	B	23	C	-4	NO	-2	NO
13	Alameda Street	Main Street/Bauchet Street	17	B	20	C	31	C	24	C	14	YES	4	NO
14	North Broadway	Cesar E. Chavez Avenue	30	C	75	E	29	C	77	E	-1	NO	2	NO
15	North Spring Street/New High Street	Cesar E. Chavez Avenue	50	D	37	D	41	D	39	D	-9	NO	2	NO
16	North Main Street	Cesar E. Chavez Avenue	17	B	51	D	16	B	41	D	-1	NO	-10	NO
17	Alameda Street	Cesar E. Chavez Avenue	35	D	36	D	46	D	50	D	11	NO	14	YES
18	Union Station Driveway	Cesar E. Chavez Avenue	97	F	110	F	51	D	113	F	-46	NO	3	YES
19	Alameda Street	Los Angeles Street	26	C	33	C	83	F	61	E	57	YES	28	YES
20	North Broadway	Arcadia Street	14	B	15	B	14	B	16	B	0	NO	1	NO
21	North Spring Street	Arcadia Street	48	D	42	D	50	D	27	C	2	NO	-15	NO
22	North Main Street	Arcadia Street	33	C	19	B	35	C	15	B	2	NO	-4	NO
23	North Los Angeles Street	Arcadia Street	43	D	24	C	40	D	33	C	-3	NO	9	YES
24	Alameda Street	Arcadia Street/US 101 Off-Ramps	111	F	40	D	111	F	37	D	0	NO	-3	NO
25	Vignes Street	Ramirez Street/Patsaouras Transit Plaza/US 101 Off-Ramps	45	D	79	E	38	D	67	E	-7	NO	-12	NO
26	North Broadway	Aliso Street/US 101 Off-Ramps	11	B	44	D	12	B	44	D	1	NO	0	NO
27	North Spring Street	Aliso Street	17	B	39	D	18	B	33	C	1	NO	-6	NO
28	North Main Street	Aliso Street	13	B	62	E	12	B	49	D	-1	NO	-13	NO
29	North Los Angeles Street	Aliso Street	19	B	54	D	20	C	77	E	1	NO	23	YES
30	Alameda Street	Aliso Street/Commercial Street	79	E	55	D	81	F	47	D	2	NO	-8	NO
31	Garey Street/US 101 Off-Ramps	Commercial Street	24	C	30	D	24	C	31	C	0	NO	1	NO
32	North Broadway	Temple Street	13	B	44	D	13	B	87	F	0	NO	43	YES
33	North Spring Street	Temple Street	29	C	36	D	31	C	50	D	2	NO	14	YES
34	North Main Street	Temple Street	17	B	156	F	18	B	196	F	1	NO	40	YES
35	North Los Angeles Street	Temple Street	32	C	60	E	27	C	106	F	-5	NO	46	YES
36	Judge John Aiso Street	Temple Street	14	B	26	C	12	B	56	E	-2	NO	30	YES
37	Alameda Street	Temple Street	66	E	42	D	61	E	36	D	-5	NO	-6	NO
38	Los Angeles Street	1 st Street	16	B	76	F	15	B	154	F	-1	NO	78	YES
39	San Pedro Street	1 st Street	18	B	30	C	16	B	26	C	-2	NO	-4	NO
40	Central Ave	1 st Street	15	B	36	D	14	B	33	C	-1	NO	-3	NO
41	Alameda Street	1 st Street	48	D	21	C	38	D	20	C	-10	NO	-1	NO
42	Alameda Street / Spring Street	College Street	26	C	17	B	196	F	17	B	170	YES	0	NO

#	N/S Street	E/W Street	Future without Project (2029)				Future Year 2029 plus Modified Project							
			AM		PM		AM		PM		AM		PM	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delta	Effect?	Delta	Effect?
43	North Broadway	College Street	39	D	14	B	27	C	14	B	-12	NO	0	NO
44	Main Street	Ann Street	20	B	3	A	221	F	3	A	201	YES	0	NO

SOURCE: Fehr & Peers, 2020.

Circulation Corrective Actions

The TAG lists the following potential “corrective actions” for project access and circulation constraints (City of Los Angeles TAG, Page 43). The corrective actions being implemented by the Project are detailed below. These actions were featured of both the Approved Project as well the Modified Project:

1. Installation of a traffic signal or stop signs or electronic warning devices at site access points.
 - The project is adjusting the signal at the primary driveway and including overlap phases to serve vehicle movement in and out of Union Station while providing for pedestrian safety by prohibiting right turn on red.
2. Redesign and/or relocation of project access points.
 - The project is consolidating the Union Station driveways on Alameda Street, eliminating one driveway entirely.
3. Redesign of the internal access and circulation system.
 - Internal access and circulation is being redesigned to facilitate internal access and circulation associated with the design changes to the project access point.
4. Installation of stop-signs and pavement markings internal to the site.
 - Stop signs and pavement markings internal to the site are being redesigned to facilitate internal access and circulation associated with the driveway modifications of the Project.
5. Restrict or prohibit turns at site access points.
 - Turns are being controlled via signal phasing at the Project driveway with right turn on red restrictions to balance vehicle access and pedestrian safety
6. Repurpose existing curb space to better accommodate passenger loading.
 - A new curb loading zone on Alameda Street will be provided by the Project
7. New traffic signal installation, left-turn signal phasing, or other vehicle flow enhancements (e.g., ATSSAC system upgrades) at nearby intersections.
 - Signal phasing upgrades, including protected left and right turn phases at the intersection of Alameda Street & Los Angeles Street are being provided. Upgrades to provide Accessible Pedestrian Signals (APS) are being provided at the intersection of Alameda Street & Los Angeles Street that are currently lacking.
8. Intersection reconfiguration that reduces gridlock and unsafe conflict points.
 - The Alameda Street & Los Angeles Street intersection is being reconfigured and will use signal phasing and right turn on red restrictions to manage conflict points. Based on the direction of LADOT, the geographic scope of the traffic striping changes for the project has been increased to eliminate trap left turns and improve lane alignment.
9. Provide continuous paved sidewalks, walkways or shared use paths to off-site pedestrians and bicyclists to adjacent or nearby transit facilities.
 - The Project is providing expanded sidewalks and a combination of a shared use path / dedicated bicycle facility to improve access to transit and general circulation enhancements for pedestrian and bicycle modes.
10. Fair share contribution to LADOT project that accomplishes one or more of the above

- The Project is directly funding the above corrective actions as Project features.

Safety Evaluation

A crash assessment was conducted from 2009-2019 to provide an evaluation of the safety history at the intersection of Alameda and Los Angeles Street. The crash assessment analyzed data from the Transportation Injury Mapping System (TIMS).

A total of 29 crashes occurred at or adjacent to the intersection. Nearly half (48%) involved one or more pedestrians. Crashes involving vehicles alone account for 38%, and crashes involving cyclists account for the remaining 14%. Over the ten-year period, crashes increased over time, spiking in 2012, 2016, and ultimately peaking in 2018, with six crashes involving pedestrians.

A total of four crashes had victims that were killed or severely injured (KSI). Two pedestrians were killed, and a third was severely injured, while one motorist was severely injured. Severe injury crashes are those which result in extreme and long-term consequences, including permanent disability, lost productivity and wages.

Crashes took place primarily on weekends, peaking on Saturdays. The majority of crashes took place at night between midnight and 3 am, when travel speeds are highest due to minimal congestion to slow travel speeds. Weather conditions were generally clear (86% of non KSI crashes and 75% of KSI crashes).

The driver movement preceding a crash can influence the severity of the collision. Motorists are generally driving at higher speeds when proceeding straight. Of the KSI crashes, 67% of drivers were proceeding straight.

75% of the KSI collisions occurred at the intersection.

A variety of Project Features have safety benefits and defined crash reduction factors (CRF) based on available research. The Local Roadway Safety Manual Version 1.5 (Caltrans, 2020) provides a detailed list and evaluation of potential safety countermeasures to reduce crash severity. The Manual includes a wide variety of factors to implement at signalized intersections, many of which are already implemented at the existing Alameda Street crosswalks (such as a left turn lanes, a leading pedestrian interval, intersection lighting and pedestrian countdown signal heads).

These include:

- Install protected left turn phase (55% CRF)
- Install pedestrian Scramble (40% CRF)
- Install right turn lane (20% CRF)
- Install separated bike lane (45% CRF)
- Install raised crossing (35% CRF)

The Project will enhance safety, particularly for the most vulnerable users.

Passenger Loading Evaluation

The Project is increasing passenger loading capacity at Union Station by providing curbside drop-off on Alameda Street that currently does not exist. Internal passenger loading at Union Station will remain open and operational as it does today, therefore the project will have a positive benefit to passenger loading.

2.2 Project Construction Evaluation

The Modified Project will increase the project area of roadway restriping, and therefore the potential area that could be affected by temporary roadway closures during the construction period. However, this restriping is generally minor work and short in duration so is not expected to materially affect the construction schedule or assumptions about construction activities as analyzed in the FEIR.

At times during the construction of the Project, the delivery of materials and equipment could create impacts on the adjacent roadway network based on the following considerations:

- There may be intermittent periods when large numbers of material deliveries are required, such as when concrete trucks will be needed for the new esplanade.
- Some of the materials and equipment could require the use of large trucks (18-wheelers), which could create additional congestion on the adjacent roadways.
- Delivery vehicles may need to park temporarily on adjacent roadways such as Los Angeles Street and Arcadia Street as they deliver their items.

Potential construction disruption of the project, e.g., partial lane closures, would be limited to those locations within or immediately adjacent to the project site. Segments of Alameda Street, Los Angeles Street, and Arcadia Street would have short-term impacts at locations where curb cuts, curb landscaping, etc. are installed. Temporary lane closures and, potentially, temporary sidewalk closures along portions of the perimeter of the project site may occur, but some level of transit, pedestrian and bicycle access around the site will be adequately maintained during construction.

A construction traffic management plan, including street closure information, detour plans, haul routes, and staging plans should be prepared and submitted to LADOT for review and approval prior to the start of any construction work. This plan would include such elements as the designation of haul routes for construction-related trucks, the location of access to the construction site, any driveway turning movement restrictions, temporary traffic control devices or flagmen, travel time restrictions (if any) for construction-related traffic to avoid peak travel periods on selected roadways, consolidating construction truck deliveries, and designated staging and parking areas for equipment and workers. If oversized vehicles or loads are to be transported over State highways, a permit would be required from Caltrans.

As most construction activities will occur within a public street right-of-way, the following construction management standard practices will be implemented:

- A site-specific construction worksite traffic control plan should be prepared and submitted to



LADOT for review and approval prior to the start of any construction work within the public right-of-way. This plan shall include such elements as the location of any lane closures, restricted hours during which lane closures (if any) would not be allowed, local traffic detours (if any), protective devices and traffic controls (such as barricades, cones, flag persons, lights, warning beacons, temporary traffic signals, warning signs), access limitations for abutting properties (if any), and provisions to maintain emergency access through construction work areas.

- Provide safety precautions for pedestrians and bicyclists with measures such as protection barriers and signage indicating alternative pedestrian and bicycle access routes where existing facilities would be affected.
- Provide advance notice of planned construction activities to any affected residents, businesses, and property owners in the vicinity of the construction site.
- Coordinate with emergency service providers (police, fire, ambulance and paramedic services) to provide advance notice of ongoing construction activity and construction hours.
- Coordinate with public transit providers (Metro, LADOT DASH, etc.) to provide advance notice of ongoing construction, construction hours. Determine bus stops that would be affected by construction and appropriate bus stop relocation.

Based on the implementation of the construction management measures, the Modified Project will not result in a substantial disruption during the construction phase.

REFERENCES

Caltrans. *City of Los Angeles Local Roadway Safety, Version 1.5*. April 2020.

City of Los Angeles. *City of Los Angeles Supplemental Street Design Guide*. February 2020.

City of Los Angeles Department of Transportation. *Transportation Assessment Guidelines*. July 2020.

**LOS ANGELES UNION STATION
FORECOURT AND ESPLANADE IMPROVEMENTS PROJECT**

*APPENDIX TO THE TRANSPORTATION TECHNICAL STUDY FOR ADDENDUM
NO. 2 TO THE ENVIRONMENTAL IMPACT REPORT*

STATE CLEARINGHOUSE NUMBER 2016121064

**LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY
ONE GATEWAY PLAZA
MAIL STOP 99-23-4
LOS ANGELES, CA 90012**

JULY 16, 2020



Plans, Policies and Programs Consistency Worksheet

The worksheet provides a structured approach to evaluate the threshold T-1 question below, that asks whether a project conflicts with a program, plan, ordinance or policy addressing the circulation system. The intention of the worksheet is to streamline the project review by highlighting the most relevant plans, policies and programs when assessing potential impacts to the City’s circulation system.

Threshold T-1: Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadways, bicycle, and pedestrian facilities?

This worksheet does not include an exhaustive list of City policies, and does not include community plans, specific plans, or any area-specific regulatory overlays. The Department of City Planning project planner will need to be consulted to determine if the project would obstruct the City from carrying out a policy or program in a community plan, specific plan, streetscape plan, or regulatory overlay that was adopted to support multimodal transportation options or public safety. LADOT staff should be consulted if a project would lead to a conflict with a mobility investment in the Public Right of Way (PROW) that is currently undergoing planning, design, or delivery. This worksheet must be completed for all projects that meet the Section I. Screening Criteria. For description of the relevant planning documents, **see Attachment D.1.**

For any response to the following questions that checks the box in bold text ((i.e. Yes or No), further analysis is needed to demonstrate that the project does not conflict with a plan, policy, or program.

I. SCREENING CRITERIA FOR POLICY ANALYSIS

If the answer is ‘yes’ to any of the following questions, further analysis will be required:

Does the project require a discretionary action that requires the decision maker to find that the project would substantially conform to the purpose, intent and provisions of the General Plan?

Yes No

Is the project known to directly conflict with a transportation plan, policy, or program adopted to support multimodal transportation options or public safety?

Yes No

Is the project required to or proposing to make any voluntary modifications to the public right-of-way (i.e., dedications and/or improvements in the right-of-way, reconfigurations of curb line, etc.)?

Yes No

II. PLAN CONSISTENCY ANALYSIS

A. Mobility Plan 2035 PROW Classification Standards for Dedications and Improvements

These questions address potential conflict with:

Mobility Plan 2035 Policy 2.1 – Adaptive Reuse of Streets. Design, plan, and operate streets to serve multiple purposes and provide flexibility in design to adapt to future demands.

Mobility Plan 2035 Policy 2.3 – Pedestrian Infrastructure. Recognize walking as a component of every trip, and ensure high quality pedestrian access in all site planning and public right-of-way modifications to provide a safe and comfortable walking environment.

Mobility Plan 2035 Policy 3.2 – People with Disabilities. Accommodate the needs of people with disabilities when modifying or installing infrastructure in the public right-of-way.

Mobility Plan 2035 Street Designations and Standard Roadway Dimensions

A.1 Does the project include additions or new construction along a street designated as a Boulevard I, and II, and/or Avenue I, II, or III on property zoned for R3 or less restrictive zone? Yes No

A.2 If **A.1 is yes**, is the project required to make additional dedications or improvements to the Public Right of Way as demonstrated by the street designation. Yes No N/A

A.3 If **A.2 is yes**, is the project making the dedications and improvements as necessary to meet the designated dimensions of the fronting street (Boulevard I, and II, or Avenue I, II, or III)?

Yes No N/A

If the answer is to **A.1 or A.2 is NO, or to A.1, A.2 and A.3. is YES**, then the project does not conflict with the dedication and improvement requirements that are needed to comply with the Mobility Plan 2035 Street Designations and Standard Roadway Dimensions.

A.4 If the answer to **A.3. is NO**, is the project applicant asking to waive from the dedication standards? Yes No N/A

Lists any streets subject to dedications or voluntary dedications and include existing roadway and sidewalk widths, required roadway and sidewalk widths, and proposed roadway and sidewalk width or waivers.

If the answer to **A.4 is NO**, the project is inconsistent with Mobility Plan 2035 street designations and must file for a waiver of street dedication and improvement.

If the answer to **A.4 is YES**, additional analysis is necessary to determine if the dedication and/or improvements are necessary to meet the City's mobility needs for the next 20 years. The following factors may contribute to determine if the dedication or improvement is necessary:

Is the project site along any of the following networks identified in the City's Mobility Plan?

- Transit Enhanced Network
- Bicycle Enhanced Network
- Bicycle Lane Network
- Pedestrian Enhanced District
- Neighborhood Enhanced Network

To see the location of the above networks, see **Transportation Assessment Support Map**.¹

Is the project within the service area of Metro Bike Share, or is there demonstrated demand for micro-mobility services? **Yes**

If the project dedications and improvements asking to be waived are necessary to meet the City's mobility needs, the project may be found to conflict with a plan that is adopted to protect the environment.

B. Mobility Plan 2035 PROW Policy Alignment with Project-Initiated Changes

B.1 Project-Initiated Changes to the PROW Dimensions

These questions address potential conflict with:

Mobility Plan 2035 Policy 2.1 – Adaptive Reuse of Streets. Design, plan, and operate streets to serve multiple purposes and provide flexibility in design to adapt to future demands.

Mobility Plan 2035 Policy 2.3 – Pedestrian Infrastructure. Recognize walking as a component of every trip, and ensure high quality pedestrian access in all site planning and public right-of-way modifications to provide a safe and comfortable walking environment.

Mobility Plan 2035 Policy 3.2 – People with Disabilities. Accommodate the needs of people with disabilities when modifying or installing infrastructure in the public right-of-way.

Mobility Plan 2035 Policy 2.10 – Loading Areas. Facilitate the provision of adequate on and off-site street loading areas.

Mobility Plan 2035 Street Designations and Standard Roadway Dimensions

¹ LADOT Transportation Assessment Support Map <https://arcg.is/fubbd>

B.1 Does the project physically modify the curb placement or turning radius and/or physically alter the sidewalk and parkways space that changes how people access a property?

Examples of physical changes to the public right-of-way include:

- widening the roadway,
- narrowing the sidewalk,
- adding space for vehicle turn outs or loading areas,
- removing bicycle lanes, bike share stations, or bicycle parking
- modifying existing bus stop, transit shelter, or other street furniture
- paving, narrowing, shifting or removing an existing parkway or tree well

Yes No

B.2 Driveway Access

These questions address potential conflict with:

Mobility Plan 2035 Policy 2.10 – Loading Areas. Facilitate the provision of adequate on and off-site street loading areas.

Mobility Plan 2035 Program PL.1. Driveway Access. Require driveway access to buildings from non-arterial streets or alleys (where feasible) in order to minimize interference with pedestrian access and vehicular movement.

Citywide Design Guidelines - Guideline 2: Carefully incorporate vehicular access such that it does not degrade the pedestrian experience.

Site Planning Best Practices:

- *Prioritize pedestrian access first and automobile access second. Orient parking and driveways toward the rear or side of buildings and away from the public right-of-way. On corner lots, parking should be oriented as far from the corner as possible.*
- *Minimize both the number of driveway entrances and overall driveway widths.*
- *Do not locate drop-off/pick-up areas between principal building entrances and the adjoining sidewalks.*
- *Orient vehicular access as far from street intersections as possible.*
- *Place drive-thru elements away from intersections and avoid placing them so that they create a barrier between the sidewalk and building entrance(s).*
- *Ensure that loading areas do not interfere with on-site pedestrian and vehicular circulation by separating loading areas and larger commercial vehicles from areas that are used for public parking and public entrances.*

B.2 Does the project add new driveways along a street designated as an Avenue or a Boulevard that conflict with LADOT’s Driveway Design Guidelines (See Sec. 321 in the Manual of Policies and Procedures) by any of the following:

- locating new driveways for residential properties on an Avenue or Boulevard, and access is otherwise possible using an alley or a collector/local street, or
- locating new driveways for industrial or commercial properties on an Avenue or Boulevard and access is possible along a collector/local street, or

- the total number of new driveways exceeds 1 driveway per every 200 feet² along on the Avenue or Boulevard frontage, or
- locating new driveways on an Avenue or Boulevard within 150 feet from the intersecting street, or
- locating new driveways on a collector or local street within 75 feet from the intersecting street, or
- locating new driveways near mid-block crosswalks, requiring relocation of the mid-block crosswalk

Yes No

If the answer to **B.1 and B.2 are both NO**, then the project would not conflict with a plan or policies that govern the PROW as a result of the project-initiated changes to the PROW.

Impact Analysis

If the answer to either **B.1 or B.2 are YES**, City plans and policies should be reviewed in light of the proposed physical changes to determine if the City would be obstructed from carrying out the plans and policies. The analysis should pay special consideration to substantial changes to the Public Right of Way that may either degrade existing facilities for people walking and bicycling (e.g., removing a bicycle lane), or preclude the City from completing complete street infrastructure as identified in the Mobility Plan 2035, especially if the physical changes are along streets that are on the High Injury Network (HIN). The analysis should also consider if the project is in a Transit Oriented Community (TOC) area, and would degrade or inhibit trips made by biking, walking and/ or transit ridership. The streets that need special consideration are those that are included on the following networks identified in the Mobility Plan 2035, or the HIN:

- Transit Enhanced Network
- Bicycle Enhanced Network
- Bicycle Lane Network
- Pedestrian Enhanced District
- Neighborhood Enhanced Network
- High Injury Network

To see the location of the above networks, see **Transportation Assessment Support Map**.³

Once the project is reviewed relevant to plans and policies, and existing facilities that may be impacted by the project, the analysis will need to answer the following two questions in concluding if there is an impact due to plan inconsistency.

B.2.1 Would the physical changes in the public right of way or new driveways that conflict with LADOT's Driveway Design Guidelines degrade the experience of vulnerable roadway users such as modify, remove, or otherwise negatively impact existing bicycle, transit, and/or pedestrian infrastructure?

Yes No N/A

² for a project frontage that exceeds 400 feet along an Avenue or Boulevard, the incremental additional driveway above 2 is more than 1 driveway for every 400 additional feet.

³ LADOT Transportation Assessment Support Map <https://arcg.is/fubbd>

B.2.2 Would the physical modifications or new driveways that conflict with LADOT’s Driveway Design Guidelines preclude the City from advancing the safety of vulnerable roadway users?

Yes No N/A

If either of the answers to either **B.2.1 or B.2.2 are YES**, the project may conflict with the Mobility Plan 2035, and therefore conflict with a plan that is adopted to protect the environment. If either of the answers to both **B.2.1. or B.2.2. are NO**, then the project would not be shown to conflict with plans or policies that govern the Public Right-of-Way.

C. Network Access

C. 1 Alley, Street and Stairway Access

These questions address potential conflict with:

Mobility Plan Policy 3.9 Increased Network Access: Discourage the vacation of public rights-of-way.

C.1.1 Does the project propose to vacate or otherwise restrict public access to a street, alley, or public stairway?

Yes No

C.1.2 If the answer to C.1.1 is Yes, will the project provide or maintain public access to people walking and biking on the street, alley or stairway?

Yes No N/A

C.2 New Cul-de-sacs

These questions address potential conflict with:

Mobility Plan 2035 Policy 3.10 Cul-de-sacs: Discourage the use of cul-de-sacs that do not provide access for active transportation options.

C.2.1 Does the project create a cul-de-sac or is the project located adjacent to an existing cul-de-sac?

Yes No

C.2.2 If yes, will the cul-de-sac maintain convenient and direct public access to people walking and biking to the adjoining street network?

Yes No N/A

If the answers to either C.1.2 or C.2.2 are YES, then the project would not conflict with a plan or policies that ensures access for all modes of travel. If the answer to either **C.1.2 or C.2.2 are NO**, the project may conflict with a plan or policies that governs multimodal access to a property. Further analysis must assess to the degree that pedestrians and bicyclists have sufficient public access to the transportation network.

D. Parking Supply and Transportation Demand Management

These questions address potential conflict with:

***Mobility Plan 2035 Policy 3.8** – Bicycle Parking, Provide bicyclists with convenient, secure and well maintained bicycle parking facilities.*

***Mobility Plan 2035 Policy 4.8** – Transportation Demand Management Strategies. Encourage greater utilization of Transportation Demand Management Strategies to reduce dependence on single-occupancy vehicles.*

***Mobility Plan 2035 Policy 4.13** – Parking and Land Use Management: Balance on-street and off-street parking supply with other transportation and land use objectives.*

D.1 Would the project propose a supply of onsite parking that exceeds the baseline amount⁴ as required in the Los Angeles Municipal Code or a Specific plan, whichever requirement prevails?

Yes No

D.2 If the answer to D.1. is YES, would the project propose to actively manage the demand of parking by independently pricing the supply to all users (e.g. parking cash-out), or for residential properties, unbundle the supply from the lease or sale of residential units?

Yes No N/A

If the answer to **D.2. is NO** the project may conflict with parking management policies. Further analysis is needed to demonstrate how the supply of parking above city requirements will not result in additional (induced) drive-alone trips as compared to an alternative that provided no more parking than the baseline required by the LAMC or Specific Plan. If there is potential for the supply of parking to result in induced demand for drive-alone trips, the project should further explore transportation demand management (TDM) measures to further off-set the induced demands of driving and vehicle miles travelled (VMT) that may result from higher amounts of on-site parking. The TDM measures should specifically focus on strategies that encourage dynamic and context-sensitive pricing solutions and ensure the parking is efficiently allocated, such as providing real time information. Research has demonstrated that charging a user cost for parking or providing a ‘cash-out’ option in return for not using it is the most effective strategy to reduce the instances of drive-alone trips and increase non-auto mode share to further reduce VMT. To ensure the parking is efficiently managed and reduce the need to build parking for future uses, further strategies should include sharing parking with other properties and/or the general public.

D.3. Would the project provide the minimum on and off-site bicycle parking spaces as required by Section 12.21 A.16 of the LAMC?

N/A, this is a transportation project. Yes No

⁴ The baseline parking is defined here as the default parking requirements in section 12.21 A.4 of the Los Angeles Municipal Code or any applicable Specific Plan, whichever prevails, for each applicable use not taking into consideration other parking incentives to reduce the amount of required parking.

D.4. Does the Project include more than 25,000 square feet of gross floor area construction of new non-residential gross floor?

Yes No

D.5 If the answer to D.4. is YES, does the project comply with the City’s TDM Ordinance in Section 12.26 J of the LAMC?

Yes No N/A

If the answer to **D.3. or D.5. is NO** the project conflicts with LAMC code requirements of bicycle parking and TDM measures. If the project includes uses that require bicycle parking (Section 12.21 A.16) or TDM (Section 12.26 J), and the project does not comply with those Sections of the LAMC, further analysis is required to ensure that the project supports the intent of the two LAMC sections. To meet the intent of bicycle parking requirements, the analysis should identify how the project commits to providing safe access to those traveling by bicycle and accommodates storing their bicycle in locations that demonstrates priority over vehicle access.

Similarly, to meet the intent of the TDM requirements of Section 12.26 J of the LAMC, the analysis should identify how the project commits to providing effective strategies in either physical facilities or programs that encourage non-drive alone trips to and from the project site and changes in work schedule that move trips out of the peak period or eliminate them altogether (as in the case in telecommuting or compressed work weeks).

E. Consistency with Regional Plans

This section addresses potential inconsistencies with greenhouse gas (GHG) reduction targets forecasted in the Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP) / Sustainable Communities Strategy (SCS).

E.1 Does the Project or Plan apply one the City’s efficiency-based impact thresholds (i.e. VMT per capita, VMT per employee, or VMT per service population) as discussed in Section 2.2.3 of the TAG?

Yes No

E.2 If the Answer to E.1 is YES, does the Project or Plan result in a significant VMT impact?

Yes No N/A

E.3 If the Answer to E.1 is NO, does the Project result in a net increase in VMT?

Yes No N/A

If the Answer to E.2 or E.3 is NO, then the Project or Plan is shown to align with the long-term VMT and GHG reduction goals of SCAG’s RTP/SCS.

E.4 If the Answer to E.2 or E.3 is YES, then further evaluation would be necessary to determine whether such a project or land use plan would be shown to be consistent with VMT and GHG reduction goals of the SCAG RTP/SCS. For the purpose of making a finding that a project is consistent with the GHG reduction targets forecasted in the SCAG RTP/SCS, the project analyst should consult Section 2.2.4 of the Transportation Assessment Guidelines (TAG). Section 2.2.4 provides the methodology for evaluating a land use project's cumulative impacts to VMT, and the appropriate reliance on SCAG’s most recently adopted RTP/SCS in reaching that conclusion.

The analysis methods therein can further support findings that the project is consistent with the general use designation, density, building intensity, and applicable policies specified for the project area in either a sustainable communities strategy or an alternative planning strategy for which the State Air Resources Board, pursuant to Section 65080(b)(2)(H) of the Government Code, has accepted a metropolitan planning organization's determination that the sustainable communities strategy or the alternative planning strategy would, if implemented, achieve the greenhouse gas emission reduction targets.

