**FINAL | AUGUST 2023**

**INITIAL STUDY/MITIGATED NEGATIVE DECLARATION ADDENDUM**



# Monteolivo Project TTM 37895


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CORONA "THE CIRCLE CITY" Established May 4, 1886 — To Cherish Our Past - To Plan Our Future

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EXPERTS IN STRATEGIC SOLUTIONS

# Addendum One to the Initial Study for the Monteolivo Project Tentative Tract Map 37895

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# 1.0 INTRODUCTION

## 1.1 Background

In 2014, the City of Corona adopted an Initial Study/Mitigated Negative Declaration (IS/MND) for Tentative Tract Map 36533 (Monteolivo Subdivision) that is presented in Appendix A, which allowed for the development of 103 single-family homes within the City of Corona, County of Riverside; refer to Figure 1-1, *Regional Location Map*. As shown in Figure 1-2, *Project Area Map*, the Monteolivo Subdivision is surrounded by the existing Bel Air residential neighborhood to the west, lower density residential uses and unincorporated land to the south, vacant land to the east, and Riverside Canal and former wastewater treatment pond site to the north. The IS/MND determined that with the incorporation of mitigation measures all potential impacts associated with implementation of Tentative Tract Map 36533 would be less than significant.

Subsequent to the approval of Tentative Tract Map 36533 and adoption of IS/MND, the approved tentative tract map inadvertently expired, which required that a new tentative tract map for the project be submitted to the City of Corona. Presently, the majority of the site has been rough-graded, and all required offsite improvements have been constructed. The property remains vacant and fenced off from the public.

The applicant has submitted a new Tentative Tract Map 37895 (TTM 37895), which retains the same general configuration and dwelling unit count except for a recreation center previously proposed on the project site has been replaced with an open space area; refer to Figure 1-3a, *Tentative Tract Map No. 37895*, and Figure 1-3b, *Public Road Dedication*. Because the project proposes the same number of residential units and the same general configuration, the City of Corona has determined that TTM 37895 has been adequately evaluated under the previously approved IS/MND.

### REGULATORY PERMIT BACKGROUND

The construction of the proposed project includes a sewer pipeline connection, storm drain improvements, and conversion of a wastewater treatment pond into a water quality treatment detention basin.

### SEWER PIPELINE CONNECTION

As shown in Figure 1-4, *Sewer Pipeline Connection*, the sewer line connection extended approximately 300 feet southwesterly from an existing sewer line located near Sherborn Street to the Bel Air Neighborhood located along Laurel Canyon Way. The sewer pipeline connection extends along an existing dirt road that is adjacent to the Riverside Canal, Northeaster Drainage Channel and the existing water quality treatment basin.

During construction of the offsite sewer line connection that was intended to be built beneath an existing access road, heavy rains caused significant erosion and a landslide buried the access road. Consequently, the sewer line to be constructed was relocated in the field 20 feet easterly, in order to protect the sewer improvements and access road. The adjacent Riverside Canal and an unnamed drainage to the Riverside Canal also had to be slope-stabilized as a result of the erosion and landslide.

These actions inadvertently caused impacts to jurisdictional waters and required after-the-fact coordination and/or jurisdictional permits from the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Wildlife (CDFW) and the Regional Water Quality Control Board

(RWQCB). A CDFW Operation of Law was issued on September 25, 2019, a USACE Non-Notifying Nationwide Permit was submitted to USACE on March 10, 2020, a Notice of Violation was issued from the RWQCB on August 15, 2019, and an After-the-Fact Determination of Biologically Equivalent or Superior Preservation (DBESP) pursuant to the Riverside Multiple Species Habitat Conservation Plan (MSHCP) was reviewed by CDFW and USFWS and was deemed complete on December 8, 2021. These documents/permits addressed impacts to the Riverside Canal and unnamed drainage.