References

BOE [Street Standard Dimensions S-470-1](http://eng2.lacity.org/techdocs/stdplans/s-400/S-470-1_20151021_150849.pdf) http://eng2.lacity.org/techdocs/stdplans/s-400/S-470-1_20151021_150849.pdf

LADCP [Citywide Design Guidelines](https://planning.lacity.org/odocument/f6608be7-d5fe-4187-bea6-20618eec5049/Citywide_Design_Guidelines.pdf). https://planning.lacity.org/odocument/f6608be7-d5fe-4187-bea6-20618eec5049/Citywide_Design_Guidelines.pdf

LADOT Transportation Assessment Support Map <https://arcg.is/fubbD>

Mobility Plan 2035 https://planning.lacity.org/odocument/523f2a95-9d72-41d7-aba5-1972f84c1d36/Mobility_Plan_2035.pdf

SCAG. Connect SoCal, 2020-2045 RTP/SCS, <https://www.connectsocial.org/Pages/default.aspx>

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Alameda St & College St N
City: Los Angeles
Control: Signalized

Project ID: 20-05059-001
Date: 2/19/2020

Total

NS/EW Streets:	N Alameda St				N Alameda St				College St N				College St N				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	1	2	0	0	1	2	0	0	1	1	1	0	1	1	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	31	62	0	0	3	256	20	0	14	5	29	0	13	55	5	0	493
7:15 AM	32	69	1	0	2	296	24	0	12	6	34	0	11	49	1	0	537
7:30 AM	36	75	1	0	2	365	29	0	22	11	26	0	13	67	2	0	649
7:45 AM	34	58	2	0	2	384	23	0	17	8	45	0	11	36	1	0	621
8:00 AM	32	72	1	0	1	338	44	0	28	9	42	0	13	43	3	0	626
8:15 AM	29	74	2	0	4	326	56	0	29	7	37	0	19	52	5	0	640
8:30 AM	38	87	5	0	4	347	41	0	23	14	38	0	19	62	5	0	683
8:45 AM	29	82	8	1	1	349	35	0	27	13	29	0	12	50	2	0	638
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	261	579	20	1	19	2661	272	0	172	73	280	0	111	414	24	0	4887
APPROACH %'s :	30.31%	67.25%	2.32%	0.12%	0.64%	90.14%	9.21%	0.00%	32.76%	13.90%	53.33%	0.00%	20.22%	75.41%	4.37%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	128	315	16	1	10	1360	176	0	107	43	146	0	63	207	15	0	2587
PEAK HR FACTOR :	0.842	0.905	0.500	0.250	0.625	0.974	0.786	0.000	0.922	0.768	0.869	0.000	0.829	0.835	0.750	0.000	0.947
	0.885				0.986				0.937				0.828				
PM	1	2	0	0	1	2	0	0	1	1	1	0	1	1	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	92	193	13	0	3	67	10	1	25	16	39	0	8	13	5	0	485
4:15 PM	73	237	2	0	4	76	7	0	15	23	26	0	6	14	4	0	487
4:30 PM	83	310	8	0	2	83	10	0	30	23	31	0	4	17	6	0	607
4:45 PM	86	211	6	0	2	62	19	0	23	20	24	1	6	15	9	0	484
5:00 PM	78	205	8	1	2	69	15	0	19	17	32	0	6	15	2	0	469
5:15 PM	78	288	3	0	2	75	14	0	25	14	26	0	7	18	9	0	559
5:30 PM	99	269	5	0	3	81	14	0	22	9	20	0	6	19	7	0	554
5:45 PM	99	215	5	1	0	60	18	0	16	13	23	0	3	10	2	0	465
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	688	1928	50	2	18	573	107	1	175	135	221	1	46	121	44	0	4110
APPROACH %'s :	25.79%	72.26%	1.87%	0.07%	2.58%	81.97%	15.31%	0.14%	32.89%	25.38%	41.54%	0.19%	21.80%	57.35%	20.85%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	325	1014	25	1	8	289	58	0	97	74	113	1	23	65	26	0	2119
PEAK HR FACTOR :	0.945	0.818	0.781	0.250	1.000	0.870	0.763	0.000	0.808	0.804	0.883	0.250	0.821	0.903	0.722	0.000	0.873
	0.851				0.934				0.848				0.838				

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Alameda St & College St N
City: Los Angeles
Control: Signalized

Project ID: 20-05059-001
Date: 2/19/2020

Cars

NS/EW Streets:	N Alameda St				N Alameda St				College St N				College St N				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
7:00 AM	26	55	0	0	3	245	20	0	14	5	27	0	11	54	5	0	465
7:15 AM	31	66	0	0	2	285	24	0	12	6	33	0	10	48	1	0	518
7:30 AM	32	65	0	0	2	357	25	0	21	11	22	0	9	67	1	0	612
7:45 AM	32	51	1	0	2	377	23	0	17	8	42	0	9	36	1	0	599
8:00 AM	32	65	1	0	1	330	44	0	28	9	38	0	11	43	2	0	604
8:15 AM	27	68	0	0	4	320	55	0	28	7	35	0	18	51	5	0	618
8:30 AM	36	73	0	0	2	341	41	0	22	13	35	0	17	62	5	0	647
8:45 AM	27	64	1	1	1	338	35	0	24	12	26	0	9	50	2	0	590
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	243	507	3	1	17	2593	267	0	166	71	258	0	94	411	22	0	4653
	32.23%	67.24%	0.40%	0.13%	0.59%	90.13%	9.28%	0.00%	33.54%	14.34%	52.12%	0.00%	17.84%	77.99%	4.17%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	122	270	2	1	8	1329	175	0	102	41	134	0	55	206	14	0	2459
PEAK HR FACTOR :	0.85	0.925	0.500	0.250	0.500	0.974	0.795	0.000	0.911	0.788	0.882	0.000	0.764	0.831	0.700	0.000	0.950
	0.906				0.984				0.923				0.818				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
4:00 PM	90	176	4	0	3	63	10	1	24	14	37	0	7	13	3	0	445
4:15 PM	72	232	1	0	1	75	7	0	15	23	24	0	4	14	4	0	472
4:30 PM	80	297	2	0	2	79	10	0	29	23	30	0	3	16	6	0	577
4:45 PM	83	193	0	0	2	60	18	0	22	20	23	1	4	15	6	0	447
5:00 PM	77	196	3	1	1	68	15	0	19	15	29	0	4	15	2	0	445
5:15 PM	76	282	2	0	1	73	14	0	25	14	24	0	5	18	8	0	542
5:30 PM	98	256	5	0	2	80	14	0	21	9	19	0	6	18	7	0	535
5:45 PM	99	206	2	1	0	57	18	0	16	13	21	0	1	10	2	0	446
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	675	1838	19	2	12	555	106	1	171	131	207	1	34	119	38	0	3909
	26.64%	72.53%	0.75%	0.08%	1.78%	82.34%	15.73%	0.15%	33.53%	25.69%	40.59%	0.20%	17.80%	62.30%	19.90%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	316	968	7	1	6	280	57	0	95	72	106	1	16	64	22	0	2011
PEAK HR FACTOR :	0.95	0.815	0.852	0.250	0.750	0.886	0.792	0.000	0.819	0.783	0.883	0.250	0.800	0.889	0.688	0.000	0.871
	0.852				0.942				0.835				0.823				

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Alameda St & College St N
City: Los Angeles
Control: Signalized

Project ID: 20-05059-001
Date: 2/19/2020

HT

NS/EW Streets:	N Alameda St				N Alameda St				College St N				College St N				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	5	7	0	0	0	11	0	0	0	0	2	0	2	1	0	0	28
	7:00 AM																
	1	3	1	0	0	11	0	0	0	0	1	0	1	1	0	0	19
	7:15 AM																
	4	10	1	0	0	8	4	0	1	0	4	0	4	0	1	0	37
	7:30 AM																
	2	7	1	0	0	7	0	0	0	0	3	0	2	0	0	0	22
7:45 AM																	
0	7	0	0	0	8	0	0	0	0	4	0	2	0	1	0	22	
8:00 AM																	
2	6	2	0	0	6	1	0	1	0	2	0	1	1	0	0	22	
8:15 AM																	
2	14	5	0	2	6	0	0	1	1	3	0	2	0	0	0	36	
8:30 AM																	
2	18	7	0	0	11	0	0	3	1	3	0	3	0	0	0	48	
8:45 AM																	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	18	72	17	0	2	68	5	0	6	2	22	0	17	68	3	2	234
	16.82%	67.29%	15.89%	0.00%	2.67%	90.67%	6.67%	0.00%	20.00%	6.67%	73.33%	0.00%	77.27%	13.64%	9.09%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	6	45	14	0	2	31	1	0	5	2	12	0	8	1	1	0	128
PEAK HR FACTOR :	0.750	0.625	0.500	0.000	0.250	0.705	0.250	0.000	0.417	0.500	0.750	0.000	0.667	0.250	0.250	0.000	0.667
	0.602				0.773				0.679				0.833				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	1	1	0	1	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	2	17	9	0	0	4	0	0	1	2	2	0	1	0	2	0	40
	4:00 PM																
	1	5	1	0	3	1	0	0	0	0	2	0	2	0	0	0	15
	4:15 PM																
	3	13	6	0	0	4	0	0	1	0	1	0	1	1	0	0	30
	4:30 PM																
	3	18	6	0	0	2	1	0	1	0	1	0	2	0	3	0	37
4:45 PM																	
1	9	5	0	1	1	0	0	0	2	3	0	2	0	0	0	24	
5:00 PM																	
2	6	1	0	1	2	0	0	0	0	2	0	2	0	1	0	17	
5:15 PM																	
1	13	0	0	1	1	0	0	1	0	1	0	0	1	0	0	19	
5:30 PM																	
0	9	3	0	0	3	0	0	0	0	2	0	2	0	0	0	19	
5:45 PM																	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	13	90	31	0	6	18	1	0	4	4	14	0	12	18	6	0	201
	9.70%	67.16%	23.13%	0.00%	24.00%	72.00%	4.00%	0.00%	18.18%	18.18%	63.64%	0.00%	60.00%	10.00%	30.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	9	46	18	0	2	9	1	0	2	2	7	0	7	1	4	0	108
PEAK HR FACTOR :	0.75	0.639	0.750	0.000	0.500	0.563	0.250	0.000	0.500	0.250	0.583	0.000	0.875	0.250	0.333	0.000	0.730
	0.676				0.750				0.550				0.600				

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Alameda St & College St N
City: Los Angeles
Control: Signalized

Project ID: 20-05059-001
Date: 2/19/2020

Bikes

NS/EW Streets:	N Alameda St				N Alameda St				College St N				College St N				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
7:00 AM	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	1	1	0	0	0	1	0	0	0	1	0	0	4
7:45 AM	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	3	1	0	0	1	0	0	1	0	0	0	6
8:30 AM	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4
8:45 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	3	0	0	1	12	4	0	1	2	0	0	1	1	0	0	25
	0.00%	100.00%	0.00%	0.00%	5.88%	70.59%	23.53%	0.00%	33.33%	66.67%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	0	1	0	0	0	9	2	0	0	1	0	0	1	0	0	0	14
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.750	0.500	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.583
			0.250				0.688				0.250				0.250		
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
4:00 PM	0	2	0	0	0	0	1	0	1	0	1	0	0	0	0	0	5
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:30 PM	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3
4:45 PM	0	1	0	0	0	2	0	0	0	0	1	0	1	0	0	0	5
5:00 PM	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3
5:15 PM	2	0	0	0	0	2	0	0	0	2	0	0	0	1	0	0	7
5:30 PM	1	3	0	0	0	3	0	0	0	0	0	0	0	1	0	0	8
5:45 PM	0	1	0	0	0	0	1	0	0	0	1	0	0	0	1	0	4
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	3	11	0	0	0	7	3	1	1	3	3	0	1	2	1	0	36
	21.43%	78.57%	0.00%	0.00%	0.00%	63.64%	27.27%	9.09%	14.29%	42.86%	42.86%	0.00%	25.00%	50.00%	25.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	2	5	0	0	0	4	1	1	0	2	1	0	1	1	0	0	18
PEAK HR FACTOR :	0.25	0.625	0.000	0.000	0.000	0.500	0.250	0.250	0.000	0.250	0.250	0.000	0.250	0.250	0.000	0.000	0.643
			0.875				0.750				0.375				0.500		

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Alameda St & College St N
City: Los Angeles

Project ID: 20-05059-001
Date: 2/19/2020

Pedestrians (Crosswalks)

NS/EW Streets:	N Alameda St		N Alameda St		College St N		College St N		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	4	1	3	1	3	0	2	2	16
7:15 AM	10	2	7	4	0	0	6	0	29
7:30 AM	3	2	5	0	2	2	4	3	21
7:45 AM	11	1	4	2	0	0	5	3	26
8:00 AM	2	3	9	0	1	2	4	8	29
8:15 AM	3	3	11	4	4	3	3	4	35
8:30 AM	8	4	9	2	1	4	6	9	43
8:45 AM	7	4	1	5	0	6	7	2	32
TOTAL VOLUMES :	EB 48	WB 20	EB 49	WB 18	NB 11	SB 17	NB 37	SB 31	TOTAL 231
APPROACH %'s :	70.59%	29.41%	73.13%	26.87%	39.29%	60.71%	54.41%	45.59%	
PEAK HR :	08:00 AM - 09:00 AM								TOTAL
PEAK HR VOL :	20	14	30	11	6	15	20	23	139
PEAK HR FACTOR :	0.625	0.875	0.682	0.550	0.375	0.625	0.714	0.639	0.808
	0.708		0.683		0.750		0.717		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	8	13	5	11	1	0	8	7	53
4:15 PM	0	5	4	8	0	0	3	9	29
4:30 PM	4	4	5	13	2	0	6	8	42
4:45 PM	5	6	1	8	2	0	5	8	35
5:00 PM	3	3	4	5	3	2	5	9	34
5:15 PM	8	3	8	4	1	4	7	5	40
5:30 PM	6	4	5	1	9	0	7	6	38
5:45 PM	8	0	3	0	1	0	6	2	20
TOTAL VOLUMES :	EB 42	WB 38	EB 35	WB 50	NB 19	SB 6	NB 47	SB 54	TOTAL 291
APPROACH %'s :	52.50%	47.50%	41.18%	58.82%	76.00%	24.00%	46.53%	53.47%	
PEAK HR :	04:30 PM - 05:30 PM								TOTAL
PEAK HR VOL :	20	16	18	30	8	6	23	30	151
PEAK HR FACTOR :	0.625	0.667	0.563	0.577	0.667	0.375	0.821	0.833	0.899
	0.818		0.667		0.700		0.946		

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Broadway & College St
City: Los Angeles
Control: Signalized

Project ID: 20-05059-004
Date: 2/19/2020

Total

NS/EW Streets:	N Broadway				N Broadway				College St				College St				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	1	2	0	0	1	2	1	0	0	2	0	0	0	1	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	9	53	3	0	18	307	64	0	8	33	6	1	11	86	14	0	613
7:15 AM	4	71	1	0	19	337	67	0	5	24	11	0	13	76	19	2	649
7:30 AM	1	62	4	0	24	320	63	0	9	44	6	0	19	101	25	1	679
7:45 AM	1	84	3	0	35	278	62	1	10	45	7	1	10	56	20	0	613
8:00 AM	5	60	3	0	21	266	52	0	5	54	15	0	16	77	25	1	600
8:15 AM	6	55	3	0	16	327	49	1	10	49	5	0	17	95	17	1	651
8:30 AM	6	40	7	0	31	335	56	0	7	64	5	0	11	108	14	0	684
8:45 AM	3	64	3	0	13	269	68	0	7	54	10	0	12	90	14	0	607
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	35	489	27	0	177	2439	481	2	61	367	65	2	109	689	148	5	5096
	6.35%	88.75%	4.90%	0.00%	5.71%	78.70%	15.52%	0.06%	12.32%	74.14%	13.13%	0.40%	11.46%	72.45%	15.56%	0.53%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	15	270	11	0	96	1242	256	1	32	146	30	2	53	319	78	3	2554
PEAK HR FACTOR :	0.417	0.804	0.688	0.000	0.686	0.921	0.955	0.250	0.800	0.811	0.682	0.500	0.697	0.790	0.780	0.375	0.940
			0.841			0.943				0.833				0.776			
PM	1	2	0	0	1	2	1	0	0	2	0	0	0	1	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	13	262	12	0	17	110	20	1	20	52	15	0	6	51	59	0	638
4:15 PM	9	345	6	0	11	114	17	0	16	57	13	0	6	50	45	0	689
4:30 PM	12	377	7	0	12	133	11	0	12	75	15	0	3	49	45	1	752
4:45 PM	10	408	7	0	9	130	14	0	17	49	16	0	1	63	63	0	787
5:00 PM	13	351	12	0	12	137	27	0	15	37	12	0	11	40	56	0	723
5:15 PM	13	369	11	0	12	115	26	0	15	29	12	0	9	68	55	0	734
5:30 PM	16	362	6	0	14	127	16	0	20	26	18	0	13	44	69	0	731
5:45 PM	8	374	11	0	12	126	18	1	22	21	11	1	1	63	73	0	742
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	94	2848	72	0	99	992	149	2	137	346	112	1	50	428	465	1	5796
	3.12%	94.49%	2.39%	0.00%	7.97%	79.87%	12.00%	0.16%	22.99%	58.05%	18.79%	0.17%	5.30%	45.34%	49.26%	0.11%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	48	1505	37	0	45	515	78	0	59	190	55	0	24	220	219	1	2996
PEAK HR FACTOR :	0.923	0.922	0.771	0.000	0.938	0.940	0.722	0.000	0.868	0.633	0.859	0.000	0.545	0.809	0.869	0.250	0.952
			0.935			0.906				0.745				0.879			

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Broadway & College St
City: Los Angeles
Control: Signalized

Project ID: 20-05059-004
Date: 2/19/2020

Cars

NS/EW Streets:	N Broadway				N Broadway				College St				College St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	1 SR	0 SU	0 EL	2 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
7:00 AM	8	46	3	0	16	293	63	0	6	33	6	1	11	83	12	0	581
7:15 AM	4	61	1	0	18	328	64	0	4	24	11	0	13	73	18	2	621
7:30 AM	1	57	4	0	21	308	62	0	9	42	6	0	19	95	23	1	648
7:45 AM	1	75	3	0	32	270	56	1	7	45	6	1	10	55	20	0	582
8:00 AM	5	53	3	0	18	247	52	0	4	52	15	0	16	75	25	1	566
8:15 AM	6	50	2	0	15	317	48	1	10	49	5	0	17	92	17	1	630
8:30 AM	6	36	6	0	28	330	55	0	5	63	5	0	11	106	14	0	665
8:45 AM	2	57	3	0	10	260	66	0	7	51	10	0	12	88	14	0	580
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	33	435	25	0	158	2353	466	2	52	359	64	2	109	667	143	5	4873
	6.69%	88.24%	5.07%	0.00%	5.30%	78.99%	15.64%	0.07%	10.90%	75.26%	13.42%	0.42%	11.80%	72.19%	15.48%	0.54%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	14	239	11	0	87	1199	245	1	26	144	29	2	53	306	73	3	2432
PEAK HR FACTOR :	0.44	0.797	0.688	0.000	0.680	0.914	0.957	0.250	0.722	0.800	0.659	0.500	0.697	0.805	0.793	0.375	0.938
	0.835				0.934				0.852				0.788				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	1 SR	0 SU	0 EL	2 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
4:00 PM	12	256	11	0	14	102	18	1	19	50	15	0	6	50	58	0	612
4:15 PM	9	336	6	0	9	100	17	0	15	57	13	0	6	49	45	0	662
4:30 PM	12	367	7	0	10	124	10	0	12	73	15	0	3	47	44	1	725
4:45 PM	10	398	7	0	8	123	14	0	16	49	16	0	1	60	61	0	763
5:00 PM	13	341	11	0	9	133	24	0	15	35	12	0	11	39	56	0	699
5:15 PM	13	364	11	0	10	110	26	0	15	29	12	0	9	66	55	0	720
5:30 PM	16	355	6	0	12	124	15	0	20	26	18	0	13	42	69	0	716
5:45 PM	8	367	11	0	10	123	18	1	22	21	11	1	1	63	73	0	730
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	93	2784	70	0	82	939	142	2	134	340	112	1	50	416	461	1	5627
	3.16%	94.47%	2.38%	0.00%	7.04%	80.60%	12.19%	0.17%	22.83%	57.92%	19.08%	0.17%	5.39%	44.83%	49.68%	0.11%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	48	1470	36	0	37	490	74	0	58	186	55	0	24	212	216	1	2907
PEAK HR FACTOR :	0.92	0.923	0.818	0.000	0.925	0.921	0.712	0.000	0.906	0.637	0.859	0.000	0.545	0.803	0.885	0.250	0.952
	0.936				0.905				0.748				0.871				

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City: Los Angeles
Control: Signalized

Project ID: 20-05059-004
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HT

NS/EW Streets:	N Broadway				N Broadway				College St				College St						
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	1	2	0	0	1	2	1	0	0	2	0	0	0	1	0	0			
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU			
	7:00 AM	1	7	0	0	2	14	1	0	2	0	0	0	0	3	2		0	32
	7:15 AM	0	10	0	0	1	9	3	0	1	0	0	0	0	3	1		0	28
	7:30 AM	0	5	0	0	3	12	1	0	0	2	0	0	0	6	2		0	31
	7:45 AM	0	9	0	0	3	8	6	0	3	0	1	0	0	1	0		0	31
	8:00 AM	0	7	0	0	3	19	0	0	1	2	0	0	0	2	0		0	34
	8:15 AM	0	5	1	0	1	10	1	0	0	0	0	0	0	3	0		0	21
	8:30 AM	0	4	1	0	3	5	1	0	2	1	0	0	0	2	0		0	19
8:45 AM	1	7	0	0	3	9	2	0	0	3	0	0	0	2	0	0	27		
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL		
APPROACH %'s :	2	54	2	0	19	86	15	0	9	8	1	0	0	22	5	0	223		
	3.45%	93.10%	3.45%	0.00%	15.83%	71.67%	12.50%	0.00%	50.00%	44.44%	5.56%	0.00%	0.00%	81.48%	18.52%	0.00%			
PEAK HR :	07:00 AM - 08:00 AM																TOTAL		
PEAK HR VOL :	1	31	0	0	9	43	11	0	6	2	1	0	0	13	5	0	122		
PEAK HR FACTOR :	0.250	0.775	0.000	0.000	0.750	0.768	0.458	0.000	0.500	0.250	0.250	0.000	0.000	0.542	0.625	0.000	0.953		
	0.800				0.926				0.563				0.563						
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	1	2	0	0	1	2	1	0	0	2	0	0	0	1	0	0			
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU			
	4:00 PM	1	6	1	0	3	8	2	0	1	2	0	0	0	1	1		0	26
	4:15 PM	0	9	0	0	2	14	0	0	1	0	0	0	0	1	0		0	27
	4:30 PM	0	10	0	0	2	9	1	0	0	2	0	0	0	2	1		0	27
	4:45 PM	0	10	0	0	1	7	0	0	1	0	0	0	0	3	2		0	24
	5:00 PM	0	10	1	0	3	4	3	0	0	2	0	0	0	1	0		0	24
	5:15 PM	0	5	0	0	2	5	0	0	0	0	0	0	0	2	0		0	14
	5:30 PM	0	7	0	0	2	3	1	0	0	0	0	0	0	2	0		0	15
5:45 PM	0	7	0	0	2	3	0	0	0	0	0	0	0	0	0	0	12		
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL		
APPROACH %'s :	1	64	2	0	17	53	7	0	3	6	0	0	0	12	4	0	169		
	1.49%	95.52%	2.99%	0.00%	22.08%	68.83%	9.09%	0.00%	33.33%	66.67%	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%			
PEAK HR :	04:30 PM - 05:30 PM																TOTAL		
PEAK HR VOL :	0	35	1	0	8	25	4	0	1	4	0	0	0	8	3	0	89		
PEAK HR FACTOR :	0.00	0.875	0.250	0.000	0.667	0.694	0.333	0.000	0.250	0.500	0.000	0.000	0.000	0.667	0.375	0.000	0.824		
	0.818				0.771				0.625				0.550						

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Broadway & College St
City: Los Angeles

Project ID: 20-05059-004
Date: 2/19/2020

Pedestrians (Crosswalks)

NS/EW Streets:	N Broadway		N Broadway		College St		College St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	7	4	1	6	2	4	5	2	31
7:15 AM	10	3	2	7	4	10	3	4	43
7:30 AM	10	6	8	17	7	16	5	12	81
7:45 AM	16	5	2	10	3	8	7	3	54
8:00 AM	7	5	5	9	5	7	0	6	44
8:15 AM	10	10	5	12	4	14	3	7	65
8:30 AM	13	5	5	9	4	7	4	7	54
8:45 AM	9	7	8	6	9	10	5	8	62
TOTAL VOLUMES :	EB 82	WB 45	EB 36	WB 76	NB 38	SB 76	NB 32	SB 49	TOTAL 434
APPROACH %'s :	64.57%	35.43%	32.14%	67.86%	33.33%	66.67%	39.51%	60.49%	
PEAK HR :	07:00 AM - 08:00 AM								TOTAL
PEAK HR VOL :	43	18	13	40	16	38	20	21	209
PEAK HR FACTOR :	0.672	0.750	0.406	0.588	0.571	0.594	0.714	0.438	0.645
	0.726		0.530		0.587		0.603		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	13	15	7	9	8	9	13	14	88
4:15 PM	20	17	14	28	16	21	17	14	147
4:30 PM	17	8	15	15	15	18	14	22	124
4:45 PM	16	2	17	10	10	6	14	15	90
5:00 PM	12	8	8	16	12	16	11	11	94
5:15 PM	23	11	12	21	7	21	8	10	113
5:30 PM	14	14	15	19	6	9	7	9	93
5:45 PM	9	16	8	14	4	3	15	7	76
TOTAL VOLUMES :	EB 124	WB 91	EB 96	WB 132	NB 78	SB 103	NB 99	SB 102	TOTAL 825
APPROACH %'s :	57.67%	42.33%	42.11%	57.89%	43.09%	56.91%	49.25%	50.75%	
PEAK HR :	04:30 PM - 05:30 PM								TOTAL
PEAK HR VOL :	68	29	52	62	44	61	47	58	421
PEAK HR FACTOR :	0.739	0.659	0.765	0.738	0.733	0.726	0.839	0.659	0.849
	0.713		0.864		0.795		0.729		

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Main St & Ann St
 City: Los Angeles
 Control: Signalized

Project ID: 20-05059-006
 Date: 2/19/2020

Total

NS/EW Streets:	N Main St				N Main St				Ann St				Ann St				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0	0	406
7:15 AM	2	46	1	0	0	340	6	0	2	1	5	0	3	0	0	0	413
7:30 AM	3	59	4	0	1	326	1	0	4	0	4	0	4	2	5	0	470
7:45 AM	6	77	1	0	1	357	3	0	4	3	8	0	7	0	3	0	383
8:00 AM	3	64	2	0	0	296	1	0	2	2	5	0	3	0	5	0	458
8:15 AM	6	69	0	0	1	365	4	0	3	3	4	0	3	0	0	0	451
8:30 AM	5	59	1	0	2	366	3	0	5	2	6	0	2	0	0	0	471
8:45 AM	6	72	1	0	2	371	5	0	1	0	8	0	2	2	1	0	460
	7	80	3	0	1	341	10	0	4	1	11	0	1	0	1	0	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	38	526	13	0	8	2762	33	0	25	12	51	0	25	4	15	0	3512
	6.59%	91.16%	2.25%	0.00%	0.29%	98.54%	1.18%	0.00%	28.41%	13.64%	57.95%	0.00%	56.82%	9.09%	34.09%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :	24	280	5	0	6	1443	22	0	13	6	29	0	8	2	2	0	1840
PEAK HR FACTOR :	0.857	0.875	0.417	0.000	0.750	0.972	0.550	0.000	0.650	0.500	0.659	0.000	0.667	0.250	0.500	0.000	0.977
	0.858				0.973				0.750				0.600				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
4:00 PM	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0	0	317
4:15 PM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:30 PM	4	150	2	0	2	134	2	0	5	2	13	0	2	0	1	0	280
4:45 PM	7	166	0	0	1	97	0	0	1	0	8	0	0	0	0	0	369
5:00 PM	5	201	0	0	0	142	1	0	3	1	8	0	4	0	4	0	357
5:15 PM	3	240	2	0	1	90	1	0	6	0	8	0	4	0	2	0	345
5:30 PM	4	224	4	0	1	90	2	0	8	1	7	0	1	0	3	0	370
5:45 PM	5	231	3	0	1	113	0	0	6	1	8	0	1	1	0	0	370
	4	226	2	0	1	113	0	1	8	0	4	0	2	0	0	0	361
	4	240	1	0	1	81	0	0	3	0	3	0	0	0	3	0	336
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	36	1678	14	0	8	860	6	1	40	5	59	0	14	1	13	0	2735
	2.08%	97.11%	0.81%	0.00%	0.91%	98.29%	0.69%	0.11%	38.46%	4.81%	56.73%	0.00%	50.00%	3.57%	46.43%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	17	896	9	0	3	435	4	0	23	3	31	0	10	1	9	0	1441
PEAK HR FACTOR :	0.850	0.933	0.563	0.000	0.750	0.766	0.500	0.000	0.719	0.750	0.969	0.000	0.625	0.250	0.563	0.000	0.974
	0.941				0.773				0.891				0.625				

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Main St & Ann St
City: Los Angeles
Control: Signalized

Project ID: 20-05059-006
Date: 2/19/2020

Cars

NS/EW Streets:	N Main St				N Main St				Ann St				Ann St						
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0	0			
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU			
	7:00 AM	2	41	1	0	0	327	6	0	1	1	4	0	3	0	0		0	386
	7:15 AM	2	49	4	0	1	314	1	0	4	0	4	0	4	1	4		0	388
	7:30 AM	6	68	1	0	1	343	3	0	3	3	7	0	7	0	3		0	445
	7:45 AM	3	59	1	0	0	290	1	0	2	2	4	0	3	0	5		0	370
	8:00 AM	5	64	0	0	1	357	4	0	2	3	4	0	3	0	0		0	443
	8:15 AM	2	52	1	0	2	356	3	0	5	2	4	0	2	0	0		0	429
	8:30 AM	5	62	1	0	2	360	5	0	1	0	7	0	2	2	1		0	448
8:45 AM	3	70	2	0	1	325	9	0	4	1	10	0	1	0	1	0	427		
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL		
APPROACH %'s :	28	465	11	0	8	2672	32	0	22	12	44	0	25	3	14	0	3336		
	5.56%	92.26%	2.18%	0.00%	0.29%	98.53%	1.18%	0.00%	28.21%	15.38%	56.41%	0.00%	59.52%	7.14%	33.33%	0.00%			
PEAK HR :	08:00 AM - 09:00 AM																TOTAL		
PEAK HR VOL :	15	248	4	0	6	1398	21	0	12	6	25	0	8	2	2	0	1747		
PEAK HR FACTOR :	0.75	0.886	0.500	0.000	0.750	0.971	0.583	0.000	0.600	0.500	0.625	0.000	0.667	0.250	0.500	0.000	0.975		
	0.890				0.971				0.717				0.600						
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0	0			
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU			
	4:00 PM	3	146	1	0	2	128	2	0	4	2	8	0	2	0	1		0	299
	4:15 PM	2	165	0	0	1	94	0	0	1	0	6	0	0	0	0		0	269
	4:30 PM	1	192	0	0	0	137	1	0	2	1	7	0	4	0	4		0	349
	4:45 PM	2	234	2	0	1	87	1	0	6	0	7	0	4	0	2		0	346
	5:00 PM	1	210	4	0	1	86	2	0	6	0	6	0	1	0	3		0	320
	5:15 PM	3	220	3	0	1	107	0	0	5	1	6	0	1	1	0		0	348
	5:30 PM	0	215	2	0	1	108	0	1	7	0	3	0	2	0	0		0	339
5:45 PM	1	225	1	0	1	76	0	0	3	0	1	0	0	0	3	0	311		
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL		
APPROACH %'s :	13	1607	13	0	8	823	6	1	34	4	44	0	14	1	13	0	2581		
	0.80%	98.41%	0.80%	0.00%	0.95%	98.21%	0.72%	0.12%	41.46%	4.88%	53.66%	0.00%	50.00%	3.57%	46.43%	0.00%			
PEAK HR :	04:30 PM - 05:30 PM																TOTAL		
PEAK HR VOL :	7	856	9	0	3	417	4	0	19	2	26	0	10	1	9	0	1363		
PEAK HR FACTOR :	0.58	0.915	0.563	0.000	0.750	0.761	0.500	0.000	0.792	0.500	0.929	0.000	0.625	0.250	0.563	0.000	0.976		
	0.916				0.768				0.904				0.625						

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Main St & Ann St
City: Los Angeles
Control: Signalized

Project ID: 20-05059-006
Date: 2/19/2020

HT

NS/EW Streets:	N Main St				N Main St				Ann St				Ann St					
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0	0	TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
	0	5	0	0	0	13	0	0	1	0	1	0	0	0	0	0	20	
	7:00 AM	1	10	0	0	0	12	0	0	0	0	0	0	0	1	1	0	25
	7:15 AM	0	9	0	0	0	14	0	0	1	0	1	0	0	0	0	0	25
	7:30 AM	0	5	1	0	0	6	0	0	0	0	1	0	0	0	0	0	13
	7:45 AM	1	5	0	0	0	8	0	0	1	0	0	0	0	0	0	0	15
	8:00 AM	3	7	0	0	0	10	0	0	0	0	2	0	0	0	0	0	22
	8:15 AM	1	10	0	0	0	11	0	0	0	0	1	0	0	0	0	0	23
8:30 AM	4	10	1	0	0	16	1	0	0	0	1	0	0	0	0	0	33	
8:45 AM																		
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :	10	61	2	0	0	90	1	0	3	0	7	0	0	1	1	0	176	
	13.70%	83.56%	2.74%	0.00%	0.00%	98.90%	1.10%	0.00%	30.00%	0.00%	70.00%	0.00%	0.00%	50.00%	50.00%	0.00%		
PEAK HR :	08:00 AM - 09:00 AM																TOTAL	
PEAK HR VOL :	9	32	1	0	0	45	1	0	1	0	4	0	0	0	0	0	93	
PEAK HR FACTOR :	0.563	0.800	0.250	0.000	0.000	0.703	0.250	0.000	0.250	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.705	
	0.700				0.676				0.625									
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0	0	TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
	1	4	1	0	0	6	0	0	1	0	5	0	0	0	0	0	18	
	4:00 PM	5	1	0	0	0	3	0	0	0	0	2	0	0	0	0	0	11
	4:15 PM	4	9	0	0	0	5	0	0	1	0	1	0	0	0	0	0	20
	4:30 PM	1	6	0	0	0	3	0	0	0	0	1	0	0	0	0	0	11
	4:45 PM	3	14	0	0	0	4	0	0	2	1	1	0	0	0	0	0	25
	5:00 PM	2	11	0	0	0	6	0	0	1	0	2	0	0	0	0	0	22
	5:15 PM	4	11	0	0	0	5	0	0	1	0	1	0	0	0	0	0	22
5:30 PM	3	15	0	0	0	5	0	0	0	0	2	0	0	0	0	0	25	
5:45 PM																		
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :	23	71	1	0	0	37	0	0	6	1	15	0	0	0	0	0	154	
	24.21%	74.74%	1.05%	0.00%	0.00%	100.00%	0.00%	0.00%	27.27%	4.55%	68.18%	0.00%	0.00%	0.00%	0.00%	0.00%		
PEAK HR :	04:30 PM - 05:30 PM																TOTAL	
PEAK HR VOL :	10	40	0	0	0	18	0	0	4	1	5	0	0	0	0	0	78	
PEAK HR FACTOR :	0.63	0.714	0.000	0.000	0.000	0.750	0.000	0.000	0.500	0.250	0.625	0.000	0.000	0.000	0.000	0.000	0.780	
	0.735				0.750				0.625									

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Main St & Ann St
City: Los Angeles
Control: Signalized

Project ID: 20-05059-006
Date: 2/19/2020

Bikes

NS/EW Streets:	N Main St				N Main St				Ann St				Ann St					
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0	0	TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	
	7:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	7:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
	7:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	7:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	8:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	8:15 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	5
	8:30 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	8:45 AM	0	1	0	0	0	5	0	0	0	0	0	0	0	0	0	0	6
	TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	APPROACH %'s :	0	4	0	0	0	16	0	0	0	0	0	0	0	0	0	0	20
		0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
	PEAK HR :	08:00 AM - 09:00 AM																TOTAL
	PEAK HR VOL :	0	3	0	0	0	11	0	0	0	0	0	0	0	0	0	0	14
PEAK HR FACTOR :	0.000	0.375	0.000	0.000	0.000	0.550	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.583	
			0.375			0.550												
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0	0	TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	4	
	4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	4:15 PM	0	6	0	0	0	1	0	0	1	0	0	0	0	0	0	0	8
	4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	4:45 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
	5:00 PM	0	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0	6
	5:15 PM	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
	5:30 PM	0	4	0	0	0	1	0	0	0	0	0	0	1	0	0	0	5
	5:45 PM	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
	TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	APPROACH %'s :	0	21	1	0	0	10	0	0	1	0	0	0	1	0	0	0	34
		0.00%	95.45%	4.55%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	
	PEAK HR :	04:30 PM - 05:30 PM																TOTAL
	PEAK HR VOL :	0	13	0	0	0	5	0	0	1	0	0	0	0	0	0	0	19
PEAK HR FACTOR :	0.00	0.542	0.000	0.000	0.000	0.625	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.594	
			0.542			0.625			0.250									

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Main St & Ann St
City: Los Angeles

Project ID: 20-05059-006
Date: 2/19/2020

Pedestrians (Crosswalks)

NS/EW Streets:	N Main St		N Main St		Ann St		Ann St		TOTAL
	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
AM	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	3	2	1	1	0	1	3	11
7:15 AM	2	1	0	1	3	0	2	0	9
7:30 AM	1	3	0	2	3	7	2	0	18
7:45 AM	0	4	0	2	0	1	3	0	10
8:00 AM	1	3	0	0	0	0	1	1	6
8:15 AM	0	1	0	5	4	1	1	0	12
8:30 AM	1	1	2	5	0	3	0	1	13
8:45 AM	1	3	0	1	4	0	1	1	11
TOTAL VOLUMES :	EB 6	WB 19	EB 4	WB 17	NB 15	SB 12	NB 11	SB 6	TOTAL 90
APPROACH %'s :	24.00%	76.00%	19.05%	80.95%	55.56%	44.44%	64.71%	35.29%	
PEAK HR :	08:00 AM - 09:00 AM								TOTAL
PEAK HR VOL :	3	8	2	11	8	4	3	3	42
PEAK HR FACTOR :	0.750	0.667	0.250	0.550	0.500	0.333	0.750	0.750	0.808
	0.688		0.464		0.600		0.750		