## PROPOSED CONVERSION WASTEWATER TREATMENT POND TO WATER QUALITY TREATMENT DETENTION BASIN

As shown in Figure 1-5, *Water Quality Treatment Detention Basin*, the project included the conversion of an existing 4.0-acre wastewater treatment pond into a water quality treatment facility. The wastewater treatment pond was part of a private sewer system that was owned and operated for the Bel Air Neighborhood Homeowner Association. The wastewater treatment pond was determined to not be Waters of the U.S. or State and was decommissioned by Santa Ana Regional Water Quality Control Board (RWQCB) in 2017. The pond was drained and the vegetation in one-half of the pond was removed and converted to a water quality treatment basin. The other half remains as open space. A berm has been constructed to separate the two basins.

The wildlife agencies initially requested information on the sewage pond retrofit. The original sewage treatment ponds were not considered jurisdictional waters of the U.S. or State due to its use as an isolated waste treatment facility. The sewage treatment pond would also not be considered an MSHCP riparian/riverine feature because it did not contain a freshwater source. When the sewage ponds were decommissioned, a portion of the pond was converted into a water quality basin and the remainder still exists as a remnant pond, but no longer treats sewage.

The connection of the Bel Air Community sewer lines, and the decommissioning of the sewage pond, was required by the City of Corona as stated within the greater Monteolivo Development Conditions of Approval (Appendix A, Conditions 42-45). As this requirement is in the existing Conditions of Approval, additional CEQA review is not required, and therefore does not warrant additional MSHCP review. As stated in the 2020 DBESP, impacts to the unnamed drainage and the Riverside Canal were not anticipated, and therefore the regulatory agency coordination, MSHCP After the Fact and this associated CEQA review is intended to address impacts to the unnamed drainage and Riverside Canal only.

The City of Corona submitted a DBESP to the USFWS and CDFW on February 24, 2021. Comments were provided by USFWS and CDFW on April 26, 2021 and responses were submitted on June 23, 2021. Subsequent USFWS and CDFW comments were received on August 24, 2021. Additional comment responses were submitted to CDFW and USFWS on October 8, 2021. No further comments were received from the wildlife agencies within their 60-day review period, and therefore, the DBESP was deemed complete on December 8, 2021. Copies of the correspondence are attached in Appendix B.

### STORM DRAIN IMPROVEMENTS

To construct the sewer line connection, shown in Figure 1-4, *Sewer Pipeline Connection*, the banks of the Riverside Canal Drainage and the Northeasterly Drainage Channel were stabilized with the placement of rock riprap. This involved the widening of the channel, replacement of an existing culvert, installation of a headwall and installation of approximately 135 linear feet of riprap for energy dissipation. Improvements to the channel required a 404 Permit from the USACE, a 1600 Streambed Agreement from CDFW and a 401 Water Quality Certification from the RWQCB. Presently, the Proposed Project Modification have approval from the CDFW and is pending permit approvals from the USACE and RWQCB.

## 1.2 Location and Surrounding Land Uses

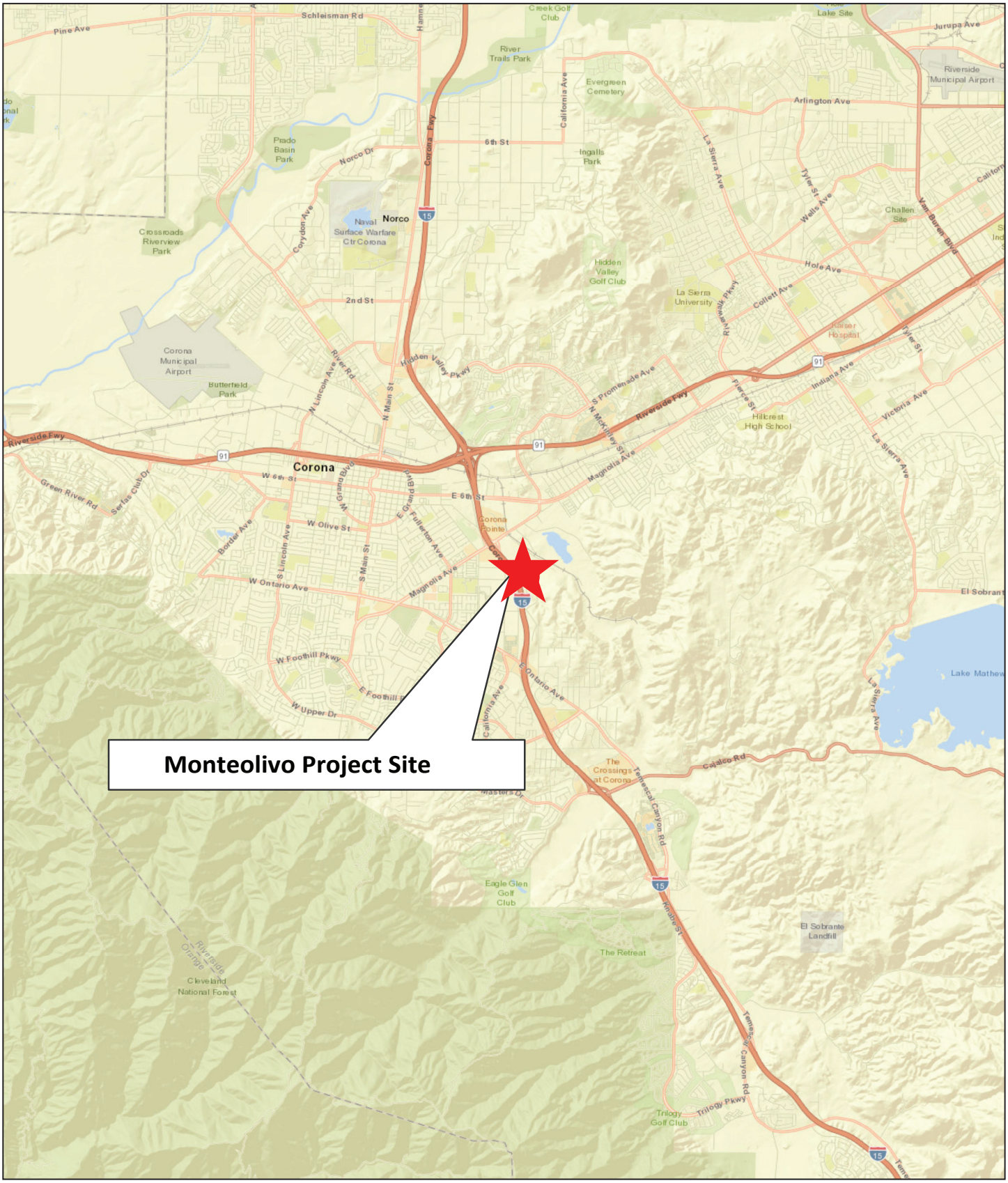
The Monteolivo project site consists of 61.6 acres and is located east of the intersection of Laurel Canyon Way and Old Temescal Road within the City of Corona, County of Riverside. The site area is located approximately 0.02 miles east of Interstate 15 (I-15) and one mile south of State Route 91 (SR-91). The project site is surrounded by the existing Bel Air residential neighborhood to the west, lower density residential uses to the south, vacant land to the east and Riverside Canal and former wastewater treatment pond site to the north.

## 1.3 Proposed Project Modifications

The Proposed Project Modifications in Addendum 1 evaluate a proposed private gated circulation access through the community and the replacement of the previously proposed recreation center with an open space park area.

### PROPOSED PROJECT ACCESS

The primary access for the Monteolivo community would be a stop-controlled full access driveway at Laurel Canyon Way with a private gate. The project would also provide a secondary access road through the southern portion of the Monteolivo community which would create a stop-controlled driveway on State Street that aligns with Bel Air Street for project residents only with a private gate and would not be open to the public; refer to Figure 1-6, *Proposed Project Circulation Access*.




Source: ESRI; March 2019.