NS/EW Streets:	N Main St		N Main St		Ann St		Ann St		TOTAL
	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
PM	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	1	2	0	1	3	4	3	2	16
4:15 PM	0	2	2	0	2	7	1	2	16
4:30 PM	2	2	1	2	3	2	0	1	13
4:45 PM	7	2	0	0	3	2	3	1	18
5:00 PM	2	1	0	0	1	2	0	1	7
5:15 PM	5	2	1	1	2	2	0	1	14
5:30 PM	1	0	2	0	4	1	1	3	12
5:45 PM	2	0	0	0	2	0	0	2	6
TOTAL VOLUMES :	EB 20	WB 11	EB 6	WB 4	NB 20	SB 20	NB 8	SB 13	TOTAL 102
APPROACH %'s :	64.52%	35.48%	60.00%	40.00%	50.00%	50.00%	38.10%	61.90%	
PEAK HR :	04:30 PM - 05:30 PM								TOTAL
PEAK HR VOL :	16	7	2	3	9	8	3	4	52
PEAK HR FACTOR :	0.571	0.875	0.500	0.375	0.750	1.000	0.250	1.000	0.722
	0.639		0.417		0.850		0.438		

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 1 Hill Street/Alpine Street Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	10	11	107.0%	7.7	A
	Through	250	270	108.0%	6.1	A
	Right Turn	20	19	93.5%	4.4	A
	Subtotal	280	300	107.0%	6.1	A
SB	Left Turn	25	24	95.6%	9.6	A
	Through	700	728	104.0%	9.7	A
	Right Turn	10	10	104.0%	10.6	B
	Subtotal	735	762	103.7%	9.7	A
EB	Left Turn					
	Through	144	146	101.7%	22.5	C
	Right Turn					
	Subtotal	144	146	101.7%	22.5	C
WB	Left Turn	50	48	95.6%	32.1	C
	Through	761	749	98.4%	30.2	C
	Right Turn	40	39	98.0%	26.1	C
	Subtotal	851	836	98.2%	30.1	C
Total		2,010	2,044	101.7%	18.5	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 2

Broadway/Alpine

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	38	37	97.4%	12.2	B
	Through	329	322	97.8%	7.9	A
	Right Turn	41	53	128.3%	6.7	A
	Subtotal	408	412	100.9%	8.1	A
SB	Left Turn	95	93	97.4%	15.6	B
	Through	1,224	1,265	103.3%	14.8	B
	Right Turn	198	198	100.0%	17.8	B
	Subtotal	1,517	1,555	102.5%	15.2	B
EB	Left Turn	19	21	107.9%	48.7	D
	Through	144	143	99.5%	31.7	C
	Right Turn	26	25	94.6%	16.0	B
	Subtotal	189	188	99.7%	31.7	C
WB	Left Turn	172	174	101.2%	37.7	D
	Through	615	601	97.7%	35.5	D
	Right Turn	78	78	99.9%	30.1	C
	Subtotal	865	853	98.6%	35.4	D
Total		2,979	3,008	101.0%	21.1	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 3

Spring/Alpine

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	23	21	90.0%	44.6	D
	Right Turn					
	Subtotal	23	21	90.0%	44.6	D
SB	Left Turn					
	Through	20	16	81.5%	43.1	D
	Right Turn					
	Subtotal	20	16	81.5%	43.1	D
EB	Left Turn	20	22	107.5%	47.9	D
	Through	240	249	103.5%	24.2	C
	Right Turn	15	14	91.3%	29.6	C
	Subtotal	275	284	103.2%	26.2	C
WB	Left Turn	10	12	123.0%	13.3	B
	Through	925	909	98.3%	18.6	B
	Right Turn	80	81	101.0%	11.6	B
	Subtotal	1,015	1,002	98.7%	18.0	B
Total		1,333	1,323	99.2%	20.5	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 4

Alameda/Alpine

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	53	57	107.5%	25.0	C
	Through	295	318	107.7%	5.1	A
	Right Turn	12	13	111.7%	0.9	A
	Subtotal	360	388	107.8%	8.9	A
SB	Left Turn	138	137	99.2%	30.9	C
	Through	922	920	99.8%	32.7	C
	Right Turn	233	223	95.6%	130.3	F
	Subtotal	1,293	1,280	99.0%	46.7	D
EB	Left Turn	59	68	115.1%	30.9	C
	Through	120	118	98.7%	7.7	A
	Right Turn	61	62	102.1%	2.8	A
	Subtotal	240	249	103.6%	13.0	B
WB	Left Turn	48	49	101.3%	46.8	D
	Through	729	724	99.3%	31.2	C
	Right Turn	143	144	100.8%	8.0	A
	Subtotal	920	916	99.6%	28.5	C
Total		2,813	2,832	100.7%	32.1	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 5

Main/Alpine

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	1	1	60.0%	7.3	A
	Through	194	164	84.3%	17.3	B
	Right Turn	41	33	81.0%	10.0	A
	Subtotal	236	197	83.6%	16.0	B
SB	Left Turn	219	224	102.1%	12.4	B
	Through	479	488	101.8%	13.5	B
	Right Turn	529	528	99.9%	13.6	B
	Subtotal	1,227	1,240	101.0%	13.4	B
EB	Left Turn	67	65	97.3%	40.1	D
	Through	198	197	99.4%	22.1	C
	Right Turn	5	6	110.0%	2.4	A
	Subtotal	270	268	99.1%	25.9	C
WB	Left Turn					
	Through	390	387	99.1%	39.1	D
	Right Turn	177	176	99.5%	30.2	C
	Subtotal	567	563	99.2%	36.5	D
Total		2,300	2,267	98.6%	21.0	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 6

Vignes/Bauchet

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	19	18	94.7%	12.9	B
	Through	573	560	97.7%	8.4	A
	Right Turn	164	156	94.9%	5.5	A
	Subtotal	756	734	97.0%	8.0	A
SB	Left Turn	60	58	96.2%	13.8	B
	Through	407	402	98.8%	10.0	B
	Right Turn	12	12	100.0%	4.8	A
	Subtotal	479	472	98.5%	10.4	B
EB	Left Turn	4	4	102.5%	8.2	A
	Through	4	4	95.0%	15.5	B
	Right Turn	7	8	117.1%	5.0	A
	Subtotal	15	16	107.3%	11.0	B
WB	Left Turn	97	98	101.4%	20.2	C
	Through	4	4	105.0%	7.2	A
	Right Turn	23	25	107.0%	4.6	A
	Subtotal	124	127	102.6%	16.8	B
Total		1,374	1,349	98.2%	9.7	A

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 7

Vignes/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	154	174	112.8%	48.9	D
	Through	363	394	108.5%	23.8	C
	Right Turn	57	59	103.3%	5.0	A
	Subtotal	574	627	109.1%	29.0	C
SB	Left Turn	145	133	91.8%	47.2	D
	Through	366	344	94.0%	28.0	C
	Right Turn	29	30	104.1%	17.1	B
	Subtotal	540	507	93.9%	32.2	C
EB	Left Turn	56	56	99.6%	27.1	C
	Through	450	480	106.7%	33.1	C
	Right Turn	214	247	115.6%	24.4	C
	Subtotal	720	783	108.8%	30.0	C
WB	Left Turn	245	250	102.0%	24.9	C
	Through	1,226	1,154	94.1%	39.9	D
	Right Turn	334	311	93.1%	6.7	A
	Subtotal	1,805	1,715	95.0%	31.8	C
Total		3,639	3,632	99.8%	30.9	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 8

Lyon/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	6	7	121.7%	61.7	E
	Through					
	Right Turn	8	8	93.8%	4.5	A
	Subtotal	14	15	105.7%	40.5	D
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	635	654	103.0%	1.8	A
	Right Turn	17	19	113.5%	1.5	A
	Subtotal	652	674	103.3%	1.8	A
WB	Left Turn	6	6	103.3%	61.3	E
	Through	1,795	1,692	94.3%	102.8	F
	Right Turn	31	26	83.9%	72.8	E
	Subtotal	1,832	1,724	94.1%	102.4	F
Total		2,498	2,413	96.6%	72.2	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 9

Mission/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	207	202	97.3%	46.3	D
	Through	487	490	100.5%	22.3	C
	Right Turn	88	84	95.8%	2.7	A
	Subtotal	782	775	99.2%	26.2	C
SB	Left Turn	25	24	95.2%	119.5	F
	Through	993	948	95.5%	128.8	F
	Right Turn	717	695	97.0%	206.4	F
	Subtotal	1,735	1,667	96.1%	162.4	F
EB	Left Turn	269	294	109.1%	51.2	D
	Through	254	251	98.7%	57.0	E
	Right Turn	120	118	98.0%	33.9	C
	Subtotal	643	662	102.9%	50.0	D
WB	Left Turn	297	290	97.7%	159.9	F
	Through	908	867	95.5%	156.9	F
	Right Turn	8	8	93.8%	152.0	F
	Subtotal	1,213	1,165	96.1%	157.6	F
Total		4,373	4,270	97.6%	117.6	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 10

Alameda/Alhambra

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	11	11	100.9%	12.8	B
	Through	345	374	108.4%	7.4	A
	Right Turn					
	Subtotal	356	385	108.1%	7.6	A
SB	Left Turn					
	Through	1,028	1,030	100.2%	3.6	A
	Right Turn	3	4	120.0%	1.4	A
	Subtotal	1,031	1,033	100.2%	3.6	A
EB	Left Turn					
	Through					
	Right Turn	10	10	95.0%	5.0	A
	Subtotal	10	10	95.0%	5.0	A
WB	Left Turn	454	463	101.9%	22.1	C
	Through	15	15	101.3%	27.6	C
	Right Turn	15	14	94.0%	22.8	C
	Subtotal	484	492	101.6%	22.2	C
Total		1,881	1,920	102.1%	9.3	A

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 11		Hill/Ord			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	15	14	94.0%	14.5	B
	Through	250	270	108.0%	9.6	A
	Right Turn	15	16	109.3%	7.2	A
	Subtotal	280	301	107.4%	9.8	A
SB	Left Turn	35	40	114.0%	11.9	B
	Through	700	723	103.3%	9.0	A
	Right Turn	15	14	96.0%	9.0	A
	Subtotal	750	777	103.6%	9.2	A
EB	Left Turn	10	8	83.0%	29.5	C
	Through	72	71	98.9%	23.8	C
	Right Turn	10	10	104.0%	21.5	C
	Subtotal	92	90	97.7%	24.4	C
WB	Left Turn	41	40	98.0%	31.1	C
	Through	250	248	99.3%	29.2	C
	Right Turn	20	22	112.0%	11.9	B
	Subtotal	311	311	100.0%	28.1	C
Total		1,433	1,479	103.2%	14.2	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 12

Broadway/Ord

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	56	55	97.5%	27.5	C
	Through	366	359	98.0%	5.0	A
	Second Right					
	Subtotal	492	481	97.8%	8.8	A
SB	Left Turn	80	95	118.3%	23.6	C
	Through	1,202	1,218	101.3%	20.8	C
	Second Right					
	Subtotal	1,422	1,452	102.1%	21.6	C
EB	Left Turn	5	5	104.0%	34.0	C
	Through	81	84	103.8%	38.6	D
	Second Right					
	Subtotal	122	128	104.8%	35.5	D
WB	Left Turn	61	49	80.5%	50.4	D
	Through	115	94	81.5%	50.3	D
	Second Right					
	Subtotal	213	185	86.7%	48.1	D
Total		2,249	2,246	99.8%	21.9	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 13

Alameda/Main

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	449	440	98.1%	2.9	A
	Right Turn	44	39	89.3%	2.2	A
	Subtotal	493	480	97.3%	2.8	A
SB	Left Turn	33	33	99.7%	10.8	B
	Through	1,306	1,321	101.1%	14.8	B
	Right Turn					
	Subtotal	1,339	1,354	101.1%	14.7	B
EB	Left Turn	193	198	102.5%	29.5	C
	Through	45	47	103.3%	22.7	C
	Right Turn	16	18	110.6%	21.3	C
	Subtotal	254	262	103.1%	27.6	C
WB	Left Turn	20	20	99.5%	44.8	D
	Through					
	Right Turn	6	6	95.0%	3.2	A
	Subtotal	26	26	98.5%	39.5	D
Total		2,112	2,121	100.4%	13.9	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 14

Broadway/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	114	119	103.9%	34.4	C
	Through	313	313	100.1%	24.4	C
	Right Turn	90	94	104.7%	19.6	B
	Subtotal	517	526	101.7%	25.9	C
SB	Left Turn	126	133	105.4%	64.1	E
	Through	810	807	99.6%	54.0	D
	Right Turn	363	361	99.5%	40.6	D
	Subtotal	1,299	1,301	100.2%	51.6	D
EB	Left Turn	130	128	98.6%	41.5	D
	Through	724	741	102.4%	21.5	C
	Right Turn	90	90	99.8%	12.0	B
	Subtotal	945	959	101.5%	23.3	C
WB	Left Turn	126	119	94.7%	13.6	B
	Through	1,374	1,275	92.8%	12.3	B
	Right Turn	49	39	80.4%	5.7	A
	Subtotal	1,549	1,433	92.5%	12.2	B
Total		4,310	4,220	97.9%	28.7	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 15

Spring/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	3	4	116.7%	84.9	F
	Through	332	335	100.9%	76.8	E
	Right Turn	164	160	97.5%	74.4	E
	Subtotal	499	498	99.9%	76.3	E
EB	Left Turn					
	Through	663	696	105.0%	8.8	A
	Right Turn	277	289	104.4%	4.0	A
	Subtotal	940	986	104.8%	7.4	A
WB	Left Turn	189	212	112.0%	51.2	D
	Through	1,385	1,234	89.1%	50.0	D
	Right Turn	17	15	89.4%	19.7	B
	Subtotal	1,591	1,461	91.8%	49.8	D
Total		3,030	2,945	97.2%	40.3	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 16

Main/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	138	135	97.8%	41.0	D
	Through	178	181	101.9%	29.7	C
	Right Turn	85	88	103.6%	16.5	B
	Subtotal	401	404	100.8%	30.4	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	62	64	103.7%	28.4	C
	Through	604	657	108.7%	3.0	A
	Right Turn					
	Subtotal	666	721	108.3%	5.6	A
WB	Left Turn					
	Through	1,438	1,306	90.8%	18.7	B
	Right Turn	14	15	110.0%	3.5	A
	Subtotal	1,452	1,321	91.0%	18.5	B
Total		2,519	2,447	97.1%	16.7	B

Vissim Post-Processor
 Average Results from 10 Runs
 Volume and Delay by Movement

Union Station Master Plan
 Existing
 AM Peak Hour

Intersection 17

Alameda/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	126	125	98.9%	79.1	E
	Through	399	394	98.6%	29.5	C
	Right Turn	119	124	103.8%	21.6	C
	Subtotal	644	642	99.6%	38.4	D
SB	Left Turn	91	97	106.8%	12.3	B
	Through	1,115	1,124	100.8%	23.5	C
	Right Turn	136	136	100.3%	26.6	C
	Subtotal	1,342	1,357	101.1%	22.9	C
EB	Left Turn	48	47	97.3%	13.8	B
	Through	521	582	111.6%	7.1	A
	Right Turn	120	126	104.7%	5.3	A
	Subtotal	689	754	109.4%	7.3	A
WB	Left Turn	114	109	95.4%	26.8	C
	Through	1,190	1,087	91.3%	53.9	D
	Right Turn	46	39	85.7%	36.6	D
	Subtotal	1,350	1,235	91.5%	51.0	D
Total		4,025	3,988	99.1%	31.1	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 18 Union Station Driveway/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	56	57	101.4%	56.2	E
	Through					
	Right Turn	62	63	101.0%	18.5	B
	Subtotal	118	119	101.2%	38.4	D
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	658	723	109.9%	3.4	A
	Right Turn	73	79	107.9%	3.1	A
	Subtotal	731	802	109.7%	3.4	A
WB	Left Turn	81	68	84.4%	119.2	F
	Through	1,328	1,232	92.8%	157.1	F
	Right Turn					
	Subtotal	1,409	1,300	92.3%	155.0	F
Total		2,258	2,222	98.4%	92.4	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 19

Alameda/Los Angeles

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	508	496	97.7%	13.6	B
	Right Turn	113	111	98.5%	7.7	A
	Subtotal	621	608	97.8%	12.6	B
SB	Left Turn	56	62	110.4%	15.6	B
	Through	1,029	979	95.1%	13.5	B
	Right Turn	320	317	98.9%	23.2	C
	Subtotal	1,405	1,357	96.6%	15.8	B
EB	Left Turn	97	107	110.4%	28.5	C
	Through	54	51	94.4%	30.8	C
	Right Turn	19	17	90.5%	9.5	A
	Subtotal	170	175	103.1%	27.6	C
WB	Left Turn	107	106	98.8%	27.2	C
	Through	58	59	102.1%	25.7	C
	Right Turn	39	41	105.6%	5.8	A
	Subtotal	204	206	101.0%	22.4	C
Total		2,400	2,346	97.7%	16.5	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 20

Broadway/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	419	444	106.0%	14.1	B
	Right Turn					
	Subtotal	419	444	106.0%	14.1	B
SB	Left Turn					
	Through	711	696	97.8%	16.9	B
	Right Turn					
	Subtotal	711	696	97.8%	16.9	B
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	355	342	96.2%	22.3	C
	Through					
	Right Turn	780	747	95.7%	10.7	B
	Subtotal	1,135	1,088	95.9%	14.5	B
Total		2,265	2,228	98.3%	15.2	B

Vissim Post-Processor
 Average Results from 10 Runs
 Volume and Delay by Movement

Union Station Master Plan
 Existing
 AM Peak Hour

Intersection 21

Spring/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn					
	Through	800	690	86.2%	22.5	C
	Right Turn	12	11	87.5%	12.1	B
	Subtotal	812	700	86.2%	22.4	C
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	514	538	104.6%	27.4	C
	Through	1,123	1,076	95.8%	23.1	C
	Right Turn					
	Subtotal	1,637	1,614	98.6%	24.5	C
Total		2,449	2,314	94.5%	23.9	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 22

Main/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	76	81	106.1%	5.1	A
	Through	326	334	102.3%	4.8	A
	Right Turn					
	Subtotal	402	414	103.0%	4.9	A
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn					
	Through	1,561	1,526	97.8%	21.9	C
	Right Turn	75	70	93.3%	17.7	B
	Subtotal	1,636	1,596	97.5%	21.7	C
Total		2,038	2,010	98.6%	18.1	B

Vissim Post-Processor
 Average Results from 10 Runs
 Volume and Delay by Movement

Union Station Master Plan
 Existing
 AM Peak Hour

Intersection 23

Los Angeles/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	86	87	101.0%	16.3	B
	Through	257	268	104.4%	5.4	A
	Right Turn					
	Subtotal	343	355	103.6%	8.2	A
SB	Left Turn					
	Through	337	338	100.1%	19.6	B
	Right Turn	37	36	96.2%	13.3	B
	Subtotal	374	373	99.8%	19.2	B
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	350	324	92.6%	36.8	D
	Through	1,513	1,480	97.8%	36.8	D
	Right Turn	69	63	91.7%	39.0	D
	Subtotal	1,932	1,867	96.6%	36.9	D
Total		2,649	2,596	98.0%	30.4	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 24

Alameda/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	138	133	96.4%	73.6	E
	Through	773	760	98.3%	29.9	C
	Right Turn	49	83	168.4%	28.9	C
	Subtotal	960	975	101.6%	35.9	D
SB	Left Turn	13	36	276.9%	40.5	D
	Through	832	808	97.1%	54.9	D
	Right Turn	67	72	107.8%	52.6	D
	Subtotal	912	916	100.5%	54.2	D
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	465	435	93.5%	110.3	F
	Through	1,727	1,652	95.7%	104.6	F
	Right Turn	222	209	93.9%	110.6	F
	Subtotal	2,414	2,296	95.1%	106.2	F
Total		4,286	4,187	97.7%	78.4	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 25

Vignes/Ramirez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	34	33	96.5%	39.8	D
	Through	173	171	98.9%	22.2	C
	Right Turn	98	97	98.5%	2.9	A
	Subtotal	305	300	98.5%	17.9	B
SB	Left Turn	441	425	96.4%	48.3	D
	Through	157	150	95.4%	20.5	C
	Right Turn	227	269	118.5%	27.0	C
	Subtotal	825	844	102.3%	36.4	D
EB	Left Turn	111	154	138.6%	43.3	D
	Through	66	63	95.2%	39.4	D
	Right Turn	68	79	116.2%	22.7	C
	Subtotal	245	296	120.7%	37.7	D
WB	Left Turn	106	108	101.4%	38.2	D
	Through	130	150	115.7%	39.2	D
	Right Turn	363	365	100.6%	12.7	B
	Subtotal	599	623	104.0%	24.0	C
Total		1,974	2,063	104.5%	30.3	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 26

Broadway/Aliso

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	299	329	110.2%	9.1	A
	Right Turn	78	78	100.0%	4.2	A
	Subtotal	377	407	108.1%	8.2	A
SB	Left Turn	128	126	98.8%	9.8	A
	Through	938	907	96.7%	7.2	A
	Right Turn					
	Subtotal	1,066	1,034	97.0%	7.5	A
EB	Left Turn	120	119	98.8%	26.8	C
	Through	270	274	101.3%	20.8	C
	Right Turn	150	154	102.9%	9.0	A
	Subtotal	540	547	101.2%	18.9	B
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		1,983	1,988	100.2%	10.9	B

Vissim Post-Processor
 Average Results from 10 Runs
 Volume and Delay by Movement

Union Station Master Plan
 Existing
 AM Peak Hour

Intersection 27

Spring/Aliso

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	159	146	91.9%	1.2	A
	Through	1,155	1,225	106.0%	12.8	B
	Right Turn					
	Subtotal	1,314	1,371	104.3%	11.6	B
EB	Left Turn					
	Through	284	284	100.1%	16.9	B
	Right Turn	192	193	100.3%	10.7	B
	Subtotal	476	477	100.2%	14.4	B
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		1,790	1,848	103.2%	12.3	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 28

Main/Aliso

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	356	367	103.1%	8.1	A
	Right Turn	211	205	97.3%	13.0	B
	Subtotal	567	573	101.0%	9.9	A
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	46	46	100.0%	7.7	A
	Through	397	417	105.1%	13.4	B
	Right Turn					
	Subtotal	443	463	104.6%	12.9	B
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		1,010	1,036	102.6%	11.3	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 29

Los Angeles/Aliso

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	325	337	103.7%	19.1	B
	Right Turn	83	135	162.8%	20.9	C
	Subtotal	466	472	101.3%	19.6	B
SB	Left Turn					
	Through	687	661	96.1%	12.5	B
	Right Turn					
	Subtotal	687	661	96.1%	12.5	B
EB	Left Turn	229	239	104.3%	17.8	B
	Through	211	243	115.3%	27.4	C
	Right Turn	150	144	95.7%	27.4	C
	Subtotal	608	626	102.9%	23.8	C
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		1,761	1,758	99.8%	18.4	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 30

Alameda/Aliso

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	717	708	98.7%	92.5	F
	Right Turn	151	160	106.0%	26.6	C
	Subtotal	868	868	100.0%	80.0	F
SB	Left Turn	143	137	96.1%	36.2	D
	Through	1,154	1,109	96.1%	16.1	B
	Right Turn					
	Subtotal	1,297	1,247	96.1%	18.5	B
EB	Left Turn	54	86	159.1%	39.6	D
	Through	62	65	105.3%	30.5	C
	Right Turn	153	151	98.8%	11.1	B
	Subtotal	269	302	112.4%	23.7	C
WB	Left Turn	145	138	94.9%	17.7	B
	Through					
	Right Turn	189	185	98.1%	34.6	C
	Subtotal	334	323	96.7%	27.7	C
Total		2,768	2,740	99.0%	39.6	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 31

US 101 Ramps/Commercial

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	13	13	100.8%	40.7	D
	Through	37	33	89.7%	35.4	D
	Right Turn	7	7	101.4%	9.1	A
	Subtotal	57	53	93.7%	31.8	C
SB	Left Turn	197	207	105.1%	31.1	C
	Through	59	60	101.0%	30.4	C
	Right Turn	183	175	95.8%	4.9	A
	Subtotal	439	442	100.7%	21.3	C
EB	Left Turn	206	210	102.1%	23.5	C
	Through	75	81	108.1%	16.9	B
	Right Turn	25	24	95.2%	7.7	A
	Subtotal	306	315	103.0%	20.8	C
WB	Left Turn	10	9	88.0%	24.9	C
	Through	118	115	97.1%	31.3	C
	Right Turn	104	102	98.0%	17.7	B
	Subtotal	232	225	97.1%	24.8	C
Total		1,034	1,036	100.2%	22.5	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 32

Broadway/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	332	362	109.1%	8.1	A
	Right Turn					
	Subtotal	332	362	109.1%	8.1	A
SB	Left Turn	50	48	95.8%	6.0	A
	Through	988	959	97.0%	7.2	A
	Right Turn	50	60	119.0%	8.9	A
	Subtotal	1,088	1,066	98.0%	7.2	A
EB	Left Turn	20	22	107.5%	27.8	C
	Through	555	571	102.9%	19.5	B
	Right Turn	150	148	98.9%	17.7	B
	Subtotal	725	741	102.2%	19.4	B
WB	Left Turn	75	65	86.5%	30.5	C
	Through	938	934	99.6%	18.0	B
	Right Turn	25	24	97.2%	16.4	B
	Subtotal	1,038	1,023	98.6%	18.7	B
Total		3,183	3,193	100.3%	14.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 33

Spring/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	55	51	92.9%	20.2	C
	Through	1,100	1,173	106.6%	19.1	B
	Right Turn	192	191	99.5%	29.1	C
	Subtotal	1,347	1,415	105.0%	20.6	C
EB	Left Turn					
	Through	468	491	105.0%	17.4	B
	Right Turn	137	137	99.7%	21.5	C
	Subtotal	605	628	103.8%	18.3	B
WB	Left Turn	110	115	104.5%	11.8	B
	Through	846	860	101.6%	11.8	B
	Right Turn					
	Subtotal	956	975	102.0%	11.7	B
Total		2,908	3,018	103.8%	17.3	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 34

Main/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	116	116	99.8%	22.1	C
	Through	423	438	103.5%	21.3	C
	Right Turn	169	172	102.0%	19.7	B
	Subtotal	708	726	102.5%	21.0	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	58	58	99.3%	12.2	B
	Through	465	483	103.9%	15.1	B
	Right Turn					
	Subtotal	523	541	103.4%	14.8	B
WB	Left Turn					
	Through	840	851	101.3%	11.5	B
	Right Turn	86	83	96.3%	11.9	B
	Subtotal	926	934	100.8%	11.5	B
Total		2,157	2,200	102.0%	15.4	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 35

Los Angeles/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	73	72	97.9%	22.8	C
	Through	322	320	99.4%	12.1	B
	Right Turn	49	51	103.7%	18.6	B
	Subtotal	444	442	99.6%	14.6	B
SB	Left Turn	160	151	94.3%	26.2	C
	Through	845	820	97.0%	18.2	B
	Right Turn	84	96	114.2%	25.6	C
	Subtotal	1,089	1,067	97.9%	20.1	C
EB	Left Turn	30	44	145.0%	58.9	E
	Through	370	384	103.7%	24.5	C
	Right Turn	234	222	94.7%	25.2	C
	Subtotal	634	649	102.3%	27.1	C
WB	Left Turn	106	100	94.0%	43.5	D
	Through	769	767	99.7%	62.2	E
	Right Turn	114	107	94.2%	55.7	E
	Subtotal	989	974	98.5%	59.7	E
Total		3,156	3,132	99.2%	33.4	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 36

San Pedro/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	74	78	105.0%	20.1	C
	Through					
	Right Turn	41	56	135.9%	11.3	B
	Subtotal	115	133	116.0%	16.3	B
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	320	329	102.8%	8.6	A
	Right Turn	259	255	98.3%	7.1	A
	Subtotal	579	584	100.8%	8.0	A
WB	Left Turn	144	162	112.6%	12.4	B
	Through	915	900	98.3%	16.0	B
	Right Turn					
	Subtotal	1,059	1,062	100.3%	15.5	B
Total		1,753	1,779	101.5%	13.2	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 37

Alameda/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	233	235	100.8%	38.9	D
	Through	724	723	99.9%	51.8	D
	Right Turn					
	Subtotal	957	958	100.1%	48.7	D
SB	Left Turn	65	63	96.3%	45.9	D
	Through	910	873	95.9%	32.8	C
	Right Turn	477	460	96.5%	14.7	B
	Subtotal	1,452	1,396	96.1%	27.2	C
EB	Left Turn	77	83	108.2%	24.6	C
	Through	158	181	114.3%	24.9	C
	Right Turn	126	119	94.3%	36.4	D
	Subtotal	361	383	106.0%	28.4	C
WB	Left Turn	25	25	101.2%	63.0	E
	Through	349	378	108.3%	70.7	E
	Right Turn	67	70	104.8%	74.9	E
	Subtotal	441	474	107.4%	71.0	E
Total		3,211	3,210	100.0%	39.9	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 38

Los Angeles/1st

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	424	415	97.9%	16.0	B
	Right Turn					
	Subtotal	424	415	97.9%	16.0	B
SB	Left Turn	50	49	98.4%	19.3	B
	Through	985	948	96.2%	18.8	B
	Right Turn	150	150	99.8%	11.6	B
	Subtotal	1,185	1,146	96.7%	17.9	B
EB	Left Turn	10	14	143.0%	14.7	B
	Through	499	529	106.0%	11.7	B
	Right Turn	90	91	100.9%	7.9	A
	Subtotal	599	634	105.8%	11.3	B
WB	Left Turn	45	43	95.1%	13.3	B
	Through	765	776	101.4%	8.4	A
	Right Turn	10	10	104.0%	4.4	A
	Subtotal	820	829	101.1%	8.6	A
Total		3,028	3,024	99.9%	13.7	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 39

San Pedro/1st

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	15	25	163.3%	26.8	C
	Through	95	95	99.9%	14.9	B
	Right Turn	20	19	97.0%	8.1	A
	Subtotal	130	139	106.8%	16.1	B
SB	Left Turn	15	13	86.7%	17.0	B
	Through	368	369	100.2%	15.8	B
	Right Turn	20	34	168.5%	26.3	C
	Subtotal	403	416	103.1%	16.7	B
EB	Left Turn	10	29	294.0%	22.3	C
	Through	524	533	101.7%	6.2	A
	Right Turn	15	15	99.3%	4.2	A
	Subtotal	549	577	105.1%	6.8	A
WB	Left Turn	22	21	95.0%	13.9	B
	Through	785	778	99.1%	10.6	B
	Right Turn	10	9	93.0%	8.5	A
	Subtotal	817	808	98.9%	10.6	B
Total		1,899	1,940	102.2%	11.2	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 40

Central/1st

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	150	149	99.3%	24.0	C
	Through					
	Right Turn	10	9	93.0%	5.1	A
	Subtotal	160	158	98.9%	23.2	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	459	488	106.2%	14.0	B
	Right Turn	100	100	100.0%	13.3	B
	Subtotal	559	588	105.1%	13.9	B
WB	Left Turn	25	21	84.8%	10.7	B
	Through	667	676	101.3%	8.2	A
	Right Turn					
	Subtotal	692	697	100.7%	8.3	A
Total		1,411	1,443	102.3%	12.2	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 41

Alameda/1st

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	2	2	75.0%	6.6	A
	Through	901	901	100.0%	33.7	C
	Right Turn	49	51	103.1%	11.8	B
	Subtotal	952	953	100.1%	32.5	C
SB	Left Turn	23	22	94.8%	38.2	D
	Through	858	821	95.7%	13.5	B
	Right Turn	180	173	96.1%	10.5	B
	Subtotal	1,061	1,016	95.8%	13.5	B
EB	Left Turn	30	30	99.0%	13.0	B
	Through	389	418	107.5%	11.0	B
	Right Turn	50	51	101.8%	15.8	B
	Subtotal	469	499	106.4%	11.6	B
WB	Left Turn					
	Through	510	518	101.6%	12.8	B
	Right Turn	26	28	105.8%	14.1	B
	Subtotal	536	546	101.8%	12.8	B
Total		3,018	3,014	99.9%	19.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 101

Alameda St/Spring St/College St

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	129	144	111.9%	19.2	B
	Through	352	372	105.5%	4.0	A
	Right Turn	16	15	92.5%	3.7	A
	Subtotal	497	531	106.8%	8.4	A
SB	Left Turn	10	9	87.0%	19.2	B
	Through	1,084	1,088	100.4%	19.5	B
	Right Turn	176	178	101.3%	16.1	B
	Subtotal	1,270	1,275	100.4%	19.0	B
EB	Left Turn	107	105	98.0%	49.9	D
	Through	43	43	99.1%	20.2	C
	Right Turn	146	153	104.6%	17.6	B
	Subtotal	296	300	101.4%	28.5	C
WB	Left Turn	63	70	110.3%	14.9	B
	Through	207	209	101.0%	14.8	B
	Right Turn	26	25	95.4%	11.1	B
	Subtotal	296	303	102.5%	14.4	B
Total		2,359	2,409	102.1%	17.4	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 104