MONTEOLIVO PROJECT TENTATIVE TRACT MAP 37895
Initial Study/Mitigated Negative Declaration Addendum

## Regional Location Map

VCS Environmental

**Figure 1-1**



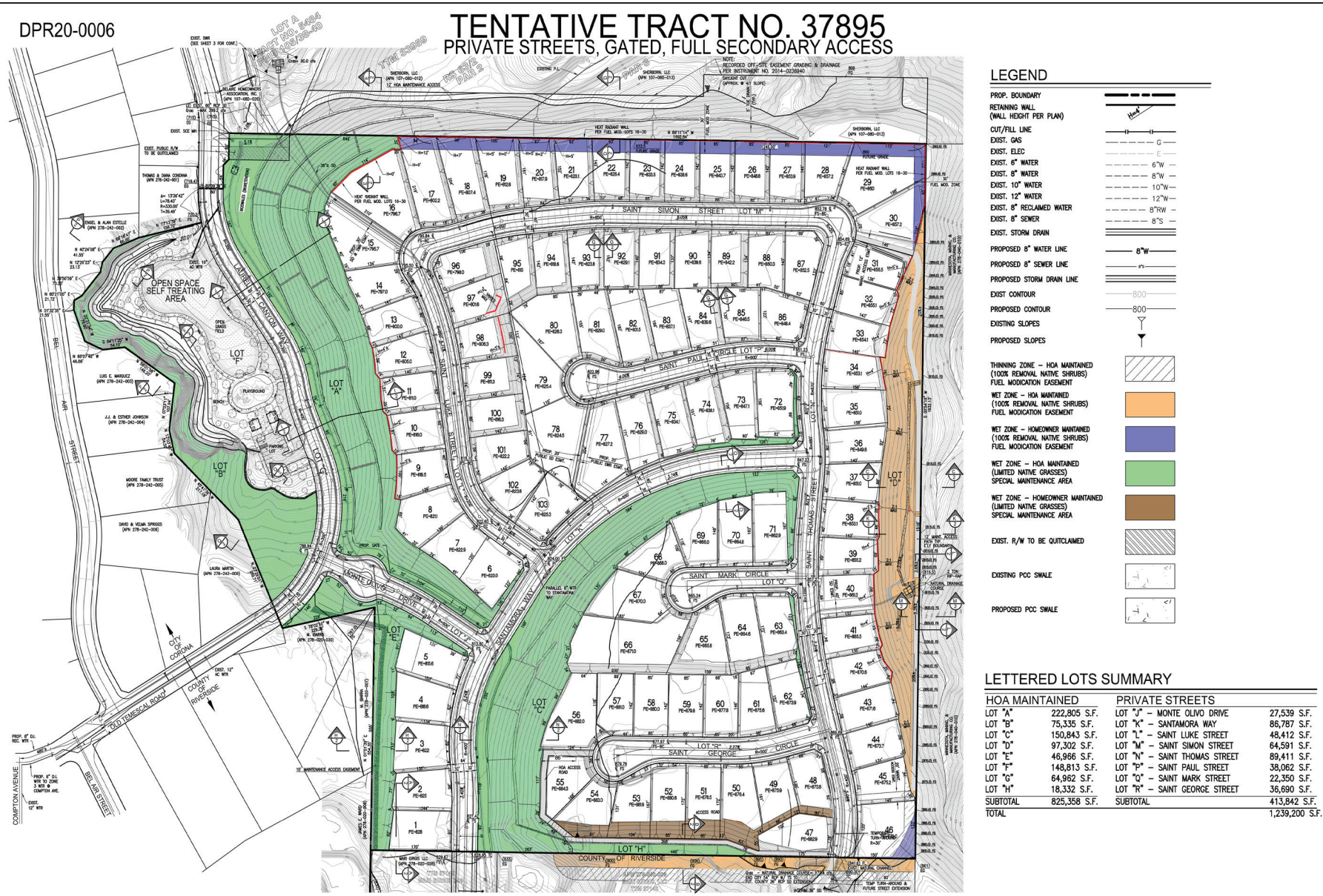

Source: Google Earth Pro; March 2023.
- approximate Project Site Boundary

MONTEOLIVO PROJECT TENTATIVE TRACT MAP 37895
Initial Study/Mitigated Negative Declaration Addendum