Broadway/College St

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	20	17	85.5%	20.7	C
	Through	390	391	100.3%	11.0	B
	Right Turn	16	13	79.4%	11.4	B
	Subtotal	426	421	98.8%	11.3	B
SB	Left Turn	82	91	110.7%	18.7	B
	Through	1,410	1,442	102.3%	16.8	B
	Right Turn	225	223	99.1%	18.9	B
	Subtotal	1,717	1,756	102.3%	17.1	B
EB	Left Turn	29	32	111.0%	46.0	D
	Through	221	217	98.1%	26.6	C
	Right Turn	35	32	90.3%	17.2	B
	Subtotal	285	281	98.4%	28.0	C
WB	Left Turn	72	70	96.5%	77.2	E
	Through	370	390	105.5%	65.1	E
	Right Turn	70	71	101.1%	47.9	D
	Subtotal	512	531	103.6%	64.2	E
Total		2,940	2,988	101.6%	25.6	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 106

Main St/Ann St

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	24	23	95.8%	43.9	D
	Through	437	406	93.0%	19.0	B
	Right Turn	5	5	90.0%	8.2	A
	Subtotal	466	434	93.1%	20.4	C
SB	Left Turn	6	5	90.0%	12.5	B
	Through	1,447	1,470	101.6%	20.4	C
	Right Turn	22	26	119.1%	18.1	B
	Subtotal	1,475	1,502	101.8%	20.3	C
EB	Left Turn	13	13	96.2%	13.6	B
	Through	6	6	105.0%	9.6	A
	Right Turn	29	25	86.6%	6.4	A
	Subtotal	48	44	91.5%	8.7	A
WB	Left Turn	8	8	98.8%	9.3	A
	Through	2	2	75.0%	1.8	A
	Right Turn	2	2	75.0%	0.5	A
	Subtotal	12	11	90.8%	7.5	A
Total		2,001	1,990	99.5%	20.0	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 1 Hill Street/Alpine Street Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	30	33	110.0%	17.2	B
	Through	620	642	103.6%	16.6	B
	Right Turn	65	64	98.0%	16.0	B
	Subtotal	715	739	103.3%	16.6	B
SB	Left Turn	15	14	94.7%	13.5	B
	Through	382	401	105.1%	9.2	A
	Right Turn	25	25	100.4%	7.1	A
	Subtotal	422	441	104.4%	9.2	A
EB	Left Turn	45	48	106.2%	22.7	C
	Through	264	259	98.3%	19.7	B
	Right Turn	15	15	97.3%	11.8	B
	Subtotal	324	322	99.3%	19.9	B
WB	Left Turn	30	28	94.0%	33.3	C
	Through	320	314	98.2%	30.5	C
	Right Turn	80	79	98.1%	23.6	C
	Subtotal	430	421	97.9%	29.4	C
Total		1,891	1,922	101.7%	18.5	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 2 **Broadway/Alpine** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	56	51	91.1%	19.6	B
	Through	1,083	1,066	98.4%	21.1	C
	Right Turn	97	103	106.1%	22.3	C
	Subtotal	1,236	1,220	98.7%	21.1	C
SB	Left Turn	54	51	94.8%	35.6	D
	Through	615	668	108.5%	22.2	C
	Right Turn	47	47	100.9%	20.3	C
	Subtotal	716	766	107.0%	23.1	C
EB	Left Turn	76	74	97.8%	20.1	C
	Through	230	229	99.4%	9.1	A
	Right Turn	38	35	93.2%	6.3	A
	Subtotal	344	338	98.3%	11.0	B
WB	Left Turn	51	50	97.6%	25.3	C
	Through	327	326	99.8%	24.3	C
	Right Turn	244	248	101.5%	25.0	C
	Subtotal	622	624	100.3%	24.7	C
Total		2,918	2,948	101.0%	21.3	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 3 Spring/Alpine Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	8	6	76.3%	28.2	C
	Through					
	Right Turn	99	77	77.4%	22.3	C
	Subtotal	107	83	77.3%	24.8	C
SB	Left Turn	17	15	88.2%	38.1	D
	Through	28	26	92.1%	38.3	D
	Right Turn	8	7	88.8%	18.4	B
	Subtotal	53	48	90.4%	37.6	D
EB	Left Turn	10	12	116.0%	24.2	C
	Through	366	365	99.7%	20.0	B
	Right Turn	15	14	93.3%	23.3	C
	Subtotal	391	391	99.9%	20.3	C
WB	Left Turn	7	7	98.6%	15.6	B
	Through	613	609	99.3%	12.8	B
	Right Turn	12	11	93.3%	4.7	A
	Subtotal	632	627	99.2%	12.7	B
Total		1,183	1,148	97.0%	17.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 4 Alameda/Alpine Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	171	174	101.6%	18.1	B
	Through	950	975	102.6%	13.3	B
	Right Turn	48	51	105.4%	10.9	B
	Subtotal	1,169	1,199	102.6%	13.9	B
SB	Left Turn	93	93	99.9%	48.4	D
	Through	384	404	105.3%	19.5	B
	Right Turn	55	53	96.4%	16.9	B
	Subtotal	532	550	103.4%	24.2	C
EB	Left Turn	100	103	103.4%	14.5	B
	Through	314	305	97.0%	20.8	C
	Right Turn	68	66	97.5%	8.1	A
	Subtotal	482	474	98.4%	17.8	B
WB	Left Turn	54	53	97.8%	31.6	C
	Through	406	400	98.4%	19.7	B
	Right Turn	352	353	100.3%	9.9	A
	Subtotal	812	805	99.2%	16.3	B
Total		2,995	3,029	101.1%	17.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 5		Main/Alpine			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	5	3	64.0%	8.4	A
	Through	639	546	85.5%	20.5	C
	Right Turn	34	31	92.4%	14.2	B
	Subtotal	678	581	85.7%	20.1	C
SB	Left Turn	183	188	102.7%	35.7	D
	Through	267	263	98.5%	20.7	C
	Right Turn	181	180	99.6%	11.8	B
	Subtotal	631	631	100.0%	22.8	C
EB	Left Turn	222	215	97.0%	69.1	E
	Through	232	232	100.0%	21.1	C
	Right Turn	1	1	140.0%	0.0	A
	Subtotal	455	449	98.6%	45.0	D
WB	Left Turn					
	Through	626	622	99.3%	34.2	C
	Right Turn	352	344	97.6%	42.3	D
	Subtotal	978	965	98.7%	37.1	D
Total		2,742	2,626	95.8%	31.6	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 6

Vignes/Bauchet

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	30	26	86.7%	13.9	B
	Through	920	900	97.9%	11.8	B
	Right Turn	77	76	99.2%	6.1	A
	Subtotal	1,027	1,003	97.6%	11.5	B
SB	Left Turn	28	29	103.2%	16.0	B
	Through	405	408	100.7%	8.9	A
	Right Turn	5	5	96.0%	5.6	A
	Subtotal	438	442	100.8%	9.3	A
EB	Left Turn	11	12	109.1%	15.3	B
	Through	5	5	106.0%	22.7	C
	Right Turn	19	20	105.8%	7.2	A
	Subtotal	35	37	106.9%	16.1	B
WB	Left Turn	134	130	96.7%	21.1	C
	Through	6	6	103.3%	12.0	B
	Right Turn	62	61	99.0%	7.4	A
	Subtotal	202	197	97.6%	16.1	B
Total		1,702	1,679	98.6%	11.5	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 7

Vignes/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	279	284	101.9%	59.6	E
	Through	677	685	101.2%	35.0	D
	Right Turn	145	152	104.6%	12.3	B
	Subtotal	1,101	1,121	101.8%	37.7	D
SB	Left Turn	238	222	93.2%	46.9	D
	Through	310	288	93.0%	31.2	C
	Right Turn	47	44	94.3%	15.4	B
	Subtotal	595	555	93.2%	36.1	D
EB	Left Turn	46	48	105.2%	55.2	E
	Through	922	938	101.7%	61.3	E
	Right Turn	257	282	109.6%	46.4	D
	Subtotal	1,225	1,268	103.5%	57.8	E
WB	Left Turn	137	153	111.3%	35.7	D
	Through	842	852	101.2%	46.5	D
	Right Turn	304	298	98.1%	6.4	A
	Subtotal	1,283	1,303	101.5%	36.0	D
Total		4,204	4,246	101.0%	42.7	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 8 Lyon/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	3	3	106.7%	26.6	C
	Through					
	Right Turn	4	4	90.0%	1.6	A
	Subtotal	7	7	97.1%	26.5	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	1,303	1,310	100.5%	1.6	A
	Right Turn	2	2	110.0%	1.9	A
	Subtotal	1,305	1,312	100.6%	1.6	A
WB	Left Turn	14	15	105.0%	22.5	C
	Through	1,280	1,286	100.5%	48.3	D
	Right Turn	7	6	87.1%	28.7	C
	Subtotal	1,301	1,307	100.5%	48.0	D
Total		2,613	2,626	100.5%	23.4	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 9 Mission/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	288	278	96.5%	169.4	F
	Through	565	567	100.3%	33.1	C
	Right Turn	81	85	104.6%	3.1	A
	Subtotal	934	929	99.5%	73.2	E
SB	Left Turn	45	47	104.0%	45.9	D
	Through	463	458	98.9%	46.7	D
	Right Turn	358	395	110.2%	17.5	B
	Subtotal	866	899	103.9%	34.0	C
EB	Left Turn	399	429	107.5%	41.1	D
	Through	630	612	97.2%	47.7	D
	Right Turn	278	266	95.6%	40.5	D
	Subtotal	1,307	1,307	100.0%	43.9	D
WB	Left Turn	167	165	98.7%	41.1	D
	Through	655	658	100.4%	42.4	D
	Right Turn	26	26	100.8%	29.5	C
	Subtotal	848	849	100.1%	41.8	D
Total		3,955	3,985	100.8%	48.6	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 10

Alameda/Alhambra

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	1,154	1,187	102.8%	11.4	B
	Right Turn					
	Subtotal	1,154	1,187	102.8%	11.4	B
SB	Left Turn					
	Through	501	518	103.4%	1.1	A
	Right Turn	5	5	108.0%	0.1	A
	Subtotal	506	523	103.4%	1.1	A
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	253	250	98.9%	42.5	D
	Through					
	Right Turn	15	14	93.3%	37.8	D
	Subtotal	268	264	98.5%	42.5	D
Total		1,928	1,974	102.4%	13.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 11 Hill/Ord Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	20	19	95.5%	12.0	B
	Through	620	632	102.0%	13.1	B
	Right Turn	55	57	104.0%	11.7	B
	Subtotal	695	709	102.0%	13.0	B
SB	Left Turn	25	25	100.0%	18.4	B
	Through	382	394	103.1%	9.4	A
	Right Turn	20	21	104.5%	10.5	B
	Subtotal	427	440	103.0%	10.0	A
EB	Left Turn	15	16	108.7%	15.1	B
	Through	206	207	100.3%	17.9	B
	Right Turn	30	29	98.0%	14.4	B
	Subtotal	251	252	100.5%	17.5	B
WB	Left Turn	25	24	95.6%	16.8	B
	Through	180	183	101.6%	15.3	B
	Right Turn	80	81	101.0%	6.3	A
	Subtotal	285	288	100.9%	12.7	B
Total		1,658	1,688	101.8%	12.8	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 12		Broadway/Ord			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	100	102	102.0%	31.4	C
	Through	996	968	97.2%	20.7	C
	Second Right					
	Subtotal	1,155	1,129	97.7%	22.0	C
SB	Left Turn	54	66	122.0%	38.9	D
	Through	605	637	105.3%	13.7	B
	Second Right					
	Subtotal	704	751	106.6%	16.6	B
EB	Left Turn	113	117	103.5%	20.0	B
	Through	105	105	100.3%	19.0	B
	Second Right					
	Subtotal	286	289	100.9%	17.9	B
WB	Left Turn	35	27	76.3%	36.7	D
	Through	140	110	78.3%	33.1	C
	Second Right					
	Subtotal	302	240	79.3%	30.7	C
Total		2,447	2,407	98.4%	20.7	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 13 Alameda/Main Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	943	923	97.8%	5.3	A
	Right Turn	12	11	94.2%	4.0	A
	Subtotal	955	934	97.8%	5.3	A
SB	Left Turn	15	16	108.0%	28.7	C
	Through	757	774	102.2%	19.0	B
	Right Turn					
	Subtotal	772	790	102.4%	19.2	B
EB	Left Turn	915	867	94.8%	37.9	D
	Through	22	21	94.1%	32.1	C
	Right Turn	36	34	93.1%	10.3	B
	Subtotal	973	922	94.7%	36.6	D
WB	Left Turn	41	43	105.6%	47.1	D
	Through					
	Right Turn	71	74	103.7%	7.2	A
	Subtotal	112	117	104.4%	22.9	C
Total		2,812	2,762	98.2%	20.5	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 14

Broadway/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	165	168	102.0%	32.6	C
	Through	806	805	99.8%	31.7	C
	Right Turn	121	126	103.7%	49.8	D
	Subtotal	1,092	1,099	100.6%	34.2	C
SB	Left Turn	103	104	100.5%	76.6	E
	Through	408	413	101.3%	24.2	C
	Right Turn	197	206	104.6%	10.4	B
	Subtotal	708	723	102.1%	28.2	C
EB	Left Turn	198	196	99.1%	87.5	F
	Through	991	1,009	101.9%	68.7	E
	Right Turn	58	56	96.9%	28.9	C
	Subtotal	1,247	1,262	101.2%	70.2	E
WB	Left Turn	103	99	96.3%	27.1	C
	Through	1,143	1,083	94.8%	14.1	B
	Right Turn	151	141	93.1%	7.2	A
	Subtotal	1,397	1,323	94.7%	14.3	B
Total		4,444	4,406	99.1%	38.3	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 15

Spring/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	29	30	103.1%	35.0	D
	Through	65	68	104.8%	34.1	C
	Right Turn	69	67	97.2%	22.9	C
	Subtotal	163	165	101.3%	30.1	C
EB	Left Turn					
	Through	1,051	1,068	101.6%	11.1	B
	Right Turn	164	186	113.2%	5.3	A
	Subtotal	1,215	1,254	103.2%	10.2	B
WB	Left Turn	135	164	121.4%	54.3	D
	Through	1,328	1,237	93.2%	49.2	D
	Right Turn	97	88	91.1%	19.7	B
	Subtotal	1,560	1,490	95.5%	47.9	D
Total		2,938	2,909	99.0%	30.2	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 16 Main/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	402	360	89.5%	39.3	D
	Through	856	799	93.4%	44.3	D
	Right Turn	234	232	98.9%	35.2	D
	Subtotal	1,492	1,390	93.2%	41.7	D
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	95	100	104.7%	96.8	F
	Through	985	1,017	103.2%	29.3	C
	Right Turn					
	Subtotal	1,080	1,117	103.4%	35.6	D
WB	Left Turn					
	Through	1,181	1,108	93.8%	26.7	C
	Right Turn	22	23	103.2%	7.9	A
	Subtotal	1,203	1,130	93.9%	26.4	C
Total		3,775	3,637	96.3%	35.2	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 17

Alameda/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	104	110	105.6%	95.0	F
	Through	727	726	99.8%	18.0	B
	Right Turn	108	123	113.4%	16.0	B
	Subtotal	939	958	102.0%	27.1	C
SB	Left Turn	92	100	108.3%	12.4	B
	Through	627	635	101.3%	20.1	C
	Right Turn	115	114	99.5%	30.0	C
	Subtotal	834	849	101.8%	20.6	C
EB	Left Turn	95	94	98.5%	38.7	D
	Through	924	957	103.6%	17.7	B
	Right Turn	200	205	102.4%	4.9	A
	Subtotal	1,219	1,256	103.0%	17.5	B
WB	Left Turn	122	116	94.9%	33.4	C
	Through	984	932	94.7%	61.1	E
	Right Turn	133	115	86.3%	49.9	D
	Subtotal	1,239	1,163	93.8%	57.2	E
Total		4,231	4,225	99.9%	31.1	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 18 **Union Station Driveway/Cesar Chavez** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	95	17	17.9%	125.2	F
	Through					
	Right Turn	171	91	53.5%	34.1	C
	Subtotal	266	108	40.8%	49.1	D
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	1,054	1,106	104.9%	4.6	A
	Right Turn	70	71	102.0%	3.1	A
	Subtotal	1,124	1,178	104.8%	4.5	A
WB	Left Turn	48	45	93.3%	107.4	F
	Through	1,120	1,089	97.2%	151.9	F
	Right Turn					
	Subtotal	1,168	1,133	97.0%	150.1	F
Total		2,558	2,419	94.6%	70.2	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 19

Alameda/Los Angeles

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	421	444	105.5%	18.3	B
	Right Turn	73	81	110.3%	8.6	A
	Subtotal	494	525	106.2%	16.9	B
SB	Left Turn	60	66	110.2%	31.4	C
	Through	780	722	92.5%	31.1	C
	Right Turn	169	167	99.0%	27.4	C
	Subtotal	1,009	955	94.7%	30.6	C
EB	Left Turn	429	420	97.9%	47.4	D
	Through	91	85	93.8%	47.1	D
	Right Turn	107	101	94.4%	22.2	C
	Subtotal	627	606	96.7%	43.2	D
WB	Left Turn	125	129	103.4%	31.7	C
	Through	60	59	98.3%	27.1	C
	Right Turn	89	96	107.8%	6.9	A
	Subtotal	274	284	103.7%	22.0	C
Total		2,404	2,370	98.6%	29.8	C

**Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement**

**Union Station Master Plan
Existing
PM Peak Hour**

Intersection 20 Broadway/Arcadia Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	951	973	102.3%	12.2	B
	Through					
	Right Turn					
	Subtotal	951	973	102.3%	12.2	B
SB	Left Turn	465	462	99.2%	9.0	A
	Through					
	Right Turn					
	Subtotal	465	462	99.2%	9.0	A
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	199	190	95.4%	21.9	C
	Through					
	Right Turn					
	Subtotal	739	713	96.5%	13.3	B
Total		2,155	2,148	99.7%	12.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 21

Spring/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn					
	Through	379	340	89.7%	20.3	C
	Right Turn	26	26	101.5%	6.9	A
	Subtotal	405	366	90.5%	19.5	B
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	207	259	125.2%	28.4	C
	Through	713	689	96.7%	19.6	B
	Right Turn					
	Subtotal	920	949	103.1%	22.3	C
Total		1,325	1,315	99.2%	21.3	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 22 Main/Arcadia Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	260	247	95.0%	32.9	C
	Through	1,251	1,179	94.2%	24.3	C
	Right Turn					
	Subtotal	1,511	1,426	94.3%	25.7	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn					
	Through	660	704	106.7%	12.6	B
	Right Turn	77	76	98.8%	9.6	A
	Subtotal	737	780	105.8%	12.3	B
Total		2,248	2,206	98.1%	21.3	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 23

Los Angeles/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	183	175	95.5%	9.2	A
	Through	1,049	1,014	96.7%	7.3	A
	Right Turn					
	Subtotal	1,232	1,189	96.5%	7.6	A
SB	Left Turn					
	Through	151	157	103.6%	9.7	A
	Right Turn	38	34	89.2%	8.0	A
	Subtotal	189	190	100.7%	9.3	A
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	101	102	100.8%	57.6	E
	Through	516	571	110.7%	58.1	E
	Right Turn	52	50	95.4%	50.5	D
	Subtotal	669	722	108.0%	57.5	E
Total		2,090	2,102	100.6%	25.1	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 24

Alameda/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	18	23	125.6%	8.9	A
	Through	428	467	109.1%	5.5	A
	Right Turn	1,184	1,136	96.0%	6.5	A
	Subtotal	1,630	1,626	99.7%	6.2	A
SB	Left Turn	164	164	99.8%	46.2	D
	Through	579	579	100.1%	8.1	A
	Right Turn	30	34	113.7%	4.6	A
	Subtotal	773	777	100.5%	15.9	B
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	240	243	101.1%	41.3	D
	Through	621	665	107.0%	41.0	D
	Right Turn	225	222	98.8%	73.4	E
	Subtotal	1,086	1,130	104.0%	47.4	D
Total		3,489	3,533	101.2%	21.9	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 25

Vignes/Ramirez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	35	34	96.9%	35.7	D
	Through	334	328	98.1%	24.0	C
	Right Turn	77	74	96.0%	2.4	A
	Subtotal	446	435	97.6%	21.4	C
SB	Left Turn	347	329	94.9%	42.8	D
	Through	222	212	95.5%	18.4	B
	Right Turn	135	181	134.4%	18.9	B
	Subtotal	704	723	102.7%	29.7	C
EB	Left Turn	171	194	113.3%	44.4	D
	Through	63	48	75.6%	31.6	C
	Right Turn	66	60	90.8%	20.3	C
	Subtotal	300	301	100.4%	38.1	D
WB	Left Turn	198	199	100.4%	50.8	D
	Through	113	136	120.2%	45.1	D
	Right Turn	496	502	101.1%	23.5	C
	Subtotal	807	836	103.6%	34.0	C
Total		2,257	2,296	101.7%	30.8	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 26 Broadway/Aliso Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	821	844	102.8%	36.8	D
	Right Turn	221	218	98.4%	25.3	C
	Subtotal	1,042	1,061	101.8%	34.5	C
SB	Left Turn	89	85	95.4%	46.9	D
	Through	575	567	98.7%	8.6	A
	Right Turn					
	Subtotal	664	652	98.2%	13.0	B
EB	Left Turn	130	131	100.4%	34.2	C
	Through	404	412	101.9%	30.4	C
	Right Turn	28	35	123.9%	7.0	A
	Subtotal	562	577	102.7%	30.0	C
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		2,268	2,290	101.0%	27.3	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 27

Spring/Aliso

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	98	88	89.7%	29.7	C
	Through	488	600	122.8%	15.4	B
	Right Turn					
	Subtotal	586	687	117.3%	17.5	B
EB	Left Turn					
	Through	635	632	99.5%	30.9	C
	Right Turn	79	79	99.9%	15.6	B
	Subtotal	714	711	99.5%	29.4	C
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		1,300	1,398	107.5%	23.9	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 28		Main/Aliso			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	1,420	1,339	94.3%	77.4	E
	Right Turn	262	240	91.4%	62.2	E
	Subtotal	1,682	1,579	93.9%	75.2	E
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	91	88	96.5%	73.0	E
	Through	642	658	102.5%	51.0	D
	Right Turn					
	Subtotal	733	746	101.8%	53.9	D
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		2,415	2,325	96.3%	67.5	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 29 Los Angeles/Aliso Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	1,153	1,113	96.5%	47.8	D
	Right Turn	199	355	178.3%	50.8	D
	Subtotal	1,525	1,467	96.2%	48.6	D
SB	Left Turn					
	Through	252	258	102.3%	8.7	A
	Right Turn					
	Subtotal	252	258	102.3%	8.7	A
EB	Left Turn	551	596	108.2%	74.3	E
	Through	254	283	111.3%	59.5	E
	Right Turn	20	18	89.0%	56.1	E
	Subtotal	904	897	99.2%	69.7	E
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		2,681	2,622	97.8%	51.7	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 30 Alameda/Aliso Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	1,121	1,106	98.7%	45.2	D
	Right Turn	122	129	105.7%	19.4	B
	Subtotal	1,243	1,235	99.3%	42.5	D
SB	Left Turn	127	120	94.6%	54.0	D
	Through	692	702	101.5%	8.2	A
	Right Turn					
	Subtotal	819	822	100.4%	15.3	B
EB	Left Turn	353	369	104.6%	101.6	F
	Through	44	47	107.0%	21.0	C
	Right Turn	30	30	98.3%	4.5	A
	Subtotal	427	446	104.4%	88.0	F
WB	Left Turn	90	86	95.8%	40.9	D
	Through					
	Right Turn	156	150	96.0%	182.5	F
	Subtotal	246	236	95.9%	131.1	F
Total		2,735	2,739	100.1%	49.7	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 31

US 101 Ramps/Commercial

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	35	35	99.1%	29.6	C
	Through	418	412	98.5%	33.3	C
	Right Turn	24	24	99.2%	21.2	C
	Subtotal	477	470	98.6%	32.5	C
SB	Left Turn	115	122	105.7%	38.7	D
	Through	22	23	104.5%	35.0	D
	Right Turn	165	162	98.0%	5.7	A
	Subtotal	302	306	101.4%	20.5	C
EB	Left Turn	272	272	99.9%	35.9	D
	Through	64	66	102.8%	20.9	C
	Right Turn	11	12	110.0%	7.1	A
	Subtotal	347	350	100.7%	32.3	C
WB	Left Turn	1	1	80.0%	8.1	A
	Through	44	39	88.9%	48.3	D
	Right Turn	245	238	97.3%	21.7	C
	Subtotal	290	278	95.9%	25.8	C
Total		1,416	1,404	99.2%	28.4	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 32 Broadway/Temple Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	15	16	104.0%	35.0	C
	Through	760	794	104.5%	10.0	A
	Right Turn	70	65	92.4%	26.0	C
	Subtotal	845	875	103.5%	12.0	B
SB	Left Turn	41	42	102.0%	15.3	B
	Through	537	525	97.7%	4.3	A
	Right Turn	25	36	143.2%	7.9	A
	Subtotal	603	602	99.9%	5.3	A
EB	Left Turn	50	51	101.2%	95.2	F
	Through	729	719	98.6%	84.6	F
	Right Turn	20	17	83.0%	85.9	F
	Subtotal	799	786	98.4%	86.0	F
WB	Left Turn	90	81	90.0%	39.0	D
	Through	727	733	100.9%	15.0	B
	Right Turn	232	222	95.7%	12.9	B
	Subtotal	1,049	1,036	98.8%	16.8	B
Total		3,296	3,299	100.1%	26.8	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 33 Spring/Temple Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	54	56	104.3%	89.8	F
	Through	414	522	126.1%	48.7	D
	Right Turn	99	99	100.4%	32.0	C
	Subtotal	567	678	119.6%	50.1	D
EB	Left Turn					
	Through	780	766	98.3%	48.0	D
	Right Turn	60	57	95.0%	39.7	D
	Subtotal	840	823	98.0%	47.4	D
WB	Left Turn	48	58	120.4%	8.1	A
	Through	950	944	99.3%	5.5	A
	Right Turn					
	Subtotal	998	1,002	100.4%	5.6	A
Total		2,405	2,503	104.1%	30.6	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 34 Main/Temple Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	268	268	99.9%	144.0	F
	Through	1,399	1,325	94.7%	189.5	F
	Right Turn	132	131	99.0%	189.8	F
	Subtotal	1,799	1,723	95.8%	182.7	F
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	88	85	96.5%	57.6	E
	Through	746	729	97.8%	83.9	F
	Right Turn					
	Subtotal	834	814	97.6%	81.0	F
WB	Left Turn					
	Through	730	734	100.6%	19.4	B
	Right Turn	195	191	97.8%	37.2	D
	Subtotal	925	925	100.0%	23.0	C
Total		3,558	3,463	97.3%	113.7	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 35

Los Angeles/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	167	162	96.8%	95.0	F
	Through	1,131	1,073	94.9%	95.4	F
	Right Turn	70	64	91.7%	76.2	E
	Subtotal	1,368	1,299	94.9%	94.5	F
SB	Left Turn	85	84	98.5%	49.2	D
	Through	374	373	99.8%	26.1	C
	Right Turn	333	338	101.5%	54.0	D
	Subtotal	792	795	100.4%	40.7	D
EB	Left Turn	130	138	106.0%	179.7	F
	Through	635	617	97.2%	29.9	C
	Right Turn	113	104	92.0%	28.3	C
	Subtotal	878	859	97.8%	54.3	D
WB	Left Turn	69	68	98.0%	39.4	D
	Through	425	428	100.7%	45.4	D
	Right Turn	264	265	100.2%	53.3	D
	Subtotal	758	760	100.3%	47.9	D
Total		3,796	3,713	97.8%	63.7	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 36 **San Pedro/Temple** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	162	159	98.2%	25.5	C
	Through					
	Right Turn	217	239	110.0%	41.8	D
	Subtotal	379	398	105.0%	36.0	D
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	760	738	97.1%	20.3	C
	Right Turn	30	27	88.7%	16.2	B
	Subtotal	790	765	96.8%	20.2	C
WB	Left Turn	38	52	137.9%	14.9	B
	Through	596	607	101.8%	8.6	A
	Right Turn					
	Subtotal	634	659	104.0%	9.1	A
Total		1,803	1,822	101.0%	19.7	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 37 Alameda/Temple Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	138	140	101.2%	23.1	C
	Through	906	888	98.0%	31.6	C
	Right Turn					
	Subtotal	1,044	1,027	98.4%	30.4	C
SB	Left Turn	46	40	87.4%	39.1	D
	Through	601	538	89.5%	28.1	C
	Right Turn	266	243	91.2%	6.8	A
	Subtotal	913	821	89.9%	22.2	C
EB	Left Turn	213	218	102.3%	30.4	C
	Through	536	542	101.1%	31.2	C
	Right Turn	228	212	92.9%	103.2	F
	Subtotal	977	972	99.5%	47.3	D
WB	Left Turn	29	29	98.3%	81.5	F
	Through	230	246	106.9%	55.5	E
	Right Turn	124	129	104.4%	63.9	E
	Subtotal	383	404	105.4%	59.9	E
Total		3,317	3,224	97.2%	37.4	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 38

Los Angeles/1st

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	35	33	94.9%	117.5	F
	Through	1,198	1,149	95.9%	134.8	F
	Right Turn	60	57	94.3%	130.3	F
	Subtotal	1,293	1,239	95.8%	134.2	F
SB	Left Turn	40	37	91.3%	34.2	C
	Through	496	490	98.8%	17.7	B
	Right Turn	20	19	92.5%	6.6	A
	Subtotal	556	545	98.0%	18.2	B
EB	Left Turn	60	50	82.5%	26.5	C
	Through	830	864	104.0%	16.6	B
	Right Turn	50	47	93.6%	7.1	A
	Subtotal	940	960	102.1%	16.6	B
WB	Left Turn	15	15	100.0%	20.1	C
	Through	480	499	103.9%	15.3	B
	Right Turn	110	106	96.5%	19.6	B
	Subtotal	605	620	102.5%	16.2	B
Total		3,394	3,364	99.1%	59.1	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 39

San Pedro/1st

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	10	20	201.0%	27.5	C
	Through	294	293	99.7%	25.3	C
	Right Turn	43	45	105.3%	16.7	B
	Subtotal	347	359	103.3%	24.4	C
SB	Left Turn	15	15	97.3%	25.7	C
	Through	38	33	86.6%	18.5	B
	Right Turn	15	31	208.7%	41.2	D
	Subtotal	68	79	115.9%	28.7	C
EB	Left Turn	15	33	218.7%	4.9	A
	Through	900	912	101.3%	3.1	A
	Right Turn	15	16	106.0%	3.2	A
	Subtotal	930	961	103.3%	3.2	A
WB	Left Turn	30	29	97.3%	16.9	B
	Through	580	568	98.0%	9.1	A
	Right Turn	70	74	105.3%	8.3	A
	Subtotal	680	671	98.7%	9.3	A
Total		2,025	2,069	102.2%	9.9	A

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 40 Central/1st Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	150	149	99.3%	30.4	C
	Through					
	Right Turn	20	21	102.5%	9.8	A
	Subtotal	170	169	99.6%	27.8	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	943	972	103.1%	15.0	B
	Right Turn	15	15	100.0%	10.8	B
	Subtotal	958	987	103.0%	14.9	B
WB	Left Turn	16	15	95.0%	19.2	B
	Through	530	538	101.5%	7.5	A
	Right Turn					
	Subtotal	546	553	101.3%	7.9	A
Total		1,674	1,709	102.1%	14.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
PM Peak Hour

Intersection 41		Alameda/1st			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	71	69	97.0%	40.0	D
	Through	584	575	98.5%	25.4	C
	Right Turn	119	118	99.4%	8.1	A
	Subtotal	774	763	98.5%	24.5	C
SB	Left Turn	34	32	92.6%	31.3	C
	Through	683	677	99.1%	22.1	C
	Right Turn	141	140	99.3%	8.5	A
	Subtotal	858	848	98.9%	20.3	C
EB	Left Turn	385	386	100.2%	25.1	C
	Through	471	498	105.8%	10.5	B
	Right Turn	107	107	99.7%	14.9	B
	Subtotal	963	991	102.9%	16.8	B
WB	Left Turn					
	Through	334	345	103.2%	15.0	B
	Right Turn	75	71	95.2%	15.3	B
	Subtotal	409	416	101.7%	15.1	B
Total		3,004	3,018	100.4%	19.5	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 101

Alameda St/Spring St/College St

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	341	357	104.7%	21.9	C
	Through	1,030	1,045	101.5%	15.8	B
	Right Turn	31	28	91.3%	15.5	B
	Subtotal	1,402	1,431	102.0%	17.4	B
SB	Left Turn	8	9	111.3%	21.4	C
	Through	396	411	103.8%	18.4	B
	Right Turn	58	56	96.4%	6.8	A
	Subtotal	462	476	103.0%	17.2	B
EB	Left Turn	98	102	104.4%	27.2	C
	Through	74	73	98.2%	20.5	C
	Right Turn	113	113	99.7%	5.8	A
	Subtotal	285	288	100.9%	17.8	B
WB	Left Turn	23	27	119.1%	20.8	C
	Through	65	66	101.5%	18.6	B
	Right Turn	26	26	101.2%	10.3	B
	Subtotal	114	120	105.0%	17.8	B
Total		2,263	2,314	102.2%	17.5	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 104