## Project Area Map

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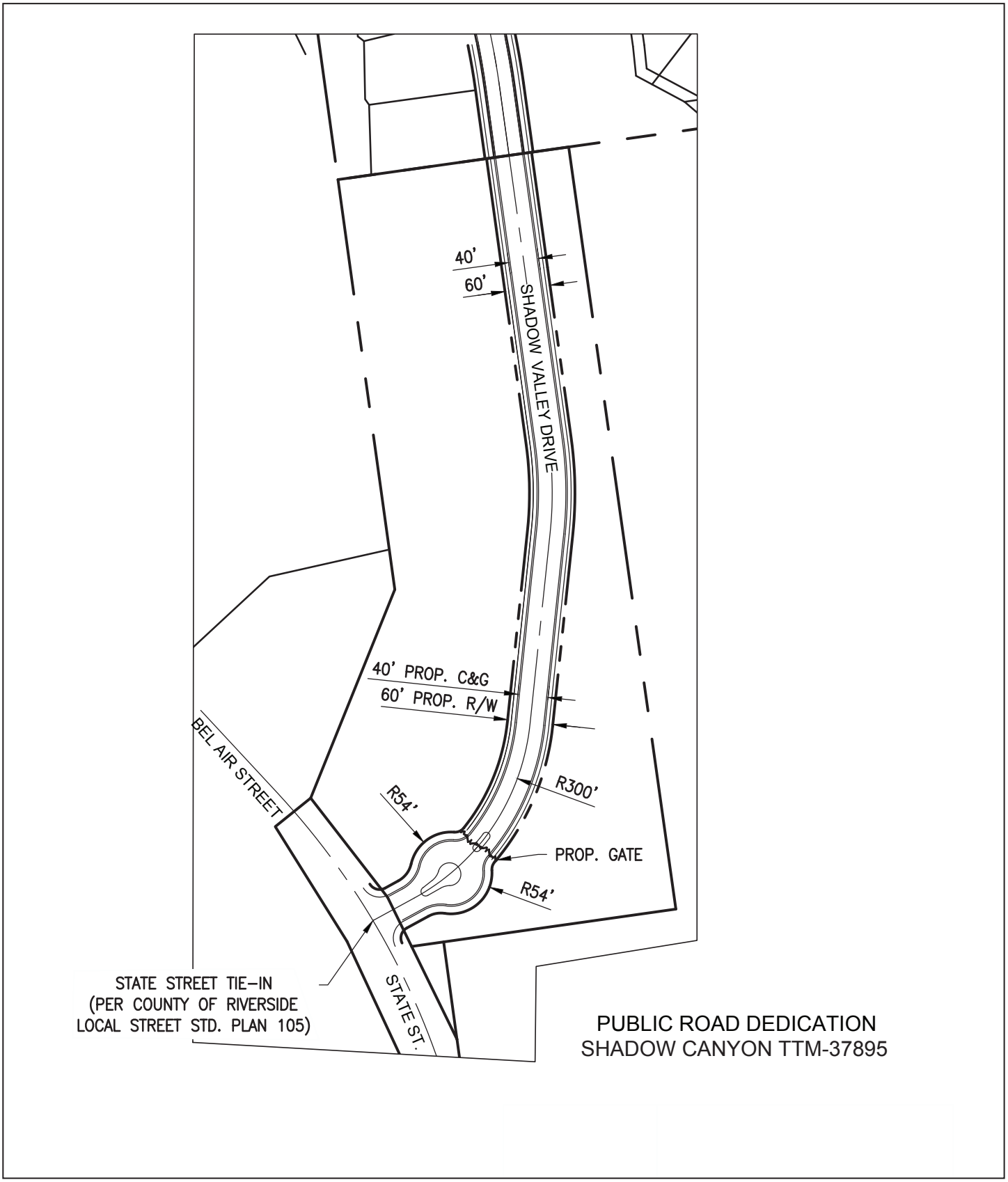
**Figure 1-2**




## LETTERED LOTS SUMMARY

| HOA MAINTAINED | | PRIVATE STREETS | |
|---|---|---|---|
| LOT "A" | 222,805 S.F. | LOT "J" – MONTE OLIVO DRIVE | 27,539 S.F. |
| LOT "B" | 75,335 S.F. | LOT "K" – SANTAMORA WAY | 86,787 S.F. |
| LOT "C" | 150,843 S.F. | LOT "L" – SAINT LUKE STREET | 48,412 S.F. |
| LOT "D" | 97,302 S.F. | LOT "M" – SAINT SIMON STREET | 64,591 S.F. |
| LOT "E" | 46,966 S.F. | LOT "N" – SAINT THOMAS STREET | 89,411 S.F. |
| LOT "F" | 148,813 S.F. | LOT "P" – SAINT PAUL STREET | 38,062 S.F. |
| LOT "G" | 64,962 S.F. | LOT "Q" – SAINT MARK STREET | 22,350 S.F. |
| LOT "H" | 18,332 S.F. | LOT "R" – SAINT GEORGE STREET | 36,690 S.F. |
| SUBTOTAL | 825,358 S.F. | SUBTOTAL | 413,842 S.F. |
| TOTAL | | | 1,239,200 S.F. |

Source: Armstrong & Brooks Consulting Engineers; August 9, 2023.




Source: Armstrong & Brooks Consulting Engineers; August 2023.

MONTEOLIVO PROJECT TENTATIVE TRACT MAP 37895
Initial Study/Mitigated Negative Declaration Addendum

## Public Road Dedication

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**Figure 1-3b**




Sources: Bing, Google Earth, LSA and VCS; February 2020.

MONTEOLIVO PROJECT TENTATIVE TRACT MAP 37895
Initial Study/Mitigated Negative Declaration Addendum