Broadway/College St

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	48	45	94.2%	15.0	B
	Through	1,318	1,298	98.5%	11.7	B
	Right Turn	37	34	90.5%	13.0	B
	Subtotal	1,403	1,377	98.1%	11.9	B
SB	Left Turn	45	47	103.8%	24.0	C
	Through	636	686	107.8%	12.5	B
	Right Turn	78	77	99.0%	6.9	A
	Subtotal	759	809	106.6%	12.7	B
EB	Left Turn	59	57	96.1%	25.0	C
	Through	190	193	101.7%	17.5	B
	Right Turn	55	56	101.5%	10.6	B
	Subtotal	304	306	100.6%	17.7	B
WB	Left Turn	25	23	93.2%	23.3	C
	Through	220	233	105.8%	19.1	B
	Right Turn	219	225	102.6%	17.1	B
	Subtotal	464	481	103.6%	18.5	B
Total		2,930	2,973	101.5%	13.8	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 106 Main St/Ann St Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	17	16	91.2%	4.5	A
	Through	1,237	1,133	91.6%	2.3	A
	Right Turn	9	9	95.6%	5.0	A
	Subtotal	1,263	1,157	91.6%	2.3	A
SB	Left Turn	3	3	100.0%	8.6	A
	Through	639	651	101.8%	1.8	A
	Right Turn	4	4	90.0%	2.8	A
	Subtotal	646	657	101.7%	1.9	A
EB	Left Turn	23	23	100.4%	37.3	D
	Through	3	2	66.7%	17.8	B
	Right Turn	31	27	87.7%	11.0	B
	Subtotal	57	52	91.8%	22.8	C
WB	Left Turn	10	10	103.0%	25.6	C
	Through	1	1	140.0%	16.5	B
	Right Turn	9	8	88.9%	8.1	A
	Subtotal	20	20	98.5%	20.6	C
Total		1,986	1,886	95.0%	3.1	A

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 1		Hill/Alpine			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	11	11	96.4%	8.5	A
	Through	284	302	106.4%	6.4	A
	Right Turn	21	21	101.4%	5.3	A
	Subtotal	316	334	105.7%	6.5	A
SB	Left Turn	26	25	97.7%	12.8	B
	Through	743	771	103.7%	10.7	B
	Right Turn	10	10	102.0%	12.4	B
	Subtotal	779	806	103.5%	10.8	B
EB	Left Turn	1	1	80.0%	6.6	A
	Through	150	153	102.2%	22.1	C
	Right Turn	1	2	160.0%	3.4	A
	Subtotal	152	156	102.4%	22.1	C
WB	Left Turn	52	50	96.5%	31.7	C
	Through	785	749	95.4%	30.7	C
	Right Turn	41	41	99.0%	28.8	C
	Subtotal	878	839	95.6%	30.7	C
Total		2,125	2,135	100.5%	19.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 2

Broadway/Alpine

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	39	36	92.1%	14.7	B
	Through	351	329	93.6%	6.4	A
	Right Turn	42	51	120.7%	7.6	A
	Subtotal	432	415	96.1%	7.1	A
SB	Left Turn	98	99	101.1%	18.7	B
	Through	1,267	1,296	102.3%	21.1	C
	Right Turn	204	206	100.9%	24.7	C
	Subtotal	1,569	1,601	102.1%	21.4	C
EB	Left Turn	21	22	102.4%	53.3	D
	Through	149	152	101.7%	30.7	C
	Right Turn	27	26	96.7%	20.5	C
	Subtotal	197	199	101.1%	31.5	C
WB	Left Turn	177	174	98.2%	40.4	D
	Through	635	598	94.1%	38.7	D
	Right Turn	83	76	92.0%	39.9	D
	Subtotal	895	848	94.7%	39.0	D
Total		3,093	3,063	99.0%	24.9	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 3

Spring/Alpine

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	24	20	84.2%	43.3	D
	Right Turn					
	Subtotal	24	20	84.2%	43.3	D
SB	Left Turn					
	Through	21	19	89.5%	38.9	D
	Right Turn					
	Subtotal	21	19	89.5%	38.9	D
EB	Left Turn	21	21	101.4%	46.3	D
	Through	248	259	104.4%	24.2	C
	Right Turn	15	13	86.0%	24.1	C
	Subtotal	284	293	103.2%	26.1	C
WB	Left Turn	10	12	117.0%	18.2	B
	Through	957	905	94.5%	22.3	C
	Right Turn	84	79	94.4%	15.6	B
	Subtotal	1,051	996	94.7%	21.8	C
Total		1,380	1,328	96.2%	23.2	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 4

Alameda/Alpine

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	58	56	97.2%	23.7	C
	Through	380	384	100.9%	6.6	A
	Right Turn	12	12	102.5%	1.9	A
	Subtotal	450	452	100.5%	8.6	A
SB	Left Turn	171	160	93.6%	38.7	D
	Through	1,069	1,026	95.9%	45.5	D
	Right Turn	240	208	86.6%	213.4	F
	Subtotal	1,480	1,394	94.2%	66.4	E
EB	Left Turn	61	73	119.7%	28.9	C
	Through	122	119	97.4%	9.0	A
	Right Turn	65	67	103.4%	3.1	A
	Subtotal	248	259	104.4%	13.3	B
WB	Left Turn	49	51	103.7%	47.9	D
	Through	753	734	97.4%	33.4	C
	Right Turn	164	163	99.3%	9.9	A
	Subtotal	966	947	98.1%	30.2	C
Total		3,144	3,052	97.1%	41.0	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 5		Main/Alpine			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	1	1	60.0%	6.4	A
	Through	200	156	78.2%	16.5	B
	Right Turn	42	33	77.6%	8.3	A
	Subtotal	243	190	78.0%	15.3	B
SB	Left Turn	227	230	101.2%	15.1	B
	Through	493	501	101.6%	18.2	B
	Right Turn	544	548	100.8%	19.2	B
	Subtotal	1,264	1,279	101.2%	18.1	B
EB	Left Turn	68	63	91.9%	37.8	D
	Through	232	223	96.2%	21.8	C
	Right Turn	5	5	92.0%	4.1	A
	Subtotal	305	290	95.2%	25.8	C
WB	Left Turn					
	Through	421	399	94.7%	36.8	D
	Right Turn	185	175	94.3%	31.7	C
	Subtotal	606	573	94.6%	35.4	D
Total		2,418	2,332	96.4%	23.1	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 6

Vignes/Bauchet

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	20	17	86.0%	14.7	B
	Through	609	561	92.2%	9.9	A
	Right Turn	164	154	93.7%	5.7	A
	Subtotal	793	732	92.3%	9.1	A
SB	Left Turn	61	58	94.4%	13.2	B
	Through	450	435	96.6%	10.0	A
	Right Turn	12	12	100.0%	5.5	A
	Subtotal	523	504	96.4%	10.2	B
EB	Left Turn	4	4	95.0%	5.9	A
	Through	4	3	85.0%	10.9	B
	Right Turn	6	6	105.0%	5.0	A
	Subtotal	14	14	96.4%	11.4	B
WB	Left Turn	123	119	96.7%	22.8	C
	Through	4	4	92.5%	2.5	A
	Right Turn	27	30	110.7%	4.5	A
	Subtotal	154	153	99.1%	19.5	B
Total		1,484	1,402	94.5%	10.7	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 7

Vignes/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	217	227	104.5%	99.1	F
	Through	393	416	105.7%	28.7	C
	Right Turn	118	118	99.8%	7.6	A
	Subtotal	728	760	104.4%	46.6	D
SB	Left Turn	158	143	90.7%	47.0	D
	Through	418	387	92.5%	27.3	C
	Right Turn	33	31	94.5%	15.6	B
	Subtotal	609	561	92.1%	31.8	C
EB	Left Turn	57	58	100.9%	29.2	C
	Through	463	482	104.0%	29.6	C
	Right Turn	281	301	107.1%	17.3	B
	Subtotal	801	840	104.9%	25.2	C
WB	Left Turn	309	274	88.5%	29.8	C
	Through	1,264	1,082	85.6%	43.3	D
	Right Turn	339	286	84.2%	6.9	A
	Subtotal	1,912	1,641	85.8%	34.7	C
Total		4,050	3,802	93.9%	34.7	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 8

Lyon/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	6	8	128.3%	53.8	D
	Through					
	Right Turn	8	9	115.0%	6.0	A
	Subtotal	14	17	120.7%	32.7	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	721	724	100.4%	1.7	A
	Right Turn	18	19	106.7%	5.3	A
	Subtotal	739	743	100.6%	1.8	A
WB	Left Turn	6	5	86.7%	57.6	E
	Through	1,902	1,617	85.0%	169.3	F
	Right Turn	32	26	82.5%	129.9	F
	Subtotal	1,940	1,648	85.0%	168.6	F
Total		2,693	2,408	89.4%	114.2	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 9

Mission/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	265	246	92.9%	192.0	F
	Through	501	503	100.3%	23.2	C
	Right Turn	90	93	103.6%	3.4	A
	Subtotal	856	842	98.4%	69.5	E
SB	Left Turn	26	22	83.5%	151.3	F
	Through	1,021	844	82.6%	156.7	F
	Right Turn	738	617	83.6%	372.8	F
	Subtotal	1,785	1,482	83.0%	252.7	F
EB	Left Turn	286	299	104.5%	57.6	E
	Through	265	257	97.0%	58.1	E
	Right Turn	178	174	97.7%	34.4	C
	Subtotal	729	730	100.1%	52.4	D
WB	Left Turn	305	270	88.5%	277.4	F
	Through	937	832	88.8%	290.6	F
	Right Turn	8	7	82.5%	269.9	F
	Subtotal	1,250	1,109	88.7%	287.2	F
Total		4,620	4,163	90.1%	184.7	F

Vissim Post-Processor
 Average Results from 10 Runs
 Volume and Delay by Movement

Union Station Master Plan
 CB
 AM Peak Hour

Intersection 10 Alameda/Alhambra Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	11	11	95.5%	22.5	C
	Through	435	438	100.8%	7.3	A
	Right Turn					
	Subtotal	446	449	100.7%	7.7	A
SB	Left Turn					
	Through	1,180	1,141	96.7%	9.6	A
	Right Turn	3	4	116.7%	1.1	A
	Subtotal	1,183	1,144	96.7%	9.6	A
EB	Left Turn					
	Through					
	Right Turn	10	9	94.0%	7.2	A
	Subtotal	10	9	94.0%	7.2	A
WB	Left Turn	467	473	101.2%	44.3	D
	Through	16	16	97.5%	48.1	D
	Right Turn	15	15	97.3%	29.4	C
	Subtotal	498	503	101.0%	44.1	D
Total		2,137	2,106	98.5%	17.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 11		Hill/Ord			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	15	15	100.7%	10.2	B
	Through	276	296	107.2%	9.2	A
	Right Turn	22	25	111.8%	9.1	A
	Subtotal	313	336	107.3%	9.3	A
SB	Left Turn	42	46	110.5%	9.6	A
	Through	739	764	103.4%	8.9	A
	Right Turn	15	14	93.3%	8.8	A
	Subtotal	796	824	103.6%	9.1	A
EB	Left Turn	10	9	93.0%	21.8	C
	Through	76	76	100.5%	25.8	C
	Right Turn	10	10	99.0%	29.1	C
	Subtotal	96	96	99.6%	26.2	C
WB	Left Turn	46	46	99.1%	28.5	C
	Through	257	244	95.1%	29.9	C
	Right Turn	30	30	99.0%	8.7	A
	Subtotal	333	320	96.0%	27.7	C
Total		1,538	1,575	102.4%	14.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 12		Broadway/Ord			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	71	67	93.8%	32.9	C
	Through	385	364	94.5%	5.8	A
	Second Right					
	Subtotal	530	500	94.3%	10.6	B
SB	Left Turn	83	114	137.6%	30.6	C
	Through	1,244	1,239	99.6%	22.4	C
	Second Right					
	Subtotal	1,471	1,492	101.4%	23.8	C
EB	Left Turn	9	7	78.9%	34.7	C
	Through	90	96	106.9%	37.6	D
	Second Right					
	Subtotal	140	148	105.5%	34.2	C
WB	Left Turn	64	50	78.0%	51.4	D
	Through	118	92	77.6%	55.9	E
	Second Right					
	Subtotal	220	179	81.2%	50.8	D
Total		2,361	2,318	98.2%	24.0	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 13

Alameda/Main

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	535	483	90.3%	3.4	A
	Right Turn	45	37	82.4%	3.7	A
	Subtotal	580	520	89.7%	3.4	A
SB	Left Turn	34	35	101.5%	11.3	B
	Through	1,466	1,433	97.7%	20.1	C
	Right Turn					
	Subtotal	1,500	1,467	97.8%	20.0	B
EB	Left Turn	204	203	99.6%	29.9	C
	Through	47	45	94.7%	18.9	B
	Right Turn	16	17	108.8%	26.7	C
	Subtotal	267	265	99.3%	28.1	C
WB	Left Turn	21	21	98.1%	45.6	D
	Through					
	Right Turn	8	8	98.8%	5.9	A
	Subtotal	29	29	98.3%	29.0	C
Total		2,376	2,281	96.0%	17.1	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 14

Broadway/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	128	121	94.5%	32.9	C
	Through	337	315	93.4%	24.6	C
	Right Turn	123	118	95.5%	24.7	C
	Subtotal	588	553	94.1%	26.4	C
SB	Left Turn	136	137	100.9%	69.3	E
	Through	840	829	98.7%	53.2	D
	Right Turn	373	364	97.7%	41.2	D
	Subtotal	1,349	1,330	98.6%	51.6	D
EB	Left Turn	139	142	102.2%	41.1	D
	Through	767	782	102.0%	24.2	C
	Right Turn	112	111	99.3%	13.6	B
	Subtotal	1,018	1,035	101.7%	25.3	C
WB	Left Turn	139	122	87.9%	13.4	B
	Through	1,435	1,254	87.4%	12.4	B
	Right Turn	54	44	80.9%	4.4	A
	Subtotal	1,628	1,420	87.2%	12.3	B
Total		4,583	4,339	94.7%	29.6	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 15

Spring/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	3	3	110.0%	64.8	E
	Through	349	326	93.5%	131.3	F
	Right Turn	170	160	94.0%	130.8	F
	Subtotal	522	490	93.8%	131.2	F
EB	Left Turn					
	Through	714	727	101.9%	10.5	B
	Right Turn	312	324	103.7%	12.1	B
	Subtotal	1,026	1,051	102.4%	11.1	B
WB	Left Turn	233	235	100.9%	55.6	E
	Through	1,458	1,222	83.8%	52.5	D
	Right Turn	17	13	77.6%	21.5	C
	Subtotal	1,708	1,470	86.1%	52.8	D
Total		3,256	3,010	92.4%	50.4	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 16

Main/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	146	135	92.3%	40.0	D
	Through	183	177	96.6%	31.6	C
	Right Turn	107	111	103.6%	17.8	B
	Subtotal	436	422	96.9%	30.6	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	70	73	104.4%	31.6	C
	Through	647	681	105.2%	3.9	A
	Right Turn					
	Subtotal	717	754	105.1%	6.8	A
WB	Left Turn					
	Through	1,546	1,311	84.8%	18.3	B
	Right Turn	14	14	102.9%	4.7	A
	Subtotal	1,560	1,326	85.0%	18.2	B
Total		2,713	2,502	92.2%	16.8	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 17

Alameda/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	134	128	95.1%	93.0	F
	Through	450	405	89.9%	30.6	C
	Right Turn	172	165	96.0%	23.6	C
	Subtotal	756	697	92.2%	41.1	D
SB	Left Turn	99	101	102.2%	15.4	B
	Through	1,214	1,177	96.9%	30.5	C
	Right Turn	190	187	98.6%	37.6	D
	Subtotal	1,503	1,465	97.5%	30.3	C
EB	Left Turn	78	74	94.5%	13.4	B
	Through	549	598	108.9%	8.0	A
	Right Turn	127	129	101.8%	4.2	A
	Subtotal	754	801	106.2%	7.9	A
WB	Left Turn	164	139	84.5%	30.7	C
	Through	1,236	1,041	84.2%	58.0	E
	Right Turn	52	42	81.3%	48.4	D
	Subtotal	1,452	1,222	84.2%	54.6	D
Total		4,465	4,186	93.7%	34.8	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 18 Union Station Driveway/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	57	60	104.6%	16.9	B
	Through					
	Right Turn	64	54	83.8%	53.4	D
	Subtotal	121	113	93.6%	35.7	D
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	737	1,219	165.4%	167.7	F
	Right Turn	83	65	78.6%	125.5	F
	Subtotal	820	1,284	156.6%	165.6	F
WB	Left Turn	84	84	100.4%	3.2	A
	Through	1,430	780	54.5%	3.4	A
	Right Turn					
	Subtotal	1,514	864	57.1%	3.4	A
Total		2,455	2,261	92.1%	96.6	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 19

Alameda/Los Angeles

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	614	551	89.7%	13.9	B
	Right Turn	123	107	87.3%	8.8	A
	Subtotal	737	658	89.3%	13.0	B
SB	Left Turn	61	67	109.2%	21.1	C
	Through	1,115	1,054	94.6%	32.5	C
	Right Turn	329	318	96.5%	28.6	C
	Subtotal	1,505	1,438	95.6%	31.1	C
EB	Left Turn	100	108	108.0%	26.7	C
	Through	56	55	97.9%	30.1	C
	Right Turn	20	19	96.5%	17.7	B
	Subtotal	176	182	103.5%	27.2	C
WB	Left Turn	115	108	93.5%	44.8	D
	Through	60	57	94.5%	28.8	C
	Right Turn	42	44	105.7%	7.6	A
	Subtotal	217	209	96.1%	33.1	C
Total		2,635	2,487	94.4%	25.6	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 20

Broadway/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	466	496	106.5%	14.8	B
	Right Turn					
	Subtotal	466	496	106.5%	14.8	B
SB	Left Turn					
	Through	762	730	95.9%	17.4	B
	Right Turn					
	Subtotal	762	730	95.9%	17.4	B
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	365	306	83.8%	18.4	B
	Through					
	Right Turn	829	688	83.0%	9.2	A
	Subtotal	1,194	994	83.2%	12.0	B
Total		2,422	2,220	91.7%	14.4	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 21

Spring/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn					
	Through	877	701	79.9%	48.5	D
	Right Turn	35	31	89.1%	23.3	C
	Subtotal	912	732	80.3%	47.4	D
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	529	480	90.7%	69.1	E
	Through	1,159	959	82.7%	37.2	D
	Right Turn					
	Subtotal	1,688	1,439	85.2%	48.2	D
Total		2,600	2,171	83.5%	47.8	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 22

Main/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	80	83	103.5%	19.9	B
	Through	355	358	100.9%	4.6	A
	Right Turn					
	Subtotal	435	441	101.4%	7.7	A
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn					
	Through	1,608	1,358	84.5%	42.0	D
	Right Turn	81	63	78.3%	30.2	C
	Subtotal	1,689	1,422	84.2%	41.4	D
Total		2,124	1,863	87.7%	32.6	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 23

Los Angeles/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	88	86	97.2%	21.6	C
	Through	265	279	105.2%	5.5	A
	Right Turn					
	Subtotal	353	364	103.2%	9.5	A
SB	Left Turn					
	Through	347	333	95.9%	19.6	B
	Right Turn	38	35	93.2%	19.9	B
	Subtotal	385	368	95.6%	19.5	B
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	360	288	80.0%	56.7	E
	Through	1,563	1,309	83.8%	57.4	E
	Right Turn	71	55	77.6%	43.0	D
	Subtotal	1,994	1,652	82.9%	56.7	E
Total		2,732	2,385	87.3%	43.0	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 24

Alameda/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	143	129	90.1%	88.2	F
	Through	849	777	91.5%	31.1	C
	Right Turn	50	81	162.8%	27.5	C
	Subtotal	1,042	987	94.7%	38.4	D
SB	Left Turn	13	33	253.1%	71.2	E
	Through	939	837	89.2%	104.6	F
	Right Turn	69	69	100.3%	116.8	F
	Subtotal	1,021	940	92.0%	104.4	F
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	484	372	76.8%	159.2	F
	Through	1,782	1,448	81.3%	153.6	F
	Right Turn	274	226	82.6%	153.2	F
	Subtotal	2,540	2,046	80.5%	154.6	F
Total		4,603	3,972	86.3%	111.2	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 25

Vignes/Ramirez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	93	91	97.4%	42.9	D
	Through	195	198	101.7%	26.1	C
	Right Turn	101	105	103.5%	7.0	A
	Subtotal	389	393	101.1%	25.0	C
SB	Left Turn	523	540	103.3%	68.3	E
	Through	189	240	127.0%	33.1	C
	Right Turn	353	263	74.4%	36.6	D
	Subtotal	1,065	1,043	97.9%	52.8	D
EB	Left Turn	235	276	117.6%	60.2	E
	Through	68	6	8.8%	15.2	B
	Right Turn	70	13	18.7%	24.4	C
	Subtotal	373	295	79.2%	57.2	E
WB	Left Turn	109	105	96.6%	39.5	D
	Through	149	169	113.5%	74.8	E
	Right Turn	373	372	99.7%	17.4	B
	Subtotal	631	646	102.4%	37.2	D
Total		2,458	2,378	96.8%	44.8	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 26

Broadway/Aliso

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	331	364	109.9%	9.9	A
	Right Turn	83	87	104.3%	3.8	A
	Subtotal	414	451	108.8%	8.6	A
SB	Left Turn	144	133	92.0%	11.0	B
	Through	983	901	91.7%	7.3	A
	Right Turn					
	Subtotal	1,127	1,034	91.7%	7.8	A
EB	Left Turn	135	136	100.9%	25.9	C
	Through	279	278	99.7%	20.3	C
	Right Turn	163	167	102.4%	9.3	A
	Subtotal	577	581	100.7%	18.5	B
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		2,118	2,066	97.5%	11.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 27

Spring/Aliso

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	171	150	87.6%	2.3	A
	Through	1,235	1,179	95.4%	20.1	C
	Right Turn					
	Subtotal	1,406	1,328	94.5%	18.3	B
EB	Left Turn					
	Through	309	303	98.0%	16.5	B
	Right Turn	197	194	98.4%	7.9	A
	Subtotal	506	497	98.2%	13.1	B
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		1,912	1,825	95.4%	16.8	B

Vissim Post-Processor
 Average Results from 10 Runs
 Volume and Delay by Movement

Union Station Master Plan
 CB
 AM Peak Hour

Intersection 28 Main/Aliso Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	388	396	101.9%	7.4	A
	Right Turn	217	215	99.0%	18.6	B
	Subtotal	605	610	100.9%	11.6	B
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	47	45	94.9%	8.3	A
	Through	433	440	101.6%	14.6	B
	Right Turn					
	Subtotal	480	485	100.9%	14.1	B
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		1,085	1,095	100.9%	12.7	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 29

Los Angeles/Aliso

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	334	344	102.9%	16.6	B
	Right Turn	85	146	171.3%	16.1	B
	Subtotal	479	489	102.2%	16.5	B
SB	Left Turn					
	Through	707	619	87.5%	13.2	B
	Right Turn					
	Subtotal	707	619	87.5%	13.2	B
EB	Left Turn	252	264	104.6%	18.5	B
	Through	222	247	111.3%	31.9	C
	Right Turn	157	146	92.7%	29.5	C
	Subtotal	650	656	101.0%	26.0	C
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		1,836	1,764	96.1%	19.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 30

Alameda/Aliso

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	777	702	90.3%	225.9	F
	Right Turn	158	149	94.5%	98.2	F
	Subtotal	935	851	91.0%	203.2	F
SB	Left Turn	200	173	86.3%	48.5	D
	Through	1,223	1,041	85.1%	17.2	B
	Right Turn					
	Subtotal	1,423	1,213	85.2%	21.7	C
EB	Left Turn	59	89	151.5%	47.2	D
	Through	66	67	101.2%	27.6	C
	Right Turn	157	153	97.5%	9.1	A
	Subtotal	282	309	109.6%	24.4	C
WB	Left Turn	149	139	93.1%	19.5	B
	Through					
	Right Turn	206	196	95.3%	55.5	E
	Subtotal	355	335	94.4%	39.7	D
Total		2,995	2,709	90.4%	78.5	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 31

US 101 Ramps/Commercial

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	13	13	103.1%	29.3	C
	Through	43	41	96.0%	34.1	C
	Right Turn	7	6	84.3%	8.1	A
	Subtotal	63	61	96.2%	29.9	C
SB	Left Turn	218	227	103.9%	31.5	C
	Through	63	65	103.0%	31.9	C
	Right Turn	200	188	94.1%	4.8	A
	Subtotal	481	480	99.7%	21.4	C
EB	Left Turn	271	250	92.3%	26.4	C
	Through	77	74	96.6%	20.0	B
	Right Turn	26	21	80.8%	7.3	A
	Subtotal	374	346	92.4%	23.9	C
WB	Left Turn	10	9	94.0%	24.4	C
	Through	122	112	91.7%	33.8	C
	Right Turn	176	165	93.6%	20.2	C
	Subtotal	308	286	92.9%	25.6	C
Total		1,226	1,172	95.6%	23.7	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 32

Broadway/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	1	1	140.0%	22.3	C
	Through	363	397	109.4%	8.4	A
	Right Turn					
	Subtotal	364	398	109.5%	8.6	A
SB	Left Turn	55	51	92.4%	6.5	A
	Through	1,028	954	92.8%	6.9	A
	Right Turn	63	70	111.0%	7.5	A
	Subtotal	1,146	1,074	93.8%	7.0	A
EB	Left Turn	25	28	110.8%	26.1	C
	Through	585	607	103.8%	19.7	B
	Right Turn	154	152	98.6%	17.5	B
	Subtotal	764	787	103.0%	19.5	B
WB	Left Turn	79	64	81.0%	29.1	C
	Through	973	919	94.4%	15.7	B
	Right Turn	26	25	94.2%	12.8	B
	Subtotal	1,078	1,007	93.4%	16.6	B
Total		3,352	3,267	97.5%	13.2	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 33

Spring/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	59	49	83.6%	44.8	D
	Through	1,172	1,129	96.4%	48.8	D
	Right Turn	201	179	88.9%	38.6	D
	Subtotal	1,432	1,357	94.8%	47.4	D
EB	Left Turn					
	Through	499	530	106.2%	18.9	B
	Right Turn	141	138	97.9%	24.5	C
	Subtotal	640	668	104.4%	20.1	C
WB	Left Turn	113	113	99.9%	9.5	A
	Through	877	855	97.5%	9.5	A
	Right Turn					
	Subtotal	990	968	97.8%	9.5	A
Total		3,062	2,993	97.8%	29.0	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 34

Main/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	120	122	101.7%	20.0	B
	Through	457	477	104.4%	19.6	B
	Right Turn	174	180	103.4%	15.6	B
	Subtotal	751	779	103.8%	18.7	B
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	60	56	94.0%	15.3	B
	Through	498	520	104.5%	18.1	B
	Right Turn					
	Subtotal	558	577	103.3%	17.8	B
WB	Left Turn					
	Through	870	836	96.1%	14.8	B
	Right Turn	88	83	94.2%	16.7	B
	Subtotal	958	919	95.9%	15.0	B
Total		2,267	2,275	100.4%	17.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 35

Los Angeles/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	75	76	101.3%	27.2	C
	Through	331	331	100.1%	12.0	B
	Right Turn	60	58	97.3%	14.2	B
	Subtotal	466	466	100.0%	14.5	B
SB	Left Turn	175	157	89.8%	24.1	C
	Through	872	796	91.3%	19.0	B
	Right Turn	86	92	106.7%	26.3	C
	Subtotal	1,133	1,045	92.2%	20.6	C
EB	Left Turn	31	47	151.6%	70.7	E
	Through	400	420	105.0%	24.9	C
	Right Turn	241	229	95.1%	22.9	C
	Subtotal	672	696	103.6%	27.2	C
WB	Left Turn	109	98	89.9%	43.0	D
	Through	797	750	94.1%	57.6	E
	Right Turn	117	110	93.9%	49.1	D
	Subtotal	1,023	958	93.6%	55.3	E
Total		3,294	3,164	96.1%	32.1	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 36

San Pedro/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	76	76	100.4%	28.0	C
	Through					
	Right Turn	42	58	137.6%	21.4	C
	Subtotal	118	134	113.6%	25.2	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	369	377	102.1%	9.5	A
	Right Turn	266	256	96.2%	14.2	B
	Subtotal	635	633	99.6%	11.4	B
WB	Left Turn	149	156	104.5%	18.2	B
	Through	947	876	92.5%	13.2	B
	Right Turn					
	Subtotal	1,096	1,032	94.1%	14.0	B
Total		1,849	1,798	97.3%	14.1	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 37

Alameda/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	240	226	94.3%	86.4	F
	Through	771	717	93.0%	155.4	F
	Right Turn					
	Subtotal	1,011	943	93.3%	138.9	F
SB	Left Turn	67	59	87.5%	49.8	D
	Through	970	842	86.8%	30.5	C
	Right Turn	492	430	87.4%	14.5	B
	Subtotal	1,529	1,330	87.0%	25.8	C
EB	Left Turn	95	99	104.0%	40.3	D
	Through	186	212	113.9%	23.4	C
	Right Turn	130	121	93.1%	36.5	D
	Subtotal	411	432	105.0%	31.0	C
WB	Left Turn	28	28	98.9%	74.1	E
	Through	364	384	105.5%	77.3	E
	Right Turn	69	71	103.0%	102.6	F
	Subtotal	461	483	104.8%	80.5	F
Total		3,412	3,188	93.4%	65.6	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 38

Los Angeles/1st

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	446	439	98.4%	16.9	B
	Right Turn					
	Subtotal	446	439	98.4%	16.9	B
SB	Left Turn	51	47	92.0%	23.2	C
	Through	1,017	930	91.4%	18.9	B
	Right Turn	154	145	94.1%	9.6	A
	Subtotal	1,222	1,121	91.8%	17.7	B
EB	Left Turn	10	13	129.0%	24.7	C
	Through	513	532	103.6%	15.2	B
	Right Turn	93	94	101.2%	7.4	A
	Subtotal	616	639	103.7%	14.2	B
WB	Left Turn	46	39	85.4%	22.9	C
	Through	787	780	99.1%	15.9	B
	Right Turn	10	11	105.0%	3.9	A
	Subtotal	843	830	98.4%	16.1	B
Total		3,127	3,029	96.9%	16.4	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 39

San Pedro/1st

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	15	24	161.3%	38.4	D
	Through	98	98	100.1%	20.6	C
	Right Turn	21	22	106.7%	8.3	A
	Subtotal	134	145	108.0%	21.9	C
SB	Left Turn	15	13	85.3%	23.0	C
	Through	379	365	96.4%	23.6	C
	Right Turn	21	34	163.3%	34.4	C
	Subtotal	415	412	99.4%	24.6	C
EB	Left Turn	10	27	272.0%	26.1	C
	Through	539	538	99.9%	8.0	A
	Right Turn	15	14	93.3%	5.1	A
	Subtotal	564	579	102.7%	8.8	A
WB	Left Turn	33	33	99.1%	25.0	C
	Through	807	783	97.1%	20.9	C
	Right Turn	10	9	90.0%	13.0	B
	Subtotal	850	825	97.1%	20.9	C
Total		1,963	1,962	99.9%	18.2	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 40 Central/1st Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	154	154	100.3%	23.4	C
	Through					
	Right Turn	12	11	94.2%	8.1	A
	Subtotal	166	166	99.8%	22.5	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	472	494	104.7%	19.0	B
	Right Turn	103	102	99.4%	12.3	B
	Subtotal	575	597	103.7%	17.9	B
WB	Left Turn	26	21	80.0%	10.2	B
	Through	696	692	99.4%	9.6	A
	Right Turn					
	Subtotal	722	713	98.7%	9.6	A
Total		1,463	1,475	100.8%	14.5	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
AM Peak Hour

Intersection 41

Alameda/1st

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	4	4	107.5%	43.4	D
	Through	953	909	95.4%	119.3	F
	Right Turn	50	51	101.0%	71.5	E
	Subtotal	1,007	964	95.7%	116.9	F
SB	Left Turn	24	20	82.9%	33.8	C
	Through	913	804	88.1%	16.0	B
	Right Turn	191	166	86.9%	18.1	B
	Subtotal	1,128	990	87.8%	16.7	B
EB	Left Turn	31	31	101.0%	26.3	C
	Through	402	424	105.3%	11.8	B
	Right Turn	51	52	102.2%	12.4	B
	Subtotal	484	507	104.7%	12.9	B
WB	Left Turn					
	Through	527	539	102.3%	30.2	C
	Right Turn	27	27	99.3%	26.7	C
	Subtotal	554	566	102.2%	30.0	C
Total		3,173	3,027	95.4%	47.5	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 101

Alameda St/Spring St/College St

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	133	139	104.7%	56.1	E
	Through	456	466	102.2%	4.8	A
	Right Turn	16	15	96.3%	2.6	A
	Subtotal	605	621	102.6%	17.5	B
SB	Left Turn	10	8	77.0%	13.7	B
	Through	1,265	1,210	95.6%	28.3	C
	Right Turn	252	243	96.5%	30.4	C
	Subtotal	1,527	1,461	95.7%	28.8	C
EB	Left Turn	123	119	96.3%	53.9	D
	Through	44	44	100.0%	28.7	C
	Right Turn	150	144	96.1%	17.2	B
	Subtotal	317	307	96.8%	33.0	C
WB	Left Turn	65	61	94.2%	22.5	C
	Through	213	215	100.9%	20.4	C
	Right Turn	27	26	94.8%	13.6	B
	Subtotal	305	302	98.9%	20.4	C
Total		2,754	2,690	97.7%	25.5	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 104

Broadway/College St

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	21	18	84.8%	19.4	B
	Through	418	395	94.4%	10.9	B
	Right Turn	16	12	74.4%	9.3	A
	Subtotal	455	424	93.3%	11.1	B
SB	Left Turn	84	82	97.6%	20.1	C
	Through	1,459	1,470	100.7%	20.6	C
	Right Turn	231	235	101.7%	23.0	C
	Subtotal	1,774	1,787	100.7%	21.0	C
EB	Left Turn	30	31	103.7%	55.5	E
	Through	240	235	98.1%	30.7	C
	Right Turn	36	33	92.5%	18.3	B
	Subtotal	306	300	98.0%	32.3	C
WB	Left Turn	74	71	95.5%	118.6	F
	Through	440	442	100.5%	113.5	F
	Right Turn	84	80	95.7%	98.8	F
	Subtotal	598	593	99.2%	112.3	F
Total		3,133	3,104	99.1%	38.5	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Existing
AM Peak Hour

Intersection 106

Main St/Ann St

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	25	23	92.8%	42.7	D
	Through	455	398	87.5%	18.2	B
	Right Turn	5	4	80.0%	7.5	A
	Subtotal	485	425	87.7%	19.5	B
SB	Left Turn	6	6	91.7%	17.1	B
	Through	1,493	1,507	101.0%	20.3	C
	Right Turn	23	27	115.2%	20.8	C
	Subtotal	1,522	1,539	101.1%	20.3	C
EB	Left Turn	13	13	97.7%	13.3	B
	Through	6	5	88.3%	17.3	B
	Right Turn	30	26	87.7%	8.9	A
	Subtotal	49	44	90.4%	12.2	B
WB	Left Turn	8	8	100.0%	9.1	A
	Through	2	2	100.0%	3.2	A
	Right Turn	2	2	90.0%	1.1	A
	Subtotal	12	12	98.3%	8.0	A
Total		2,068	2,021	97.7%	19.9	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 1		Hill/Alpine			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	32	32	101.3%	17.0	B
	Through	665	680	102.3%	17.0	B
	Right Turn	67	66	99.0%	16.1	B
	Subtotal	764	779	101.9%	17.0	B
SB	Left Turn	15	15	98.7%	15.3	B
	Through	435	454	104.3%	9.9	A
	Right Turn	26	26	101.2%	8.2	A
	Subtotal	476	495	103.9%	10.0	B
EB	Left Turn	47	48	101.9%	24.2	C
	Through	293	287	98.1%	17.9	B
	Right Turn	16	16	98.8%	13.9	B
	Subtotal	356	351	98.6%	18.6	B
WB	Left Turn	32	29	89.7%	34.4	C
	Through	340	319	93.9%	30.9	C
	Right Turn	82	74	90.5%	23.0	C
	Subtotal	454	422	93.0%	29.8	C
Total		2,050	2,046	99.8%	18.2	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 2 Broadway/Alpine Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	58	50	86.6%	20.1	C
	Through	1,134	1,066	94.0%	21.9	C
	Right Turn	100	103	102.9%	21.5	C
	Subtotal	1,292	1,219	94.3%	21.8	C
SB	Left Turn	55	54	98.5%	33.2	C
	Through	649	713	109.8%	22.1	C
	Right Turn	48	51	106.5%	20.8	C
	Subtotal	752	818	108.8%	22.8	C
EB	Left Turn	79	78	98.5%	19.2	B
	Through	254	251	98.7%	10.3	B
	Right Turn	42	42	99.5%	6.5	A
	Subtotal	375	370	98.7%	11.6	B
WB	Left Turn	52	49	94.8%	31.0	C
	Through	348	324	93.2%	26.7	C
	Right Turn	254	242	95.2%	26.2	C
	Subtotal	654	615	94.1%	26.8	C
Total		3,073	3,022	98.4%	21.8	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 3 Spring/Alpine Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	7	6	90.0%	30.5	C
	Through					
	Right Turn	102	77	75.3%	18.7	B
	Subtotal	109	83	76.2%	20.6	C
SB	Left Turn	17	15	87.6%	31.8	C
	Through	29	28	95.5%	35.0	C
	Right Turn	8	8	102.5%	11.6	B
	Subtotal	54	51	94.1%	31.3	C
EB	Left Turn	10	12	116.0%	31.1	C
	Through	390	376	96.3%	19.3	B
	Right Turn	15	14	94.7%	20.7	C
	Subtotal	415	402	96.7%	19.7	B
WB	Left Turn	7	8	108.6%	8.2	A
	Through	646	592	91.6%	11.8	B
	Right Turn	13	11	85.4%	7.2	A
	Subtotal	666	611	91.7%	11.7	B
Total		1,244	1,146	92.1%	16.3	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 4 Alameda/Alpine Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	179	170	95.1%	16.1	B
	Through	1,112	1,060	95.3%	13.4	B
	Right Turn	49	48	97.6%	11.8	B
	Subtotal	1,340	1,278	95.4%	13.8	B
SB	Left Turn	116	104	89.4%	63.0	E
	Through	500	456	91.3%	18.7	B
	Right Turn	57	49	85.1%	16.9	B
	Subtotal	673	609	90.4%	26.7	C
EB	Left Turn	102	105	102.5%	15.1	B
	Through	335	318	94.9%	18.8	B
	Right Turn	72	66	91.3%	6.9	A
	Subtotal	509	488	95.9%	16.6	B
WB	Left Turn	55	56	102.5%	38.9	D
	Through	430	392	91.2%	19.4	B
	Right Turn	393	358	91.1%	11.2	B
	Subtotal	878	807	91.9%	17.2	B
Total		3,400	3,181	93.6%	17.6	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 5		Main/Alpine			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	5	3	62.0%	12.1	B
	Through	657	521	79.4%	22.0	C
	Right Turn	35	31	88.6%	18.3	B
	Subtotal	697	556	79.7%	21.8	C
SB	Left Turn	201	203	100.7%	37.2	D
	Through	275	267	96.9%	20.4	C
	Right Turn	186	191	102.7%	13.8	B
	Subtotal	662	660	99.7%	24.1	C
EB	Left Turn	228	215	94.3%	67.2	E
	Through	271	256	94.3%	23.5	C
	Right Turn	1	1	130.0%	5.7	A
	Subtotal	500	472	94.4%	44.3	D
WB	Left Turn					
	Through	687	611	88.9%	37.4	D
	Right Turn	370	326	88.0%	42.8	D
	Subtotal	1,057	937	88.6%	39.3	D
Total		2,916	2,624	90.0%	33.0	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 6 Vignes/Bauchet Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	31	24	75.8%	13.8	B
	Through	980	846	86.4%	12.5	B
	Right Turn	57	48	84.4%	6.1	A
	Subtotal	1,068	918	85.9%	12.2	B
SB	Left Turn	27	25	93.7%	20.4	C
	Through	463	448	96.7%	10.7	B
	Right Turn	5	4	86.0%	3.2	A
	Subtotal	495	477	96.4%	11.3	B
EB	Left Turn	11	12	107.3%	12.4	B
	Through	5	5	94.0%	11.1	B
	Right Turn	20	22	110.0%	6.1	A
	Subtotal	36	39	106.9%	10.0	A
WB	Left Turn	263	260	98.7%	22.4	C
	Through	6	6	103.3%	11.1	B
	Right Turn	81	80	99.3%	6.3	A
	Subtotal	350	346	98.9%	18.6	B
Total		1,949	1,780	91.3%	13.1	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 7

Vignes/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	346	289	83.4%	212.8	F
	Through	719	643	89.4%	62.0	E
	Right Turn	208	189	90.6%	19.2	B
	Subtotal	1,273	1,120	87.9%	90.5	F
SB	Left Turn	296	265	89.4%	43.7	D
	Through	426	396	93.0%	33.5	C
	Right Turn	62	61	98.1%	24.4	C
	Subtotal	784	721	92.0%	36.3	D
EB	Left Turn	45	42	92.9%	44.0	D
	Through	948	905	95.4%	45.4	D
	Right Turn	325	330	101.6%	22.0	C
	Subtotal	1,318	1,276	96.8%	39.5	D
WB	Left Turn	198	182	91.9%	48.4	D
	Through	878	745	84.8%	75.6	E
	Right Turn	304	255	84.0%	6.4	A
	Subtotal	1,380	1,182	85.6%	56.9	E
Total		4,755	4,299	90.4%	56.3	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 8 Lyon/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	3	4	116.7%	24.5	C
	Through					
	Right Turn	4	4	87.5%	4.3	A
	Subtotal	7	7	100.0%	23.7	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	1,450	1,357	93.6%	1.7	A
	Right Turn	2	2	105.0%	4.3	A
	Subtotal	1,452	1,359	93.6%	1.8	A
WB	Left Turn	14	12	87.9%	166.6	F
	Through	1,377	1,165	84.6%	273.4	F
	Right Turn	7	5	65.7%	196.2	F
	Subtotal	1,398	1,182	84.5%	272.6	F
Total		2,857	2,547	89.2%	118.0	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 9 Mission/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	348	241	69.2%	908.1	F
	Through	581	482	82.9%	88.2	F
	Right Turn	83	70	84.3%	56.5	E
	Subtotal	1,012	792	78.3%	338.4	F
SB	Left Turn	46	43	92.8%	44.6	D
	Through	476	468	98.2%	48.5	D
	Right Turn	366	370	101.0%	178.9	F
	Subtotal	888	880	99.1%	99.3	F
EB	Left Turn	445	443	99.6%	49.8	D
	Through	663	602	90.8%	55.2	E
	Right Turn	346	308	89.0%	45.9	D
	Subtotal	1,454	1,353	93.1%	51.4	D
WB	Left Turn	172	162	94.0%	125.8	F
	Through	684	653	95.5%	152.5	F
	Right Turn	27	27	98.9%	145.8	F
	Subtotal	883	842	95.3%	147.3	F
Total		4,237	3,867	91.3%	122.3	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 10 Alameda/Hollywood Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	1,325	1,263	95.3%	11.4	B
	Right Turn					
	Subtotal	1,325	1,263	95.3%	11.4	B
SB	Left Turn					
	Through	622	575	92.4%	1.0	A
	Right Turn	5	4	80.0%	0.1	A
	Subtotal	627	579	92.3%	1.0	A
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	260	254	97.5%	43.2	D
	Through	1	1	100.0%	23.2	C
	Right Turn	15	14	94.7%	37.3	D
	Subtotal	276	269	97.4%	42.9	D
Total		2,228	2,111	94.7%	12.6	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 11 Hill/Ord Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	21	19	88.6%	16.3	B
	Through	655	665	101.6%	13.6	B
	Right Turn	64	67	105.3%	12.7	B
	Subtotal	740	751	101.5%	13.6	B
SB	Left Turn	51	52	102.5%	17.5	B
	Through	411	419	101.9%	8.1	A
	Right Turn	21	22	104.8%	12.0	B
	Subtotal	483	493	102.1%	9.2	A
EB	Left Turn	15	16	104.7%	18.3	B
	Through	213	213	100.1%	17.8	B
	Right Turn	31	29	93.9%	15.7	B
	Subtotal	259	258	99.6%	17.7	B
WB	Left Turn	30	29	95.7%	20.2	C
	Through	185	176	94.9%	18.6	B
	Right Turn	94	88	93.4%	7.0	A
	Subtotal	309	292	94.5%	15.3	B
Total		1,791	1,795	100.2%	13.2	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 12		Broadway/Ord			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	119	107	89.7%	40.7	D
	Through	1,040	959	92.2%	23.1	C
	Second Right					
	Subtotal	1,224	1,128	92.2%	25.0	C
SB	Left Turn	61	91	149.7%	78.3	E
	Through	636	661	103.9%	17.0	B
	Second Right					
	Subtotal	743	799	107.5%	25.2	C
EB	Left Turn	121	123	101.7%	17.8	B
	Through	124	126	101.4%	21.0	C
	Second Right					
	Subtotal	328	332	101.3%	17.6	B
WB	Left Turn	39	30	77.9%	30.4	C
	Through	144	108	75.1%	30.0	C
	Second Right					
	Subtotal	314	243	77.4%	28.8	C
Total		2,609	2,502	95.9%	24.5	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 13 Alameda/Main Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	1,101	1,029	93.4%	5.1	A
	Right Turn	13	13	97.7%	3.0	A
	Subtotal	1,114	1,041	93.5%	5.1	A
SB	Left Turn	16	14	88.1%	34.1	C
	Through	882	844	95.7%	21.5	C
	Right Turn					
	Subtotal	898	858	95.6%	21.7	C
EB	Left Turn	948	813	85.8%	36.8	D
	Through	23	19	80.4%	35.9	D
	Right Turn	37	33	87.8%	13.0	B
	Subtotal	1,008	864	85.7%	36.0	D
WB	Left Turn	42	45	106.9%	44.3	D
	Through					
	Right Turn	73	71	97.0%	7.2	A
	Subtotal	115	116	100.6%	21.5	C
Total		3,135	2,879	91.8%	20.1	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 14 Broadway/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	192	189	98.5%	44.6	D
	Through	855	825	96.4%	50.0	D
	Right Turn	182	173	95.2%	87.1	F
	Subtotal	1,229	1,187	96.6%	54.3	D
SB	Left Turn	112	114	102.1%	107.7	F
	Through	443	447	100.9%	27.4	C
	Right Turn	203	207	101.8%	13.1	B
	Subtotal	758	768	101.3%	36.4	D
EB	Left Turn	210	184	87.7%	195.2	F
	Through	1,055	952	90.3%	184.8	F
	Right Turn	64	57	89.5%	93.3	F
	Subtotal	1,329	1,194	89.8%	181.5	F
WB	Left Turn	139	121	87.3%	53.0	D
	Through	1,203	999	83.1%	16.9	B
	Right Turn	159	131	82.3%	7.3	A
	Subtotal	1,501	1,251	83.4%	19.2	B
Total		4,817	4,400	91.3%	74.5	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 15 Spring/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	30	29	97.3%	42.7	D
	Through	99	101	102.2%	41.0	D
	Right Turn	72	68	94.2%	31.4	C
	Subtotal	201	198	98.6%	37.8	D
EB	Left Turn					
	Through	1,126	1,039	92.3%	18.0	B
	Right Turn	223	221	99.0%	5.5	A
	Subtotal	1,349	1,260	93.4%	15.9	B
WB	Left Turn	179	181	101.3%	58.7	E
	Through	1,429	1,157	81.0%	58.1	E
	Right Turn	100	84	84.2%	23.7	C
	Subtotal	1,708	1,423	83.3%	56.0	E
Total		3,258	2,881	88.4%	36.9	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 16 Main/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	427	342	80.0%	67.9	E
	Through	880	748	85.0%	67.4	E
	Right Turn	278	251	90.1%	44.4	D
	Subtotal	1,585	1,340	84.5%	63.6	E
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	105	97	92.1%	114.2	F
	Through	1,051	990	94.2%	49.5	D
	Right Turn					
	Subtotal	1,156	1,087	94.0%	56.0	E
WB	Left Turn					
	Through	1,296	1,044	80.5%	32.0	C
	Right Turn	23	21	93.0%	7.1	A
	Subtotal	1,319	1,065	80.7%	31.5	C
Total		4,060	3,491	86.0%	51.1	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 17 Alameda/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	113	106	93.7%	151.0	F
	Through	822	801	97.5%	19.2	B
	Right Turn	161	167	103.9%	17.2	B
	Subtotal	1,096	1,075	98.0%	32.7	C
SB	Left Turn	100	98	97.9%	13.7	B
	Through	699	666	95.3%	21.6	C
	Right Turn	162	154	94.8%	29.2	C
	Subtotal	961	918	95.5%	22.0	C
EB	Left Turn	150	135	89.7%	58.7	E
	Through	969	922	95.2%	17.5	B
	Right Turn	210	193	91.9%	5.9	A
	Subtotal	1,329	1,250	94.0%	20.5	C
WB	Left Turn	173	134	77.6%	40.5	D
	Through	1,044	827	79.2%	80.6	F
	Right Turn	142	106	74.3%	57.8	E
	Subtotal	1,359	1,067	78.5%	73.5	E
Total		4,745	4,309	90.8%	36.0	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 18 Union Station Driveway/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	97	95	98.1%	26.6	C
	Through					
	Right Turn	175	15	8.5%	123.8	F
	Subtotal	272	110	40.5%	39.9	D
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	1,143	993	86.9%	249.9	F
	Right Turn	87	39	45.2%	188.1	F
	Subtotal	1,230	1,032	83.9%	247.6	F
WB	Left Turn	49	84	172.2%	4.2	A
	Through	1,237	1,100	89.0%	5.3	A
	Right Turn					
	Subtotal	1,286	1,185	92.1%	5.2	A
Total		2,788	2,327	83.5%	110.1	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 19

Alameda/Los Angeles

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	558	551	98.7%	22.9	C
	Right Turn	88	87	98.6%	11.4	B
	Subtotal	646	638	98.7%	21.5	C
SB	Left Turn	72	72	100.1%	41.5	D
	Through	836	750	89.7%	34.4	C
	Right Turn	174	169	96.9%	35.0	D
	Subtotal	1,082	991	91.6%	34.9	C
EB	Left Turn	441	425	96.4%	51.6	D
	Through	94	88	93.6%	49.2	D
	Right Turn	110	100	90.5%	25.6	C
	Subtotal	645	613	95.0%	46.7	D
WB	Left Turn	156	155	99.1%	32.0	C
	Through	62	60	97.1%	32.5	C
	Right Turn	97	105	108.7%	6.6	A
	Subtotal	315	320	101.7%	23.6	C
Total		2,688	2,561	95.3%	33.1	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 20 Broadway/Arcadia Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	1,038	1,032	99.4%	14.0	B
	Through					
	Right Turn					
	Subtotal	1,038	1,032	99.4%	14.0	B
SB	Left Turn	508	492	96.8%	11.9	B
	Through					
	Right Turn					
	Subtotal	508	492	96.8%	11.9	B
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	205	187	91.2%	20.4	C
	Through					
	Right Turn					
	Subtotal	855	793	92.7%	17.6	B
Total		2,401	2,316	96.5%	14.7	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 21 Spring/Arcadia Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn					
	Through	451	358	79.3%	56.8	E
	Right Turn	103	98	95.0%	18.9	B
	Subtotal	554	455	82.2%	47.5	D
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	213	250	117.4%	69.4	E
	Through	752	699	92.9%	29.9	C
	Right Turn					
	Subtotal	965	949	98.3%	39.0	D
Total		1,519	1,404	92.4%	41.6	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 22 Main/Arcadia Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	274	228	83.3%	27.7	C
	Through	1,324	1,119	84.5%	22.7	C
	Right Turn					
	Subtotal	1,598	1,347	84.3%	23.4	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn					
	Through	691	726	105.1%	12.5	B
	Right Turn	93	97	104.7%	9.1	A
	Subtotal	784	823	105.0%	11.9	B
Total		2,382	2,171	91.1%	19.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 23 Los Angeles/Arcadia Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	190	182	95.8%	8.9	A
	Through	1,079	1,014	94.0%	7.3	A
	Right Turn					
	Subtotal	1,269	1,196	94.3%	7.6	A
SB	Left Turn					
	Through	155	157	101.3%	7.0	A
	Right Turn	39	34	87.4%	9.7	A
	Subtotal	194	191	98.5%	7.5	A
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	104	104	99.9%	52.5	D
	Through	555	614	110.6%	53.9	D
	Right Turn	53	52	98.9%	49.3	D
	Subtotal	712	770	108.2%	53.4	D
Total		2,175	2,157	99.2%	23.8	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 24

Alameda/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	22	26	118.2%	6.8	A
	Through	508	508	100.0%	5.4	A
	Right Turn	1,217	1,105	90.8%	6.6	A
	Subtotal	1,747	1,639	93.8%	6.3	A
SB	Left Turn	169	152	89.9%	63.3	E
	Through	676	609	90.1%	11.8	B
	Right Turn	30	32	107.7%	4.9	A
	Subtotal	875	793	90.7%	21.7	C
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	253	255	100.7%	72.2	E
	Through	660	711	107.8%	75.2	E
	Right Turn	303	291	96.1%	168.5	F
	Subtotal	1,216	1,258	103.4%	96.6	F
Total		3,838	3,690	96.1%	40.3	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 25

Vignes/Ramirez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	102	103	100.9%	40.2	D
	Through	366	362	99.0%	42.9	D
	Right Turn	79	78	99.0%	5.4	A
	Subtotal	547	544	99.4%	37.4	D
SB	Left Turn	520	479	92.2%	47.3	D
	Through	272	250	91.9%	25.7	C
	Right Turn	284	216	76.1%	28.6	C
	Subtotal	1,076	946	87.9%	37.2	D
EB	Left Turn	297	290	97.5%	124.1	F
	Through					
	Right Turn					
	Subtotal	297	290	97.5%	124.1	F
WB	Left Turn	204	190	92.9%	120.3	F
	Through	156	164	105.1%	151.1	F
	Right Turn	507	432	85.1%	178.3	F
	Subtotal	867	785	90.6%	159.6	F
Total		2,787	2,564	92.0%	79.2	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 26 Broadway/Aliso Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	890	884	99.3%	69.3	E
	Right Turn	230	217	94.2%	54.1	D
	Subtotal	1,120	1,101	98.3%	66.5	E
SB	Left Turn	102	97	95.2%	67.5	E
	Through	611	581	95.1%	9.8	A
	Right Turn					
	Subtotal	713	678	95.1%	18.7	B
EB	Left Turn	148	148	100.2%	38.4	D
	Through	418	427	102.1%	33.9	C
	Right Turn	46	53	114.6%	6.4	A
	Subtotal	612	628	102.6%	32.8	C
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		2,445	2,407	98.4%	44.1	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 27 Spring/Aliso Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	113	96	84.8%	72.9	E
	Through	551	605	109.8%	28.7	C
	Right Turn					
	Subtotal	664	701	105.6%	34.4	C
EB	Left Turn					
	Through	668	650	97.3%	43.5	D
	Right Turn	82	83	101.1%	36.0	D
	Subtotal	750	733	97.7%	42.8	D
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		1,414	1,434	101.4%	39.3	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 28		Main/Aliso			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	1,504	1,258	83.7%	49.0	D
	Right Turn	270	226	83.7%	50.9	D
	Subtotal	1,774	1,484	83.7%	49.5	D
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	94	89	95.0%	85.4	F
	Through	687	676	98.4%	88.8	F
	Right Turn					
	Subtotal	781	765	98.0%	88.4	F
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		2,555	2,250	88.1%	62.4	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 29

Los Angeles/Aliso

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	1,188	1,120	94.3%	47.2	D
	Right Turn	204	356	174.7%	50.0	D
	Subtotal	1,570	1,477	94.1%	47.9	D
SB	Left Turn					
	Through	259	261	100.8%	8.0	A
	Right Turn					
	Subtotal	259	261	100.8%	8.0	A
EB	Left Turn	586	603	102.9%	88.8	F
	Through	266	273	102.5%	57.1	E
	Right Turn	24	20	81.7%	52.8	D
	Subtotal	957	895	93.5%	78.9	E
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		2,786	2,633	94.5%	54.2	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 30 Alameda/Aliso Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	1,210	1,125	93.0%	45.5	D
	Right Turn	127	128	100.6%	19.8	B
	Subtotal	1,337	1,253	93.7%	42.7	D
SB	Left Turn	167	153	91.7%	124.9	F
	Through	762	710	93.2%	8.3	A
	Right Turn					
	Subtotal	929	863	92.9%	30.6	C
EB	Left Turn	366	359	98.0%	66.6	E
	Through	47	46	97.9%	20.6	C
	Right Turn	31	30	96.1%	5.4	A
	Subtotal	444	434	97.8%	57.2	E
WB	Left Turn	93	83	89.5%	78.5	E
	Through					
	Right Turn	171	156	91.5%	256.6	F
	Subtotal	264	240	90.8%	194.1	F
Total		2,974	2,790	93.8%	54.8	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 31 US 101 Ramps/Commercial Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	36	35	96.7%	26.9	C
	Through	435	433	99.5%	33.6	C
	Right Turn	25	25	101.2%	18.3	B
	Subtotal	496	493	99.4%	32.6	C
SB	Left Turn	130	141	108.5%	38.9	D
	Through	25	29	114.8%	37.1	D
	Right Turn	181	172	94.9%	4.9	A
	Subtotal	336	342	101.7%	22.8	C
EB	Left Turn	321	308	96.1%	32.9	C
	Through	66	65	98.2%	25.0	C
	Right Turn	11	8	72.7%	9.0	A
	Subtotal	398	381	95.8%	31.1	C
WB	Left Turn	1	1	140.0%	20.7	C
	Through	45	39	87.6%	53.2	D
	Right Turn	345	325	94.3%	28.2	C
	Subtotal	391	366	93.6%	30.7	C
Total		1,621	1,582	97.6%	29.8	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 32 Broadway/Temple Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	20	20	99.5%	40.6	D
	Through	808	824	102.0%	32.4	C
	Right Turn	72	68	94.0%	61.5	E
	Subtotal	900	912	101.3%	34.7	C
SB	Left Turn	45	41	91.1%	24.1	C
	Through	567	539	95.0%	4.3	A
	Right Turn	45	53	117.1%	7.2	A
	Subtotal	657	632	96.2%	6.0	A
EB	Left Turn	69	68	97.8%	134.2	F
	Through	765	747	97.6%	109.5	F
	Right Turn	21	17	82.9%	69.9	E
	Subtotal	855	832	97.3%	111.1	F
WB	Left Turn	97	81	83.4%	54.8	D
	Through	763	722	94.6%	18.7	B
	Right Turn	243	221	90.9%	25.9	C
	Subtotal	1,103	1,024	92.8%	23.4	C
Total		3,515	3,400	96.7%	43.7	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 33 Spring/Temple Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	58	52	90.0%	85.4	F
	Through	466	538	115.4%	51.4	D
	Right Turn	109	101	92.5%	28.1	C
	Subtotal	633	691	109.1%	51.1	D
EB	Left Turn					
	Through	820	791	96.4%	60.3	E
	Right Turn	62	58	92.9%	46.2	D
	Subtotal	882	848	96.2%	59.2	E
WB	Left Turn	49	50	102.7%	12.7	B
	Through	994	933	93.8%	7.9	A
	Right Turn					
	Subtotal	1,043	983	94.2%	8.1	A
Total		2,558	2,522	98.6%	36.0	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 34		Main/Temple			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	278	231	83.2%	233.6	F
	Through	1,483	1,206	81.3%	287.9	F
	Right Turn	136	115	84.3%	289.3	F
	Subtotal	1,897	1,552	81.8%	279.8	F
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	90	82	91.0%	53.3	D
	Through	788	753	95.6%	81.5	F
	Right Turn					
	Subtotal	878	835	95.1%	78.8	E
WB	Left Turn					
	Through	765	749	97.9%	18.7	B
	Right Turn	201	191	95.2%	31.0	C
	Subtotal	966	940	97.3%	21.2	C
Total		3,741	3,328	88.9%	156.3	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 35 Los Angeles/Temple Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	172	164	95.5%	88.9	F
	Through	1,165	1,092	93.8%	89.5	F
	Right Turn	82	78	95.1%	76.8	E
	Subtotal	1,419	1,335	94.1%	88.6	F
SB	Left Turn	97	100	102.9%	80.4	F
	Through	388	383	98.6%	20.3	C
	Right Turn	342	346	101.1%	45.4	D
	Subtotal	827	828	100.1%	38.8	D
EB	Left Turn	134	136	101.8%	164.9	F
	Through	674	629	93.3%	30.8	C
	Right Turn	116	105	90.3%	27.9	C
	Subtotal	924	870	94.2%	52.0	D
WB	Left Turn	71	66	92.7%	38.8	D
	Through	452	434	96.0%	41.4	D
	Right Turn	271	254	93.8%	49.6	D
	Subtotal	794	754	94.9%	44.1	D
Total		3,964	3,787	95.5%	60.0	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 36 San Pedro/Temple Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	166	156	93.9%	66.2	E
	Through					
	Right Turn	223	234	105.0%	71.7	E
	Subtotal	389	390	100.2%	69.3	E
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	822	778	94.6%	23.1	C
	Right Turn	31	28	89.4%	20.7	C
	Subtotal	853	806	94.4%	23.0	C
WB	Left Turn	39	51	130.3%	20.1	C
	Through	628	604	96.1%	7.9	A
	Right Turn					
	Subtotal	667	654	98.1%	8.9	A
Total		1,909	1,850	96.9%	25.8	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 37 Alameda/Temple Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	142	134	94.6%	24.7	C
	Through	968	887	91.7%	36.0	D
	Right Turn					
	Subtotal	1,110	1,022	92.0%	34.4	C
SB	Left Turn	47	40	86.0%	42.0	D
	Through	663	555	83.7%	29.2	C
	Right Turn	275	224	81.6%	6.8	A
	Subtotal	985	820	83.2%	24.0	C
EB	Left Turn	235	232	98.5%	36.4	D
	Through	576	561	97.3%	37.0	D
	Right Turn	234	214	91.5%	112.7	F
	Subtotal	1,045	1,006	96.3%	53.6	D
WB	Left Turn	32	34	104.7%	82.1	F
	Through	250	266	106.5%	59.9	E
	Right Turn	134	132	98.7%	66.1	E
	Subtotal	416	432	103.9%	63.4	E
Total		3,556	3,280	92.2%	41.8	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 38 Los Angeles/1st Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	36	36	100.8%	100.2	F
	Through	1,244	1,191	95.8%	120.1	F
	Right Turn	62	59	95.2%	120.3	F
	Subtotal	1,342	1,287	95.9%	119.6	F
SB	Left Turn	44	41	92.7%	34.5	C
	Through	510	494	96.9%	17.6	B
	Right Turn	21	19	89.0%	4.7	A
	Subtotal	575	554	96.3%	18.4	B
EB	Left Turn	62	33	52.9%	54.6	D
	Through	854	679	79.5%	97.7	F
	Right Turn	51	38	74.1%	64.8	E
	Subtotal	967	750	77.5%	94.3	F
WB	Left Turn	15	12	79.3%	40.1	D
	Through	504	514	102.0%	21.1	C
	Right Turn	113	113	100.2%	16.1	B
	Subtotal	632	639	101.2%	20.6	C
Total		3,516	3,229	91.8%	76.0	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 39

San Pedro/1st

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	10	18	183.0%	53.3	D
	Through	302	291	96.3%	52.3	D
	Right Turn	44	46	105.2%	50.0	D
	Subtotal	356	355	99.8%	52.0	D
SB	Left Turn	15	14	92.7%	33.9	C
	Through	40	35	86.5%	25.2	C
	Right Turn	15	31	204.0%	42.5	D
	Subtotal	70	79	113.0%	33.7	C
EB	Left Turn	15	30	202.0%	22.1	C
	Through	926	754	81.4%	34.1	C
	Right Turn	19	15	80.0%	4.9	A
	Subtotal	960	799	83.3%	33.2	C
WB	Left Turn	31	28	90.6%	24.7	C
	Through	607	593	97.7%	14.8	B
	Right Turn	72	71	98.5%	25.5	C
	Subtotal	710	692	97.5%	15.8	B
Total		2,096	1,926	91.9%	29.5	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 40 Central/1st Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	154	149	96.4%	31.8	C
	Through					
	Right Turn	22	22	98.6%	21.6	C
	Subtotal	176	170	96.7%	30.5	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	970	815	84.0%	55.8	E
	Right Turn	15	14	94.7%	50.8	D
	Subtotal	985	829	84.1%	55.7	E
WB	Left Turn	16	13	83.1%	16.9	B
	Through	556	556	99.9%	6.8	A
	Right Turn					
	Subtotal	572	569	99.5%	7.1	A
Total		1,733	1,568	90.5%	35.7	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 41 Alameda/1st Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	75	76	100.8%	35.9	D
	Through	637	634	99.5%	26.6	C
	Right Turn	122	119	97.3%	11.5	B
	Subtotal	834	828	99.3%	25.3	C
SB	Left Turn	35	33	93.7%	31.3	C
	Through	743	703	94.6%	21.3	C
	Right Turn	151	139	91.8%	12.1	B
	Subtotal	929	874	94.1%	20.2	C
EB	Left Turn	396	318	80.3%	27.1	C
	Through	486	425	87.5%	13.9	B
	Right Turn	110	92	83.9%	13.6	B
	Subtotal	992	836	84.3%	19.0	B
WB	Left Turn					
	Through	346	354	102.4%	19.5	B
	Right Turn	77	76	99.2%	12.8	B
	Subtotal	423	431	101.8%	18.3	B
Total		3,178	2,969	93.4%	21.1	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 101 Alameda St/Spring St/College St Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	351	343	97.7%	25.8	C
	Through	1,224	1,151	94.1%	15.3	B
	Right Turn	32	28	87.2%	12.4	B
	Subtotal	1,607	1,522	94.7%	17.7	B
SB	Left Turn	8	7	86.3%	18.9	B
	Through	532	471	88.5%	14.8	B
	Right Turn	99	85	85.6%	6.6	A
	Subtotal	639	562	88.0%	13.8	B
EB	Left Turn	154	148	95.8%	28.6	C
	Through	76	77	101.6%	17.6	B
	Right Turn	116	117	100.7%	5.8	A
	Subtotal	346	342	98.7%	18.6	B
WB	Left Turn	24	21	88.8%	21.8	C
	Through	66	64	97.1%	17.8	B
	Right Turn	27	25	93.7%	14.4	B
	Subtotal	117	111	94.6%	17.7	B
Total		2,709	2,537	93.6%	16.9	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 104 Broadway/College St Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	49	45	92.2%	14.0	B
	Through	1,380	1,298	94.1%	11.3	B
	Right Turn	38	33	87.6%	11.6	B
	Subtotal	1,467	1,377	93.9%	11.4	B
SB	Left Turn	46	45	97.0%	25.9	C
	Through	669	729	108.9%	13.2	B
	Right Turn	80	82	102.9%	7.2	A
	Subtotal	795	856	107.6%	13.3	B
EB	Left Turn	61	61	99.8%	28.6	C
	Through	249	250	100.3%	21.2	C
	Right Turn	57	53	93.5%	12.8	B
	Subtotal	367	364	99.2%	21.2	C
WB	Left Turn	26	22	83.1%	24.8	C
	Through	258	254	98.3%	19.4	B
	Right Turn	232	221	95.2%	15.7	B
	Subtotal	516	496	96.1%	18.2	B
Total		3,145	3,092	98.3%	14.2	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
CB
PM Peak Hour

Intersection 106		Main St/Ann St			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	17	15	85.9%	2.7	A
	Through	1,285	1,100	85.6%	2.3	A
	Right Turn	9	7	82.2%	2.3	A
	Subtotal	1,311	1,122	85.6%	2.3	A
SB	Left Turn	3	4	120.0%	4.1	A
	Through	676	680	100.5%	1.8	A
	Right Turn	4	4	107.5%	2.4	A
	Subtotal	683	688	100.7%	1.8	A
EB	Left Turn	24	24	98.8%	37.6	D
	Through	3	3	90.0%	20.8	C
	Right Turn	32	31	95.6%	12.0	B
	Subtotal	59	57	96.6%	24.3	C
WB	Left Turn	10	9	94.0%	26.7	C
	Through	1	1	80.0%	6.5	A
	Right Turn	9	7	80.0%	6.1	A
	Subtotal	20	17	87.0%	23.4	C
Total		2,073	1,884	90.9%	3.0	A

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 1		Hill/Alpine			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	11	12	104.5%	8.4	A
	Through	284	294	103.4%	7.0	A
	Right Turn	21	21	101.0%	5.5	A
	Subtotal	316	326	103.3%	7.0	A
SB	Left Turn	26	24	93.5%	12.6	B
	Through	743	760	102.3%	9.9	A
	Right Turn	10	9	93.0%	9.9	A
	Subtotal	779	794	101.9%	10.0	A
EB	Left Turn	1	1	110.0%	8.1	A
	Through	150	150	99.8%	22.4	C
	Right Turn	1	2	160.0%	8.6	A
	Subtotal	152	152	100.3%	22.6	C
WB	Left Turn	52	38	73.3%	31.6	C
	Through	785	564	71.8%	31.0	C
	Right Turn	41	26	63.9%	26.4	C
	Subtotal	878	628	71.5%	30.8	C
Total		2,125	1,901	89.4%	18.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 2		Broadway/Alpine			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	39	35	89.2%	13.3	B
	Through	351	320	91.0%	5.9	A
	Right Turn	42	49	117.6%	4.8	A
	Subtotal	432	404	93.4%	6.5	A
SB	Left Turn	98	94	95.5%	16.4	B
	Through	1,267	1,273	100.5%	17.2	B
	Right Turn	204	198	97.1%	19.3	B
	Subtotal	1,569	1,564	99.7%	17.4	B
EB	Left Turn	21	20	95.2%	47.2	D
	Through	149	151	101.2%	32.1	C
	Right Turn	27	25	91.5%	19.0	B
	Subtotal	197	196	99.2%	32.1	C
WB	Left Turn	177	120	67.5%	35.7	D
	Through	635	396	62.3%	34.3	C
	Right Turn	83	49	59.5%	31.1	C
	Subtotal	895	565	63.1%	34.3	C
Total		3,093	2,728	88.2%	20.8	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 3 Spring/Alpine Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	24	15	62.1%	48.1	D
	Right Turn					
	Subtotal	24	15	62.1%	48.1	D
SB	Left Turn					
	Through	21	20	95.2%	42.5	D
	Right Turn					
	Subtotal	21	20	95.2%	42.5	D
EB	Left Turn	21	23	108.1%	40.7	D
	Through	248	246	99.3%	25.7	C
	Right Turn	15	14	92.7%	27.3	C
	Subtotal	284	283	99.6%	27.3	C
WB	Left Turn	10	7	67.0%	6.8	A
	Through	957	580	60.6%	10.8	B
	Right Turn	84	52	62.4%	6.6	A
	Subtotal	1,051	639	60.8%	10.4	B
Total		1,380	957	69.3%	16.3	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 4

Alameda/Alpine

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	58	57	98.8%	9.7	A
	Through	380	374	98.5%	6.3	A
	Right Turn	12	12	99.2%	1.3	A
	Subtotal	450	444	98.6%	6.7	A
SB	Left Turn	171	74	43.2%	278.9	F
	Through	1,069	456	42.6%	438.8	F
	Right Turn	240	114	47.4%	284.5	F
	Subtotal	1,480	643	43.5%	393.7	F
EB	Left Turn	61	68	111.5%	16.4	B
	Through	122	115	93.9%	7.1	A
	Right Turn	65	64	98.3%	37.0	D
	Subtotal	248	246	99.4%	18.8	B
WB	Left Turn	49	32	65.1%	60.0	E
	Through	753	464	61.7%	26.6	C
	Right Turn	164	103	62.8%	7.8	A
	Subtotal	966	599	62.0%	25.2	C
Total		3,144	1,933	61.5%	133.6	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 5		Main/Alpine			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	1	1	70.0%	4.2	A
	Through	200	158	79.1%	13.2	B
	Right Turn	42	32	76.0%	6.3	A
	Subtotal	243	191	78.5%	12.0	B
SB	Left Turn	227	80	35.3%	303.5	F
	Through	493	156	31.6%	625.7	F
	Right Turn	544	183	33.7%	486.1	F
	Subtotal	1,264	419	33.2%	502.5	F
EB	Left Turn	68	43	62.8%	48.7	D
	Through	232	154	66.5%	26.0	C
	Right Turn	5	4	84.0%	236.8	F
	Subtotal	305	201	66.0%	37.0	D
WB	Left Turn					
	Through	421	412	97.8%	33.7	C
	Right Turn	185	179	96.6%	30.4	C
	Subtotal	606	590	97.4%	32.7	C
Total		2,418	1,402	58.0%	137.8	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 6

Vignes/Bauchet

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	20	18	92.0%	10.3	B
	Through	609	582	95.6%	8.5	A
	Right Turn	164	158	96.0%	5.0	A
	Subtotal	793	758	95.6%	7.9	A
SB	Left Turn	61	35	56.7%	13.1	B
	Through	450	250	55.6%	9.5	A
	Right Turn	12	6	49.2%	6.6	A
	Subtotal	523	291	55.6%	10.0	A
EB	Left Turn	4	5	125.0%	7.4	A
	Through	4	4	95.0%	12.3	B
	Right Turn	6	7	120.0%	4.9	A
	Subtotal	14	16	114.3%	10.5	B
WB	Left Turn	123	119	96.9%	22.5	C
	Through	4	5	120.0%	9.9	A
	Right Turn	27	29	108.5%	4.1	A
	Subtotal	154	153	99.5%	18.3	B
Total		1,484	1,218	82.1%	9.8	A

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 7

Vignes/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	208	225	108.2%	37.0	D
	Through	393	408	103.7%	25.1	C
	Right Turn	118	117	98.7%	5.6	A
	Subtotal	719	749	104.2%	25.8	C
SB	Left Turn	158	100	63.0%	48.6	D
	Through	418	257	61.5%	24.7	C
	Right Turn	33	22	65.8%	9.6	A
	Subtotal	609	378	62.1%	30.8	C
EB	Left Turn	57	52	91.9%	23.7	C
	Through	463	436	94.1%	31.2	C
	Right Turn	272	268	98.3%	16.0	B
	Subtotal	792	756	95.4%	25.3	C
WB	Left Turn	309	311	100.5%	27.4	C
	Through	1,264	1,213	95.9%	27.5	C
	Right Turn	339	325	96.0%	6.3	A
	Subtotal	1,912	1,849	96.7%	24.0	C
Total		4,032	3,732	92.5%	25.2	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 8 Lyon/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	6	7	115.0%	35.5	D
	Through					
	Right Turn	8	8	96.3%	4.9	A
	Subtotal	14	15	104.3%	25.6	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	721	635	88.0%	1.5	A
	Right Turn	18	17	95.6%	5.4	A
	Subtotal	739	652	88.2%	1.6	A
WB	Left Turn	6	5	88.3%	15.6	B
	Through	1,902	1,825	95.9%	30.7	C
	Right Turn	32	27	84.7%	19.9	B
	Subtotal	1,940	1,857	95.7%	30.4	C
Total		2,693	2,524	93.7%	22.6	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 9 Mission/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	265	258	97.4%	45.3	D
	Through	501	506	100.9%	22.7	C
	Right Turn	90	94	104.1%	2.8	A
	Subtotal	856	857	100.2%	26.9	C
SB	Left Turn	26	24	90.4%	151.3	F
	Through	1,021	938	91.9%	156.0	F
	Right Turn	738	709	96.0%	209.0	F
	Subtotal	1,785	1,670	93.6%	179.4	F
EB	Left Turn	286	268	93.7%	52.2	D
	Through	265	225	84.9%	55.6	E
	Right Turn	178	149	83.4%	29.8	C
	Subtotal	729	641	88.0%	47.8	D
WB	Left Turn	305	290	94.9%	221.6	F
	Through	937	890	95.0%	218.0	F
	Right Turn	8	8	95.0%	191.3	F
	Subtotal	1,250	1,187	95.0%	218.9	F
Total		4,620	4,356	94.3%	141.5	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 10

Alameda/Alhambra

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	11	10	90.0%	11.8	B
	Through	435	438	100.6%	8.6	A
	Right Turn					
	Subtotal	446	448	100.4%	8.8	A
SB	Left Turn					
	Through	1,180	538	45.6%	150.1	F
	Right Turn	3	2	63.3%	66.3	E
	Subtotal	1,183	540	45.7%	150.0	F
EB	Left Turn					
	Through					
	Right Turn	10	9	93.0%	29.1	C
	Subtotal	10	9	93.0%	29.1	C
WB	Left Turn	467	141	30.1%	852.4	F
	Through	16	4	27.5%	467.9	F
	Right Turn	15	4	28.7%	500.3	F
	Subtotal	498	149	30.0%	860.8	F
Total		2,137	1,147	53.7%	174.1	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 11 Hill/Ord Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	15	15	98.7%	10.0	B
	Through	276	293	106.1%	8.3	A
	Right Turn	22	24	109.1%	10.4	B
	Subtotal	313	332	106.0%	8.5	A
SB	Left Turn	42	46	108.6%	7.3	A
	Through	739	742	100.4%	9.5	A
	Right Turn	15	13	87.3%	11.7	B
	Subtotal	796	801	100.6%	9.4	A
EB	Left Turn	10	10	98.0%	21.0	C
	Through	76	75	99.1%	23.8	C
	Right Turn	10	10	102.0%	24.3	C
	Subtotal	96	95	99.3%	24.0	C
WB	Left Turn	46	38	83.3%	28.6	C
	Through	257	215	83.8%	29.3	C
	Right Turn	30	25	83.3%	7.8	A
	Subtotal	333	279	83.7%	27.4	C
Total		1,538	1,507	98.0%	13.7	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 12 Broadway/Ord Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	71	68	96.2%	26.4	C
	Through	385	360	93.5%	5.9	A
	Second Right					
	Subtotal	530	495	93.4%	9.5	A
SB	Left Turn	83	110	132.4%	26.3	C
	Through	1,244	1,174	94.4%	18.9	B
	Second Right					
	Subtotal	1,471	1,414	96.1%	20.1	C
EB	Left Turn	9	7	80.0%	40.2	D
	Through	90	94	104.7%	39.5	D
	Second Right					
	Subtotal	140	144	103.1%	36.8	D
WB	Left Turn	64	34	52.8%	47.5	D
	Through	118	63	53.3%	44.4	D
	Second Right					
	Subtotal	220	127	57.7%	42.4	D
Total		2,361	2,180	92.3%	20.1	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 13

Alameda/Main

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	535	490	91.6%	5.0	A
	Right Turn	45	39	86.0%	2.4	A
	Subtotal	580	529	91.1%	4.9	A
SB	Left Turn	34	15	45.0%	10.6	B
	Through	1,466	646	44.1%	51.4	D
	Right Turn					
	Subtotal	1,500	662	44.1%	50.4	D
EB	Left Turn	204	197	96.5%	29.8	C
	Through	47	45	96.6%	33.9	C
	Right Turn	16	17	108.1%	59.1	E
	Subtotal	267	260	97.2%	33.4	C
WB	Left Turn	21	23	109.0%	78.5	E
	Through					
	Right Turn	8	8	97.5%	5.8	A
	Subtotal	29	31	105.9%	61.1	E
Total		2,376	1,480	62.3%	31.0	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 14

Broadway/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	128	120	93.4%	36.4	D
	Through	337	311	92.4%	24.4	C
	Right Turn	123	116	94.6%	23.6	C
	Subtotal	588	547	93.1%	27.3	C
SB	Left Turn	136	132	96.9%	71.8	E
	Through	840	780	92.8%	53.2	D
	Right Turn	373	340	91.1%	38.0	D
	Subtotal	1,349	1,251	92.8%	51.0	D
EB	Left Turn	139	140	100.9%	41.2	D
	Through	767	784	102.2%	24.4	C
	Right Turn	112	114	101.5%	14.1	B
	Subtotal	1,018	1,038	101.9%	25.5	C
WB	Left Turn	139	126	90.4%	14.8	B
	Through	1,435	1,247	86.9%	12.4	B
	Right Turn	54	44	80.7%	4.9	A
	Subtotal	1,628	1,417	87.0%	12.4	B
Total		4,583	4,252	92.8%	29.4	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 15

Spring/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	3	2	76.7%	35.2	D
	Through	349	304	87.2%	82.8	F
	Right Turn	170	143	83.9%	75.4	E
	Subtotal	522	449	86.1%	80.2	F
EB	Left Turn					
	Through	714	719	100.7%	8.9	A
	Right Turn	312	327	104.8%	5.9	A
	Subtotal	1,026	1,046	101.9%	7.9	A
WB	Left Turn	233	242	104.0%	52.6	D
	Through	1,458	1,237	84.8%	51.4	D
	Right Turn	17	14	80.0%	18.0	B
	Subtotal	1,708	1,493	87.4%	51.4	D
Total		3,256	2,988	91.8%	40.5	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 16 Main/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	146	136	93.2%	36.2	D
	Through	183	176	96.2%	30.2	C
	Right Turn	107	108	100.8%	19.9	B
	Subtotal	436	420	96.3%	29.4	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	70	70	99.6%	30.3	C
	Through	647	675	104.3%	3.9	A
	Right Turn					
	Subtotal	717	745	103.8%	6.6	A
WB	Left Turn					
	Through	1,546	1,328	85.9%	17.2	B
	Right Turn	14	14	102.1%	2.7	A
	Subtotal	1,560	1,342	86.0%	17.0	B
Total		2,713	2,507	92.4%	16.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 17

Alameda/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	144	137	95.4%	91.8	F
	Through	483	435	90.1%	34.1	C
	Right Turn	212	186	87.6%	31.6	C
	Subtotal	839	758	90.4%	45.2	D
SB	Left Turn	99	46	46.4%	26.1	C
	Through	1,214	551	45.4%	90.4	F
	Right Turn	190	87	45.9%	77.5	E
	Subtotal	1,503	684	45.5%	84.3	F
EB	Left Turn	78	74	94.9%	30.8	C
	Through	549	590	107.5%	7.7	A
	Right Turn	127	127	100.1%	7.9	A
	Subtotal	754	791	104.9%	10.1	B
WB	Left Turn	164	147	89.8%	44.6	D
	Through	1,226	1,151	93.9%	50.3	D
	Right Turn	19	20	105.8%	33.2	C
	Subtotal	1,409	1,319	93.6%	49.4	D
Total		4,505	3,552	78.9%	45.7	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 18 Union Station Driveway/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	14	13	92.1%	15.7	B
	Through					
	Right Turn	15	12	77.3%	46.5	D
	Subtotal	29	25	84.5%	31.5	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	777	1,361	175.2%	82.1	F
	Right Turn	83	68	81.7%	58.0	E
	Subtotal	860	1,429	166.2%	81.0	F
WB	Left Turn	75	80	106.1%	1.9	A
	Through	1,430	743	51.9%	1.3	A
	Right Turn					
	Subtotal	1,505	822	54.6%	1.4	A
Total		2,394	2,276	95.1%	50.6	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 19

Alameda/Los Angeles

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	697	629	90.2%	40.7	D
	Right Turn	27	23	84.8%	42.2	D
	Subtotal	724	652	90.0%	40.8	D
SB	Left Turn	61	41	67.5%	105.2	F
	Through	1,115	604	54.1%	136.9	F
	Right Turn	329	182	55.2%	153.6	F
	Subtotal	1,505	827	54.9%	139.3	F
EB	Left Turn	100	106	106.4%	22.4	C
	Through	56	52	93.2%	25.5	C
	Right Turn	20	19	95.0%	11.9	B
	Subtotal	176	178	100.9%	22.1	C
WB	Left Turn	99	85	85.6%	38.8	D
	Through	60	54	90.7%	36.8	D
	Right Turn	42	43	103.1%	68.2	E
	Subtotal	201	182	90.7%	45.3	D
Total		2,606	1,839	70.5%	83.3	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 20 Broadway/Arcadia Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	466	493	105.8%	14.3	B
	Through					
	Right Turn					
	Subtotal	466	493	105.8%	14.3	B
SB	Left Turn	762	704	92.4%	16.2	B
	Through					
	Right Turn					
	Subtotal	762	704	92.4%	16.2	B
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	365	298	81.6%	18.4	B
	Through					
	Right Turn					
	Subtotal	1,194	983	82.4%	12.1	B
Total		2,422	2,181	90.0%	13.9	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 21

Spring/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn					
	Through	877	705	80.4%	53.2	D
	Right Turn	35	32	90.6%	26.5	C
	Subtotal	912	737	80.8%	52.1	D
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	529	478	90.4%	71.6	E
	Through	1,159	950	82.0%	37.9	D
	Right Turn					
	Subtotal	1,688	1,428	84.6%	49.5	D
Total		2,600	2,165	83.3%	50.3	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 22 Main/Arcadia Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	80	79	98.9%	30.3	C
	Through	355	355	100.0%	4.8	A
	Right Turn					
	Subtotal	435	434	99.8%	9.3	A
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn					
	Through	1,608	1,345	83.6%	43.7	D
	Right Turn	81	64	78.4%	30.2	C
	Subtotal	1,689	1,408	83.4%	43.2	D
Total		2,124	1,842	86.7%	34.9	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 23

Los Angeles/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	88	88	99.8%	20.0	C
	Through	265	273	103.0%	6.2	A
	Right Turn					
	Subtotal	353	361	102.2%	9.5	A
SB	Left Turn					
	Through	347	211	60.9%	16.8	B
	Right Turn	38	22	58.7%	14.9	B
	Subtotal	385	234	60.6%	16.7	B
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	360	290	80.5%	52.1	D
	Through	1,563	1,302	83.3%	50.7	D
	Right Turn	71	55	77.7%	42.1	D
	Subtotal	1,994	1,647	82.6%	50.7	D
Total		2,732	2,241	82.0%	39.9	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 24

Alameda/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	143	131	91.8%	76.5	E
	Through	849	788	92.8%	31.3	C
	Right Turn	50	80	160.2%	29.3	C
	Subtotal	1,042	999	95.9%	37.4	D
SB	Left Turn	13	26	201.5%	68.9	E
	Through	939	521	55.5%	132.7	F
	Right Turn	69	36	52.8%	231.1	F
	Subtotal	1,021	584	57.2%	135.6	F
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	484	382	78.9%	157.6	F
	Through	1,782	1,473	82.6%	138.6	F
	Right Turn	261	214	81.9%	144.4	F
	Subtotal	2,527	2,068	81.9%	142.7	F
Total		4,590	3,651	79.6%	110.8	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 25

Vignes/Ramirez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	93	94	100.9%	41.9	D
	Through	208	206	98.8%	26.0	C
	Right Turn	101	102	101.3%	5.3	A
	Subtotal	402	402	99.9%	24.6	C
SB	Left Turn	591	478	80.9%	54.6	D
	Through	275	239	86.9%	34.0	C
	Right Turn	353	239	67.6%	32.9	C
	Subtotal	1,219	956	78.4%	44.4	D
EB	Left Turn	235	268	114.2%	56.2	E
	Through					
	Right Turn					
	Subtotal	235	268	114.2%	56.2	E
WB	Left Turn	109	110	100.5%	37.3	D
	Through	149	172	115.6%	63.3	E
	Right Turn	373	368	98.6%	12.6	B
	Subtotal	631	650	102.9%	29.8	C
Total		2,487	2,275	91.5%	38.2	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 26

Broadway/Aliso

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	331	364	109.9%	9.4	A
	Right Turn	83	85	102.4%	3.7	A
	Subtotal	414	449	108.4%	8.3	A
SB	Left Turn	144	125	86.7%	11.9	B
	Through	983	874	88.9%	8.2	A
	Right Turn					
	Subtotal	1,127	999	88.6%	8.7	A
EB	Left Turn	135	133	98.4%	27.1	C
	Through	279	283	101.3%	22.1	C
	Right Turn	163	172	105.5%	9.1	A
	Subtotal	577	587	101.8%	19.4	B
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		2,118	2,035	96.1%	11.8	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 27 Spring/Aliso Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	171	147	85.7%	3.6	A
	Through	1,235	1,181	95.6%	20.7	C
	Right Turn					
	Subtotal	1,406	1,327	94.4%	18.9	B
EB	Left Turn					
	Through	309	303	97.9%	17.8	B
	Right Turn	197	190	96.2%	7.6	A
	Subtotal	506	492	97.3%	13.7	B
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		1,912	1,819	95.2%	17.5	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 28 Main/Aliso Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	388	388	99.9%	7.5	A
	Right Turn	217	215	98.9%	16.6	B
	Subtotal	605	602	99.5%	10.9	B
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	47	46	98.3%	10.7	B
	Through	433	434	100.3%	14.5	B
	Right Turn					
	Subtotal	480	481	100.1%	14.1	B
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		1,085	1,083	99.8%	12.3	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 29

Los Angeles/Aliso

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	334	339	101.6%	16.0	B
	Right Turn	85	144	169.2%	18.4	B
	Subtotal	479	483	100.9%	16.8	B
SB	Left Turn					
	Through	707	500	70.7%	17.0	B
	Right Turn					
	Subtotal	707	500	70.7%	17.0	B
EB	Left Turn	252	256	101.5%	17.6	B
	Through	222	247	111.2%	30.7	C
	Right Turn	157	149	94.6%	30.4	C
	Subtotal	650	651	100.2%	25.4	C
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		1,836	1,634	89.0%	20.3	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 30 Alameda/Aliso Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	777	717	92.3%	201.2	F
	Right Turn	158	154	97.6%	84.7	F
	Subtotal	935	871	93.2%	181.3	F
SB	Left Turn	200	132	65.8%	40.3	D
	Through	1,223	776	63.4%	17.2	B
	Right Turn					
	Subtotal	1,423	907	63.7%	20.6	C
EB	Left Turn	59	88	149.8%	48.0	D
	Through	66	66	99.8%	25.3	C
	Right Turn	157	155	98.6%	10.5	B
	Subtotal	282	309	109.6%	25.2	C
WB	Left Turn	149	136	91.5%	18.6	B
	Through					
	Right Turn	206	196	95.0%	47.3	D
	Subtotal	355	332	93.5%	35.5	D
Total		2,995	2,419	80.8%	80.6	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 31 US 101 Ramps/Commercial Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	13	13	100.8%	23.2	C
	Through	43	43	99.3%	28.8	C
	Right Turn	7	7	100.0%	8.2	A
	Subtotal	63	63	99.7%	26.6	C
SB	Left Turn	218	232	106.3%	32.6	C
	Through	63	63	99.5%	37.5	D
	Right Turn	200	193	96.6%	5.3	A
	Subtotal	481	488	101.4%	22.2	C
EB	Left Turn	271	225	83.1%	26.8	C
	Through	77	68	88.4%	16.6	B
	Right Turn	26	20	75.8%	6.9	A
	Subtotal	374	313	83.7%	23.8	C
WB	Left Turn	10	9	89.0%	31.4	C
	Through	122	105	85.8%	31.3	C
	Right Turn	176	152	86.6%	18.3	B
	Subtotal	308	266	86.4%	24.1	C
Total		1,226	1,130	92.1%	23.5	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 32 Broadway/Temple Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	1	2	180.0%	22.7	C
	Through	363	398	109.6%	8.4	A
	Right Turn					
	Subtotal	364	400	109.8%	8.7	A
SB	Left Turn	55	49	89.5%	6.6	A
	Through	1,028	936	91.0%	7.4	A
	Right Turn	63	68	108.3%	8.9	A
	Subtotal	1,146	1,053	91.9%	7.5	A
EB	Left Turn	25	27	106.0%	25.9	C
	Through	585	613	104.7%	19.5	B
	Right Turn	154	151	97.8%	16.5	B
	Subtotal	764	790	103.4%	19.1	B
WB	Left Turn	79	60	75.3%	28.5	C
	Through	973	869	89.4%	15.7	B
	Right Turn	26	23	88.5%	13.8	B
	Subtotal	1,078	952	88.3%	16.5	B
Total		3,352	3,194	95.3%	13.3	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 33

Spring/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	59	52	88.6%	54.8	D
	Through	1,172	1,130	96.4%	52.7	D
	Right Turn	201	177	87.8%	37.8	D
	Subtotal	1,432	1,359	94.9%	50.8	D
EB	Left Turn					
	Through	499	532	106.6%	18.1	B
	Right Turn	141	140	99.6%	22.0	C
	Subtotal	640	672	105.0%	19.0	B
WB	Left Turn	113	108	95.8%	9.6	A
	Through	877	801	91.4%	8.9	A
	Right Turn					
	Subtotal	990	910	91.9%	9.0	A
Total		3,062	2,940	96.0%	30.9	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 34 Main/Temple Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	120	124	103.3%	18.6	B
	Through	457	470	102.9%	19.4	B
	Right Turn	174	177	101.6%	15.0	B
	Subtotal	751	771	102.6%	18.3	B
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	60	61	101.5%	12.9	B
	Through	498	518	104.0%	20.8	C
	Right Turn					
	Subtotal	558	579	103.7%	20.0	C
WB	Left Turn					
	Through	870	773	88.9%	15.3	B
	Right Turn	88	76	86.5%	14.9	B
	Subtotal	958	849	88.7%	15.3	B
Total		2,267	2,199	97.0%	17.6	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 35

Los Angeles/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	75	73	97.5%	23.1	C
	Through	331	334	100.8%	12.0	B
	Right Turn	60	59	98.5%	18.7	B
	Subtotal	466	466	99.9%	14.6	B
SB	Left Turn	175	144	82.5%	25.4	C
	Through	872	698	80.0%	15.8	B
	Right Turn	86	83	96.7%	22.1	C
	Subtotal	1,133	925	81.7%	17.9	B
EB	Left Turn	31	45	146.5%	58.8	E
	Through	400	416	104.0%	24.5	C
	Right Turn	241	227	94.2%	28.2	C
	Subtotal	672	689	102.5%	27.9	C
WB	Left Turn	109	91	83.8%	39.3	D
	Through	797	693	87.0%	42.8	D
	Right Turn	117	104	88.9%	34.4	C
	Subtotal	1,023	888	86.8%	41.4	D
Total		3,294	2,968	90.1%	27.0	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 36

San Pedro/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	76	75	98.6%	25.1	C
	Through					
	Right Turn	42	57	136.0%	22.8	C
	Subtotal	118	132	111.9%	24.1	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	369	365	98.9%	9.5	A
	Right Turn	266	254	95.6%	13.4	B
	Subtotal	635	619	97.5%	11.1	B
WB	Left Turn	149	142	95.2%	16.9	B
	Through	947	811	85.6%	10.5	B
	Right Turn					
	Subtotal	1,096	952	86.9%	11.4	B
Total		1,849	1,704	92.1%	12.3	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 37

Alameda/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	240	229	95.5%	72.3	E
	Through	771	737	95.6%	130.1	F
	Right Turn					
	Subtotal	1,011	966	95.5%	116.5	F
SB	Left Turn	67	45	67.2%	40.6	D
	Through	970	683	70.4%	26.1	C
	Right Turn	492	340	69.0%	7.7	A
	Subtotal	1,529	1,068	69.8%	20.9	C
EB	Left Turn	95	97	102.5%	39.3	D
	Through	186	202	108.5%	23.1	C
	Right Turn	130	120	92.6%	35.0	C
	Subtotal	411	420	102.1%	30.8	C
WB	Left Turn	28	28	98.9%	72.6	E
	Through	364	385	105.6%	72.5	E
	Right Turn	69	69	100.1%	92.4	F
	Subtotal	461	481	104.4%	75.1	E
Total		3,412	2,935	86.0%	61.3	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 38

Los Angeles/1st

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	446	440	98.6%	16.9	B
	Right Turn					
	Subtotal	446	440	98.6%	16.9	B
SB	Left Turn	51	41	81.2%	22.4	C
	Through	1,017	843	82.8%	17.6	B
	Right Turn	154	134	86.8%	7.7	A
	Subtotal	1,222	1,018	83.3%	16.4	B
EB	Left Turn	10	12	121.0%	20.1	C
	Through	513	541	105.4%	15.0	B
	Right Turn	93	94	100.8%	6.6	A
	Subtotal	616	647	105.0%	13.8	B
WB	Left Turn	46	38	81.5%	20.6	C
	Through	787	754	95.8%	12.9	B
	Right Turn	10	9	94.0%	1.8	A
	Subtotal	843	801	95.0%	13.2	B
Total		3,127	2,905	92.9%	15.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 39

San Pedro/1st

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	15	23	153.3%	34.8	C
	Through	98	96	98.2%	18.5	B
	Right Turn	21	22	102.4%	8.2	A
	Subtotal	134	141	105.0%	19.8	B
SB	Left Turn	15	12	80.7%	21.6	C
	Through	379	349	92.1%	21.6	C
	Right Turn	21	36	170.0%	30.3	C
	Subtotal	415	397	95.6%	22.4	C
EB	Left Turn	10	28	277.0%	25.3	C
	Through	539	542	100.5%	7.1	A
	Right Turn	15	14	95.3%	4.3	A
	Subtotal	564	584	103.5%	7.8	A
WB	Left Turn	33	33	100.6%	20.2	C
	Through	807	753	93.3%	18.4	B
	Right Turn	10	9	88.0%	13.1	B
	Subtotal	850	795	93.5%	18.4	B
Total		1,963	1,916	97.6%	16.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 40 Central/1st Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	154	157	102.1%	23.0	C
	Through					
	Right Turn	12	11	95.0%	8.3	A
	Subtotal	166	169	101.6%	22.4	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	472	497	105.3%	18.6	B
	Right Turn	103	103	99.5%	12.1	B
	Subtotal	575	600	104.3%	17.5	B
WB	Left Turn	26	21	79.2%	18.6	B
	Through	696	657	94.3%	8.7	A
	Right Turn					
	Subtotal	722	677	93.8%	9.1	A
Total		1,463	1,446	98.8%	14.2	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 41 Alameda/1st Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	4	4	100.0%	34.4	C
	Through	953	929	97.5%	81.8	F
	Right Turn	50	47	94.2%	44.0	D
	Subtotal	1,007	980	97.3%	79.7	E
SB	Left Turn	24	16	65.0%	36.0	D
	Through	913	678	74.3%	16.3	B
	Right Turn	191	136	70.9%	12.3	B
	Subtotal	1,128	829	73.5%	16.2	B
EB	Left Turn	31	32	104.2%	23.7	C
	Through	402	424	105.4%	11.5	B
	Right Turn	51	54	105.3%	13.3	B
	Subtotal	484	510	105.3%	12.6	B
WB	Left Turn					
	Through	527	536	101.6%	25.8	C
	Right Turn	27	27	101.1%	26.7	C
	Subtotal	554	563	101.6%	25.8	C
Total		3,173	2,882	90.8%	38.3	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 101

Alameda St/Spring St/College St

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	133	126	94.7%	22.8	C
	Through	456	410	89.9%	4.6	A
	Right Turn	16	12	73.8%	2.1	A
	Subtotal	605	548	90.5%	9.0	A
SB	Left Turn	10	4	35.0%	152.0	F
	Through	1,265	521	41.1%	482.8	F
	Right Turn	252	100	39.8%	553.8	F
	Subtotal	1,527	624	40.9%	499.5	F
EB	Left Turn	123	117	94.7%	58.7	E
	Through	44	45	102.5%	43.4	D
	Right Turn	150	127	84.5%	116.5	F
	Subtotal	317	288	91.0%	82.1	F
WB	Left Turn	65	24	36.5%	121.0	F
	Through	213	81	38.1%	28.2	C
	Right Turn	27	10	37.0%	25.2	C
	Subtotal	305	115	37.6%	41.0	D
Total		2,754	1,575	57.2%	196.4	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 104

Broadway/College St

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	21	17	78.6%	20.2	C
	Through	418	359	86.0%	9.4	A
	Right Turn	16	11	71.3%	4.8	A
	Subtotal	455	387	85.1%	9.9	A
SB	Left Turn	84	80	95.2%	19.4	B
	Through	1,459	1,469	100.7%	19.5	B
	Right Turn	231	231	100.1%	18.4	B
	Subtotal	1,774	1,780	100.3%	19.4	B
EB	Left Turn	30	28	91.7%	44.8	D
	Through	240	223	92.9%	32.5	C
	Right Turn	36	34	94.7%	17.7	B
	Subtotal	306	285	93.0%	32.2	C
WB	Left Turn	74	37	49.7%	71.3	E
	Through	440	237	53.9%	67.8	E
	Right Turn	84	42	50.2%	52.0	D
	Subtotal	598	316	52.8%	66.1	E
Total		3,133	2,768	88.3%	26.5	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 106 Main St/Ann St Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	25	22	88.0%	32.9	C
	Through	455	384	84.4%	11.9	B
	Right Turn	5	5	90.0%	9.3	A
	Subtotal	485	411	84.7%	13.3	B
SB	Left Turn	6	2	31.7%	88.1	F
	Through	1,493	558	37.4%	606.0	F
	Right Turn	23	10	43.5%	365.5	F
	Subtotal	1,522	570	37.4%	606.3	F
EB	Left Turn	13	12	92.3%	138.5	F
	Through	6	6	93.3%	125.1	F
	Right Turn	30	28	92.7%	219.4	F
	Subtotal	49	45	92.7%	195.0	F
WB	Left Turn	8	8	102.5%	153.7	F
	Through	2	2	95.0%	6.1	A
	Right Turn	2	1	70.0%	1.4	A
	Subtotal	12	12	95.8%	134.2	F
Total		2,068	1,037	50.2%	221.0	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 1		Hill/Alpine			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	32	33	101.6%	16.4	B
	Through	665	692	104.0%	16.9	B
	Right Turn	67	67	100.6%	15.6	B
	Subtotal	764	792	103.6%	16.8	B
SB	Left Turn	15	14	96.0%	16.3	B
	Through	435	457	105.0%	8.7	A
	Right Turn	26	26	100.8%	5.7	A
	Subtotal	476	497	104.5%	8.9	A
EB	Left Turn	47	48	101.9%	22.7	C
	Through	293	294	100.2%	19.9	B
	Right Turn	16	16	97.5%	15.5	B
	Subtotal	356	357	100.3%	20.1	C
WB	Left Turn	32	30	94.1%	32.7	C
	Through	340	311	91.4%	30.5	C
	Right Turn	82	75	91.5%	22.1	C
	Subtotal	454	416	91.6%	29.1	C
Total		2,050	2,062	100.6%	18.0	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 2 Broadway/Alpine Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	58	51	87.6%	16.3	B
	Through	1,134	1,026	90.5%	21.5	C
	Right Turn	100	89	88.9%	22.4	C
	Subtotal	1,292	1,166	90.2%	21.4	C
SB	Left Turn	55	52	94.2%	38.1	D
	Through	649	705	108.7%	22.6	C
	Right Turn	48	49	102.5%	22.0	C
	Subtotal	752	806	107.2%	23.6	C
EB	Left Turn	79	79	100.1%	17.2	B
	Through	254	255	100.2%	10.6	B
	Right Turn	42	44	104.8%	6.8	A
	Subtotal	375	378	100.7%	11.5	B
WB	Left Turn	52	48	92.9%	27.5	C
	Through	348	320	92.0%	22.3	C
	Right Turn	254	238	93.6%	26.6	C
	Subtotal	654	606	92.7%	24.5	C
Total		3,073	2,956	96.2%	21.4	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 3 Spring/Alpine Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	7	5	77.1%	35.5	D
	Through					
	Right Turn	102	73	71.9%	26.9	C
	Subtotal	109	79	72.2%	28.0	C
SB	Left Turn	17	16	93.5%	35.8	D
	Through	29	26	90.0%	38.9	D
	Right Turn	8	8	102.5%	16.5	B
	Subtotal	54	50	93.0%	36.8	D
EB	Left Turn	10	10	98.0%	30.0	C
	Through	390	372	95.4%	19.7	B
	Right Turn	15	13	84.7%	30.6	C
	Subtotal	415	395	95.1%	20.2	C
WB	Left Turn	7	8	118.6%	13.9	B
	Through	646	587	90.9%	9.1	A
	Right Turn	13	11	85.4%	4.2	A
	Subtotal	666	606	91.1%	9.1	A
Total		1,244	1,130	90.8%	15.8	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 4 Alameda/Alpine Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	179	148	82.5%	20.2	C
	Through	1,112	947	85.2%	12.6	B
	Right Turn	49	40	82.4%	10.6	B
	Subtotal	1,340	1,136	84.7%	13.5	B
SB	Left Turn	116	106	91.0%	52.8	D
	Through	500	453	90.7%	23.2	C
	Right Turn	57	52	90.7%	5.5	A
	Subtotal	673	611	90.7%	27.1	C
EB	Left Turn	102	96	94.0%	16.6	B
	Through	335	316	94.3%	19.8	B
	Right Turn	72	68	95.0%	11.8	B
	Subtotal	509	480	94.3%	18.2	B
WB	Left Turn	55	58	104.9%	35.4	D
	Through	430	407	94.7%	18.9	B
	Right Turn	393	385	98.0%	11.1	B
	Subtotal	878	850	96.8%	16.4	B
Total		3,400	3,076	90.5%	17.8	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 5		Main/Alpine			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	5	3	50.0%	9.8	A
	Through	657	469	71.4%	24.5	C
	Right Turn	35	27	76.0%	22.3	C
	Subtotal	697	498	71.4%	24.3	C
SB	Left Turn	201	202	100.3%	32.8	C
	Through	275	265	96.4%	20.5	C
	Right Turn	186	195	104.7%	12.0	B
	Subtotal	662	661	99.9%	21.4	C
EB	Left Turn	228	211	92.5%	65.8	E
	Through	271	250	92.2%	23.9	C
	Right Turn	1	1	130.0%	7.8	A
	Subtotal	500	462	92.4%	43.3	D
WB	Left Turn					
	Through	687	651	94.8%	36.6	D
	Right Turn	370	340	91.9%	42.6	D
	Subtotal	1,057	991	93.8%	38.7	D
Total		2,916	2,613	89.6%	32.8	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 6

Vignes/Bauchet

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	31	28	91.3%	12.8	B
	Through	980	901	91.9%	11.8	B
	Right Turn	57	52	91.4%	5.0	A
	Subtotal	1,068	981	91.9%	11.4	B
SB	Left Turn	27	25	91.5%	21.3	C
	Through	463	438	94.6%	11.2	B
	Right Turn	5	5	90.0%	3.0	A
	Subtotal	495	467	94.4%	11.7	B
EB	Left Turn	11	12	108.2%	21.1	C
	Through	5	6	112.0%	5.4	A
	Right Turn	20	22	109.5%	6.9	A
	Subtotal	36	39	109.4%	12.8	B
WB	Left Turn	263	266	101.0%	24.0	C
	Through	6	7	116.7%	7.3	A
	Right Turn	81	82	101.0%	6.7	A
	Subtotal	350	354	101.3%	20.1	C
Total		1,949	1,842	94.5%	13.3	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 7

Vignes/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	319	298	93.4%	140.3	F
	Through	719	699	97.2%	50.8	D
	Right Turn	208	200	96.3%	19.7	B
	Subtotal	1,246	1,198	96.1%	67.1	E
SB	Left Turn	296	270	91.3%	46.0	D
	Through	426	390	91.6%	33.5	C
	Right Turn	62	60	97.4%	25.5	C
	Subtotal	784	721	92.0%	37.8	D
EB	Left Turn	45	39	87.3%	37.0	D
	Through	948	845	89.1%	41.6	D
	Right Turn	299	283	94.8%	18.9	B
	Subtotal	1,292	1,167	90.3%	35.8	D
WB	Left Turn	198	192	96.9%	44.7	D
	Through	878	796	90.6%	67.9	E
	Right Turn	304	269	88.5%	7.0	A
	Subtotal	1,380	1,256	91.0%	51.2	D
Total		4,702	4,342	92.3%	48.4	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 8 Lyon/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	3	4	123.3%	38.8	D
	Through					
	Right Turn	4	3	82.5%	3.0	A
	Subtotal	7	7	100.0%	36.4	D
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	1,450	1,313	90.6%	1.7	A
	Right Turn	2	2	85.0%	3.4	A
	Subtotal	1,452	1,315	90.6%	1.7	A
WB	Left Turn	14	12	82.9%	61.6	E
	Through	1,377	1,239	89.9%	158.6	F
	Right Turn	7	5	77.1%	142.0	F
	Subtotal	1,398	1,256	89.8%	158.0	F
Total		2,857	2,578	90.2%	73.6	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 9 Mission/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	348	270	77.7%	670.9	F
	Through	581	517	89.0%	72.8	E
	Right Turn	83	76	91.0%	36.6	D
	Subtotal	1,012	863	85.3%	266.6	F
SB	Left Turn	46	48	103.3%	38.0	D
	Through	476	470	98.7%	45.9	D
	Right Turn	366	383	104.6%	50.1	D
	Subtotal	888	900	101.4%	47.4	D
EB	Left Turn	445	423	95.1%	41.8	D
	Through	663	580	87.5%	50.1	D
	Right Turn	346	307	88.6%	38.4	D
	Subtotal	1,454	1,310	90.1%	44.7	D
WB	Left Turn	172	167	97.3%	56.5	E
	Through	684	672	98.3%	67.0	E
	Right Turn	27	25	91.1%	59.8	E
	Subtotal	883	864	97.9%	64.6	E
Total		4,237	3,937	92.9%	87.1	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 10

Alameda/Alhambra

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	1,325	1,121	84.6%	10.1	B
	Right Turn					
	Subtotal	1,325	1,121	84.6%	10.1	B
SB	Left Turn					
	Through	622	563	90.5%	44.3	D
	Right Turn	5	5	92.0%	35.5	D
	Subtotal	627	567	90.5%	44.2	D
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	260	244	93.7%	168.9	F
	Through	1	1	120.0%	35.0	D
	Right Turn	15	14	92.0%	153.1	F
	Subtotal	276	259	93.7%	167.0	F
Total		2,228	1,947	87.4%	41.7	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 11 Hill/Ord Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	21	20	95.7%	19.2	B
	Through	655	677	103.3%	12.8	B
	Right Turn	64	63	98.0%	10.1	B
	Subtotal	740	760	102.6%	12.7	B
SB	Left Turn	51	51	100.0%	17.3	B
	Through	411	426	103.6%	10.1	B
	Right Turn	21	21	98.6%	10.9	B
	Subtotal	483	497	103.0%	10.8	B
EB	Left Turn	15	18	118.0%	18.5	B
	Through	213	211	99.1%	17.2	B
	Right Turn	31	29	91.9%	15.0	B
	Subtotal	259	257	99.3%	17.1	B
WB	Left Turn	30	27	91.3%	17.3	B
	Through	185	166	89.7%	14.5	B
	Right Turn	94	87	93.0%	6.2	A
	Subtotal	309	281	90.9%	12.3	B
Total		1,791	1,795	100.2%	12.8	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 12 **Broadway/Ord** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	119	103	86.9%	34.0	C
	Through	1,040	921	88.5%	22.4	C
	Second Right					
	Subtotal	1,224	1,086	88.7%	23.6	C
SB	Left Turn	61	92	151.5%	52.2	D
	Through	636	658	103.5%	15.0	B
	Second Right					
	Subtotal	743	796	107.2%	19.9	B
EB	Left Turn	121	119	98.6%	18.1	B
	Through	124	120	96.8%	19.0	B
	Second Right					
	Subtotal	328	324	98.9%	16.8	B
WB	Left Turn	39	28	72.1%	38.2	D
	Through	144	102	70.8%	32.8	C
	Second Right					
	Subtotal	314	221	70.4%	31.5	C
Total		2,609	2,427	93.0%	22.3	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 13

Alameda/Main

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	1,101	892	81.0%	7.2	A
	Right Turn	13	9	66.9%	5.1	A
	Subtotal	1,114	900	80.8%	7.2	A
SB	Left Turn	16	15	90.6%	23.9	C
	Through	882	802	91.0%	32.2	C
	Right Turn					
	Subtotal	898	817	91.0%	32.1	C
EB	Left Turn	948	731	77.1%	36.1	D
	Through	23	17	73.5%	48.2	D
	Right Turn	37	32	87.3%	49.8	D
	Subtotal	1,008	780	77.4%	37.0	D
WB	Left Turn	42	43	103.1%	52.8	D
	Through					
	Right Turn	73	70	95.3%	7.7	A
	Subtotal	115	113	98.2%	24.8	C
Total		3,135	2,610	83.3%	24.5	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 14

Broadway/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	192	173	90.3%	40.9	D
	Through	855	788	92.2%	42.8	D
	Right Turn	182	169	92.6%	70.6	E
	Subtotal	1,229	1,130	91.9%	47.0	D
SB	Left Turn	112	114	101.7%	93.4	F
	Through	443	453	102.1%	26.3	C
	Right Turn	203	202	99.6%	12.5	B
	Subtotal	758	769	101.4%	33.8	C
EB	Left Turn	210	181	86.1%	203.9	F
	Through	1,055	888	84.2%	210.6	F
	Right Turn	64	54	84.2%	108.3	F
	Subtotal	1,329	1,123	84.5%	204.7	F
WB	Left Turn	139	116	83.5%	40.5	D
	Through	1,203	1,017	84.6%	18.3	B
	Right Turn	159	129	80.9%	8.8	A
	Subtotal	1,501	1,262	84.1%	19.2	B
Total		4,817	4,283	88.9%	74.8	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 15

Spring/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	30	29	98.0%	41.8	D
	Through	99	101	101.6%	40.4	D
	Right Turn	72	68	94.2%	31.2	C
	Subtotal	201	198	98.4%	37.0	D
EB	Left Turn					
	Through	1,126	987	87.7%	17.7	B
	Right Turn	223	204	91.4%	5.4	A
	Subtotal	1,349	1,191	88.3%	15.7	B
WB	Left Turn	179	189	105.4%	61.6	E
	Through	1,429	1,171	81.9%	52.1	D
	Right Turn	100	79	78.5%	19.8	B
	Subtotal	1,708	1,438	84.2%	51.8	D
Total		3,258	2,826	86.8%	35.7	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 16 Main/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	427	329	77.1%	64.6	E
	Through	880	660	75.0%	65.1	E
	Right Turn	278	222	79.8%	37.4	D
	Subtotal	1,585	1,212	76.4%	60.6	E
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	105	95	90.9%	118.4	F
	Through	1,051	943	89.7%	51.5	D
	Right Turn					
	Subtotal	1,156	1,039	89.8%	58.4	E
WB	Left Turn					
	Through	1,296	1,077	83.1%	30.8	C
	Right Turn	23	22	94.8%	8.9	A
	Subtotal	1,319	1,099	83.3%	30.5	C
Total		4,060	3,349	82.5%	48.8	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 17

Alameda/Cesar Chavez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	113	90	79.2%	96.3	F
	Through	848	683	80.5%	39.9	D
	Right Turn	181	147	81.2%	41.3	D
	Subtotal	1,142	919	80.5%	46.1	D
SB	Left Turn	100	96	95.5%	33.6	C
	Through	699	632	90.4%	54.9	D
	Right Turn	162	147	90.6%	56.7	E
	Subtotal	961	874	90.9%	53.0	D
EB	Left Turn	150	126	84.1%	76.6	E
	Through	969	866	89.4%	17.9	B
	Right Turn	210	183	87.2%	4.3	A
	Subtotal	1,329	1,175	88.4%	22.7	C
WB	Left Turn	173	146	84.3%	45.1	D
	Through	1,044	887	85.0%	73.3	E
	Right Turn	116	92	79.3%	54.4	D
	Subtotal	1,333	1,125	84.4%	68.4	E
Total		4,765	4,093	85.9%	46.6	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 18 Union Station Driveway/Cesar Chavez Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	71	9	12.3%	21.0	C
	Through					
	Right Turn	129	22	17.1%	164.3	F
	Subtotal	200	31	15.4%	127.1	F
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	1,163	1,076	92.5%	212.6	F
	Right Turn	87	18	20.8%	175.1	F
	Subtotal	1,250	1,094	87.5%	211.9	F
WB	Left Turn	22	73	329.5%	3.5	A
	Through	1,237	1,034	83.6%	4.8	A
	Right Turn					
	Subtotal	1,259	1,106	87.9%	4.8	A
Total		2,709	2,231	82.4%	104.3	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 19

Alameda/Los Angeles

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	604	540	89.4%	40.3	D
	Right Turn	15	14	94.7%	30.7	C
	Subtotal	619	554	89.5%	40.2	D
SB	Left Turn	72	69	96.1%	70.3	E
	Through	836	724	86.6%	49.6	D
	Right Turn	174	166	95.6%	60.7	E
	Subtotal	1,082	960	88.7%	53.0	D
EB	Left Turn	441	289	65.4%	79.5	E
	Through	94	60	63.9%	82.7	F
	Right Turn	110	66	59.8%	54.5	D
	Subtotal	645	414	64.2%	76.1	E
WB	Left Turn	141	137	97.3%	56.3	E
	Through	62	56	90.0%	46.9	D
	Right Turn	97	98	100.6%	142.2	F
	Subtotal	300	291	96.9%	84.9	F
Total		2,646	2,219	83.9%	58.1	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 20 **Broadway/Arcadia** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	1,038	1,032	99.4%	6.4	A
	Through					
	Right Turn					
	Subtotal	1,038	1,032	99.4%	6.4	A
SB	Left Turn	508	489	96.3%	13.6	B
	Through					
	Right Turn					
	Subtotal	508	489	96.3%	13.6	B
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	205	161	78.3%	43.6	D
	Through					
	Right Turn					
	Subtotal	855	680	79.5%	25.4	C
Total		2,401	2,201	91.7%	13.7	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 21

Spring/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn					
	Through	451	352	77.9%	24.4	C
	Right Turn	103	95	91.8%	5.8	A
	Subtotal	554	446	80.5%	20.2	C
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	213	211	99.0%	21.5	C
	Through	752	585	77.8%	17.5	B
	Right Turn					
	Subtotal	965	796	82.5%	18.6	B
Total		1,519	1,242	81.8%	19.2	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 22 Main/Arcadia Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	274	209	76.2%	21.1	C
	Through	1,324	1,001	75.6%	23.5	C
	Right Turn					
	Subtotal	1,598	1,210	75.7%	23.0	C
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn					
	Through	691	587	85.0%	9.2	A
	Right Turn	93	73	78.4%	9.5	A
	Subtotal	784	660	84.2%	9.2	A
Total		2,382	1,870	78.5%	18.5	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 23

Los Angeles/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	190	122	64.3%	11.6	B
	Through	1,079	690	63.9%	21.1	C
	Right Turn					
	Subtotal	1,269	812	64.0%	19.6	B
SB	Left Turn					
	Through	155	151	97.6%	7.2	A
	Right Turn	39	34	86.2%	8.1	A
	Subtotal	194	185	95.3%	7.5	A
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	104	82	78.4%	35.1	D
	Through	555	505	90.9%	32.1	C
	Right Turn	53	39	74.2%	52.0	D
	Subtotal	712	625	87.8%	33.9	C
Total		2,175	1,622	74.6%	23.5	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 24

Alameda/Arcadia

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	22	27	122.7%	5.6	A
	Through	508	487	95.9%	5.3	A
	Right Turn	1,217	1,056	86.7%	6.1	A
	Subtotal	1,747	1,570	89.9%	5.8	A
SB	Left Turn	169	152	89.8%	31.4	C
	Through	676	546	80.8%	17.3	B
	Right Turn	30	37	122.0%	14.6	B
	Subtotal	875	735	83.9%	20.3	C
EB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
WB	Left Turn	253	193	76.4%	213.8	F
	Through	660	562	85.1%	242.3	F
	Right Turn	276	210	76.1%	404.5	F
	Subtotal	1,189	965	81.2%	270.2	F
Total		3,811	3,270	85.8%	90.1	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 25

Vignes/Ramirez

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	102	103	101.2%	39.9	D
	Through	393	391	99.5%	37.3	D
	Right Turn	79	81	102.0%	5.7	A
	Subtotal	574	575	100.1%	33.5	C
SB	Left Turn	520	519	99.9%	56.8	E
	Through	287	313	109.1%	33.3	C
	Right Turn	284	215	75.7%	30.4	C
	Subtotal	1,091	1,047	96.0%	44.3	D
EB	Left Turn	297	309	103.9%	83.0	F
	Through					
	Right Turn					
	Subtotal	297	309	103.9%	83.0	F
WB	Left Turn	204	198	97.1%	78.7	E
	Through	156	173	111.0%	116.1	F
	Right Turn	507	481	94.9%	91.9	F
	Subtotal	867	852	98.3%	95.2	F
Total		2,829	2,783	98.4%	59.7	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 26 Broadway/Aliso Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	890	885	99.4%	10.0	B
	Right Turn	230	212	92.0%	6.7	A
	Subtotal	1,120	1,097	97.9%	9.4	A
SB	Left Turn	102	92	90.0%	29.0	C
	Through	611	557	91.1%	8.0	A
	Right Turn					
	Subtotal	713	649	91.0%	11.0	B
EB	Left Turn	148	147	99.1%	38.3	D
	Through	418	426	101.8%	31.1	C
	Right Turn	46	51	111.7%	7.1	A
	Subtotal	612	624	101.9%	30.9	C
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		2,445	2,369	96.9%	15.7	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 27 Spring/Aliso Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	113	100	88.5%	13.0	B
	Through	551	563	102.2%	14.1	B
	Right Turn					
	Subtotal	664	663	99.9%	14.0	B
EB	Left Turn					
	Through	668	647	96.8%	18.6	B
	Right Turn	82	79	96.2%	11.2	B
	Subtotal	750	726	96.8%	17.8	B
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		1,414	1,389	98.2%	15.9	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 28		Main/Aliso			Signal	
Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	1,504	1,117	74.3%	72.0	E
	Right Turn	270	197	73.0%	134.0	F
	Subtotal	1,774	1,314	74.1%	82.9	F
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	94	88	93.4%	73.4	E
	Through	687	681	99.1%	72.6	E
	Right Turn					
	Subtotal	781	769	98.4%	72.7	E
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		2,555	2,082	81.5%	78.2	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 29

Los Angeles/Aliso

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	1,188	741	62.4%	108.5	F
	Right Turn	204	237	116.1%	84.0	F
	Subtotal	1,570	978	62.3%	102.6	F
SB	Left Turn					
	Through	259	234	90.5%	11.2	B
	Right Turn					
	Subtotal	259	234	90.5%	11.2	B
EB	Left Turn	586	587	100.1%	96.5	F
	Through	266	265	99.6%	53.3	D
	Right Turn	24	21	88.3%	51.0	D
	Subtotal	957	873	91.2%	82.8	F
WB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
Total		2,786	2,085	74.8%	83.6	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 30 Alameda/Aliso Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through	1,210	1,095	90.5%	29.5	C
	Right Turn	127	126	99.5%	10.9	B
	Subtotal	1,337	1,221	91.4%	27.6	C
SB	Left Turn	167	129	77.5%	103.9	F
	Through	762	611	80.2%	12.8	B
	Right Turn					
	Subtotal	929	741	79.7%	28.8	C
EB	Left Turn	366	314	85.8%	74.9	E
	Through	47	39	82.6%	44.4	D
	Right Turn	31	23	74.2%	6.5	A
	Subtotal	444	376	84.6%	67.8	E
WB	Left Turn	93	89	95.9%	108.7	F
	Through					
	Right Turn	171	161	93.9%	269.5	F
	Subtotal	264	250	94.6%	212.0	F
Total		2,974	2,588	87.0%	50.6	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 31

US 101 Ramps/Commercial

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	36	36	98.6%	29.0	C
	Through	435	436	100.3%	33.1	C
	Right Turn	25	24	94.4%	17.5	B
	Subtotal	496	496	99.9%	32.1	C
SB	Left Turn	130	136	104.9%	38.0	D
	Through	25	26	105.6%	45.8	D
	Right Turn	181	176	97.2%	5.3	A
	Subtotal	336	339	100.8%	22.1	C
EB	Left Turn	321	283	88.2%	37.2	D
	Through	66	58	87.9%	20.6	C
	Right Turn	11	9	83.6%	7.8	A
	Subtotal	398	350	88.0%	33.6	C
WB	Left Turn	1	1	120.0%	16.4	B
	Through	45	43	96.0%	57.2	E
	Right Turn	345	343	99.4%	29.4	C
	Subtotal	391	387	99.1%	32.2	C
Total		1,621	1,572	97.0%	30.3	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 32 Broadway/Temple Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	20	22	108.0%	46.5	D
	Through	808	842	104.2%	9.3	A
	Right Turn	72	69	96.4%	102.6	F
	Subtotal	900	933	103.6%	16.4	B
SB	Left Turn	45	38	83.3%	51.5	D
	Through	567	520	91.6%	4.4	A
	Right Turn	45	51	113.8%	4.6	A
	Subtotal	657	608	92.6%	7.2	A
EB	Left Turn	69	61	87.7%	272.6	F
	Through	765	607	79.3%	314.9	F
	Right Turn	21	12	57.6%	237.5	F
	Subtotal	855	679	79.5%	309.9	F
WB	Left Turn	97	73	75.1%	29.9	C
	Through	763	659	86.3%	10.9	B
	Right Turn	243	195	80.0%	7.9	A
	Subtotal	1,103	926	83.9%	12.1	B
Total		3,515	3,146	89.5%	65.2	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 33

Spring/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
SB	Left Turn	58	45	76.9%	110.7	F
	Through	466	508	108.9%	49.4	D
	Right Turn	109	93	85.0%	26.4	C
	Subtotal	633	645	101.9%	50.8	D
EB	Left Turn					
	Through	820	658	80.3%	133.0	F
	Right Turn	62	47	76.1%	90.9	F
	Subtotal	882	706	80.0%	130.3	F
WB	Left Turn	49	47	94.9%	7.2	A
	Through	994	843	84.8%	4.7	A
	Right Turn					
	Subtotal	1,043	889	85.2%	4.9	A
Total		2,558	2,239	87.5%	51.9	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 34 Main/Temple Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	278	210	75.6%	297.2	F
	Through	1,483	1,080	72.8%	398.5	F
	Right Turn	136	107	79.0%	434.3	F
	Subtotal	1,897	1,398	73.7%	385.1	F
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn	90	66	72.8%	92.0	F
	Through	788	633	80.3%	126.3	F
	Right Turn					
	Subtotal	878	698	79.5%	122.7	F
WB	Left Turn					
	Through	765	676	88.4%	24.8	C
	Right Turn	201	162	80.8%	32.5	C
	Subtotal	966	839	86.8%	26.2	C
Total		3,741	2,935	78.4%	206.6	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 35

Los Angeles/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	172	97	56.2%	212.2	F
	Through	1,165	632	54.2%	255.8	F
	Right Turn	82	46	55.9%	202.7	F
	Subtotal	1,419	774	54.6%	247.0	F
SB	Left Turn	97	96	98.8%	50.1	D
	Through	388	373	96.2%	38.9	D
	Right Turn	342	345	100.9%	62.3	E
	Subtotal	827	814	98.5%	51.3	D
EB	Left Turn	134	113	84.2%	221.1	F
	Through	674	536	79.5%	32.5	C
	Right Turn	116	89	76.9%	28.2	C
	Subtotal	924	738	79.9%	62.6	E
WB	Left Turn	71	59	83.5%	69.3	E
	Through	452	399	88.3%	86.5	F
	Right Turn	271	232	85.7%	144.0	F
	Subtotal	794	691	87.0%	104.9	F
Total		3,964	3,017	76.1%	113.7	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 36

San Pedro/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	166	136	81.9%	175.2	F
	Through					
	Right Turn	223	206	92.5%	163.6	F
	Subtotal	389	342	88.0%	168.5	F
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	822	655	79.7%	37.3	D
	Right Turn	31	22	70.6%	32.1	C
	Subtotal	853	677	79.4%	37.1	D
WB	Left Turn	39	50	127.2%	30.4	C
	Through	628	562	89.5%	70.3	E
	Right Turn					
	Subtotal	667	612	91.7%	67.2	E
Total		1,909	1,631	85.4%	69.8	E

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 37

Alameda/Temple

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	142	131	92.0%	38.7	D
	Through	968	895	92.5%	23.7	C
	Right Turn					
	Subtotal	1,110	1,026	92.4%	25.7	C
SB	Left Turn	47	34	72.3%	75.8	E
	Through	663	485	73.2%	10.2	B
	Right Turn	275	195	70.9%	55.3	E
	Subtotal	985	714	72.5%	27.0	C
EB	Left Turn	235	193	82.0%	65.2	E
	Through	576	486	84.4%	65.2	E
	Right Turn	234	181	77.3%	180.7	F
	Subtotal	1,045	860	82.3%	89.8	F
WB	Left Turn	32	31	97.2%	111.0	F
	Through	250	267	106.6%	77.6	E
	Right Turn	134	133	99.4%	79.7	E
	Subtotal	416	431	103.6%	80.5	F
Total		3,556	3,031	85.2%	52.9	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 38

Los Angeles/1st

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	36	17	48.1%	316.6	F
	Through	1,244	630	50.6%	417.1	F
	Right Turn	62	33	52.9%	389.2	F
	Subtotal	1,342	680	50.6%	413.5	F
SB	Left Turn	44	41	93.2%	21.3	C
	Through	510	462	90.5%	16.6	B
	Right Turn	21	19	91.9%	4.7	A
	Subtotal	575	522	90.8%	16.6	B
EB	Left Turn	62	35	55.8%	74.8	E
	Through	854	703	82.3%	98.1	F
	Right Turn	51	38	75.1%	62.9	E
	Subtotal	967	775	80.2%	95.2	F
WB	Left Turn	15	10	65.3%	48.2	D
	Through	504	479	95.0%	47.9	D
	Right Turn	113	106	93.6%	71.5	E
	Subtotal	632	595	94.1%	52.1	D
Total		3,516	2,572	73.1%	148.4	F

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 39

San Pedro/1st

Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	10	18	183.0%	198.5	F
	Through	302	259	85.8%	206.2	F
	Right Turn	44	41	93.4%	144.8	F
	Subtotal	356	319	89.5%	197.6	F
SB	Left Turn	15	12	81.3%	34.7	C
	Through	40	29	73.3%	20.4	C
	Right Turn	15	30	200.0%	31.9	C
	Subtotal	70	72	102.1%	29.1	C
EB	Left Turn	15	29	195.3%	63.3	E
	Through	926	755	81.6%	5.6	A
	Right Turn	19	14	75.3%	3.4	A
	Subtotal	960	799	83.2%	8.5	A
WB	Left Turn	31	27	87.1%	65.1	E
	Through	607	548	90.3%	37.7	D
	Right Turn	72	65	90.1%	179.7	F
	Subtotal	710	640	90.1%	52.4	D
Total		2,096	1,829	87.3%	46.6	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 40 Central/1st Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	154	147	95.7%	63.8	E
	Through					
	Right Turn	22	21	95.0%	15.1	B
	Subtotal	176	168	95.6%	59.3	E
SB	Left Turn					
	Through					
	Right Turn					
	Subtotal					
EB	Left Turn					
	Through	970	813	83.8%	31.6	C
	Right Turn	15	13	86.7%	23.1	C
	Subtotal	985	826	83.9%	31.4	C
WB	Left Turn	16	13	82.5%	24.6	C
	Through	556	517	92.9%	24.6	C
	Right Turn					
	Subtotal	572	530	92.7%	24.7	C
Total		1,733	1,525	88.0%	32.0	C

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
PM Peak Hour

Intersection 41 Alameda/1st Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	75	74	99.2%	99.5	F
	Through	637	638	100.1%	26.3	C
	Right Turn	122	122	99.7%	11.1	B
	Subtotal	834	834	99.9%	31.7	C
SB	Left Turn	35	28	81.1%	35.7	D
	Through	743	615	82.7%	25.2	C
	Right Turn	151	122	81.0%	67.1	E
	Subtotal	929	766	82.4%	34.6	C
EB	Left Turn	396	317	80.1%	19.2	B
	Through	486	424	87.3%	10.8	B
	Right Turn	110	92	83.7%	10.3	B
	Subtotal	992	833	84.0%	14.0	B
WB	Left Turn					
	Through	346	335	96.8%	198.4	F
	Right Turn	77	72	93.0%	133.5	F
	Subtotal	423	407	96.1%	186.8	F
Total		3,178	2,839	89.3%	49.0	D

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 101 Alameda St/Spring St/College St Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	351	319	90.9%	23.9	C
	Through	1,224	1,087	88.8%	14.3	B
	Right Turn	32	27	84.1%	12.9	B
	Subtotal	1,607	1,433	89.2%	16.4	B
SB	Left Turn	8	7	88.8%	18.9	B
	Through	532	476	89.5%	14.8	B
	Right Turn	99	85	85.9%	7.6	A
	Subtotal	639	568	88.9%	13.9	B
EB	Left Turn	154	148	96.0%	30.6	C
	Through	76	74	97.0%	18.5	B
	Right Turn	116	116	100.1%	6.0	A
	Subtotal	346	338	97.6%	18.9	B
WB	Left Turn	24	19	77.9%	25.2	C
	Through	66	62	94.4%	19.3	B
	Right Turn	27	24	88.9%	12.9	B
	Subtotal	117	105	89.7%	19.4	B
Total		2,709	2,444	90.2%	16.3	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 104 Broadway/College St Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	49	43	88.0%	13.1	B
	Through	1,380	1,257	91.1%	11.5	B
	Right Turn	38	33	86.1%	12.3	B
	Subtotal	1,467	1,333	90.9%	11.5	B
SB	Left Turn	46	45	98.7%	25.0	C
	Through	669	719	107.4%	13.1	B
	Right Turn	80	84	105.5%	6.7	A
	Subtotal	795	849	106.7%	13.2	B
EB	Left Turn	61	64	104.8%	30.2	C
	Through	249	248	99.7%	22.0	C
	Right Turn	57	52	91.9%	11.7	B
	Subtotal	367	365	99.3%	22.0	C
WB	Left Turn	26	22	83.5%	18.0	B
	Through	258	239	92.6%	17.9	B
	Right Turn	232	208	89.8%	15.1	B
	Subtotal	516	469	90.9%	16.6	B
Total		3,145	3,015	95.9%	14.1	B

Vissim Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Union Station Master Plan
Project
AM Peak Hour

Intersection 106 Main St/Ann St Signal

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)	
			Average	Percent	Average	LOS
NB	Left Turn	17	14	81.2%	3.1	A
	Through	1,285	1,061	82.5%	2.3	A
	Right Turn	9	7	74.4%	1.9	A
	Subtotal	1,311	1,081	82.5%	2.3	A
SB	Left Turn	3	3	96.7%	1.3	A
	Through	676	681	100.8%	1.7	A
	Right Turn	4	5	112.5%	1.5	A
	Subtotal	683	689	100.8%	1.8	A
EB	Left Turn	24	23	96.7%	33.3	C
	Through	3	3	110.0%	27.8	C
	Right Turn	32	30	94.4%	10.5	B
	Subtotal	59	57	96.1%	22.7	C
WB	Left Turn	10	9	92.0%	36.0	D
	Through	1	1	80.0%	5.0	A
	Right Turn	9	6	67.8%	4.1	A
	Subtotal	20	16	80.5%	30.0	C
Total		2,073	1,843	88.9%	3.0	A