## Sewer Pipeline Connection

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**Figure 1-4**



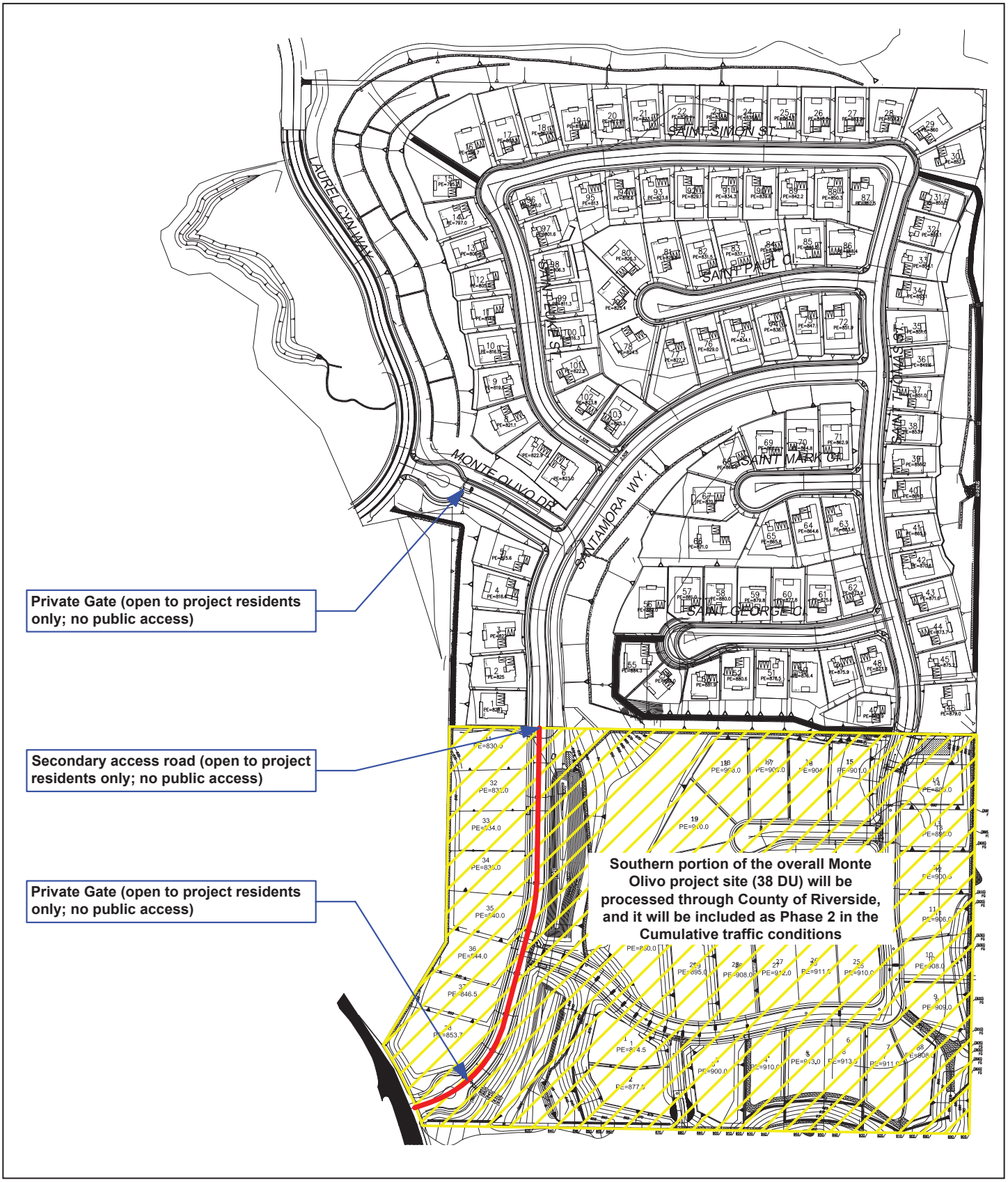

Source: LSA.

MONTEOLIVO PROJECT TENTATIVE TRACT MAP 37895
Initial Study/Mitigated Negative Declaration Addendum

## Water Quality Treatment Detention Basin

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**Figure 1-5**




Source: Ganddini Group, Inc.; January 26, 2023.

MONTEOLIVO PROJECT TENTATIVE TRACT MAP 37895
Initial Study/Mitigated Negative Declaration Addendum

## Proposed Project Circulation Access

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**Figure 1-6**

### Project Access Design Features

The following traffic design features have been incorporated into the Proposed Project Modifications to ensure that project area intersections and roadway segments operate at acceptable levels of service:

PDF-T-1: At the project driveway at Laurel Canyon Way (Intersection No. 7), install a westbound stop sign, and provide a westbound shared left-right lane.

PDF-T-2: At the project driveway at State Street (Intersection No. 8 – Opposite Bel Air Street), install a westbound stop sign, and provide a westbound shared left-right lane.

#### PROPOSED PASSIVE OPEN SPACE AREA

The previously expired Tentative Tract Map (TTM) included a 3.16-acre open space lot located on the west side of Laurel Canyon Way, north of the project entry, which would be dedicated for the construction of a common private recreational center with amenities for the benefit of future homeowners. TTM 37895 proposes to retain the 3.16-acre open space lot, but in-lieu of providing a recreation center, proposes a passive open space area. The open space area is envisioned to include a tot lot of play equipment, informal open grass play areas, pedestrian pathways, and picnic areas with shade pavilions; refer to Figure 1-7, *Conceptual Landscape Plan*.

## 1.4 Basis for an Addendum

CEQA Guidelines Section 15164 allows for the preparation of an Addendum to an adopted MND "if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR (or MND) have occurred." CEQA Guidelines Section 15164 identifies the following conditions that would require the preparation of a subsequent MND:

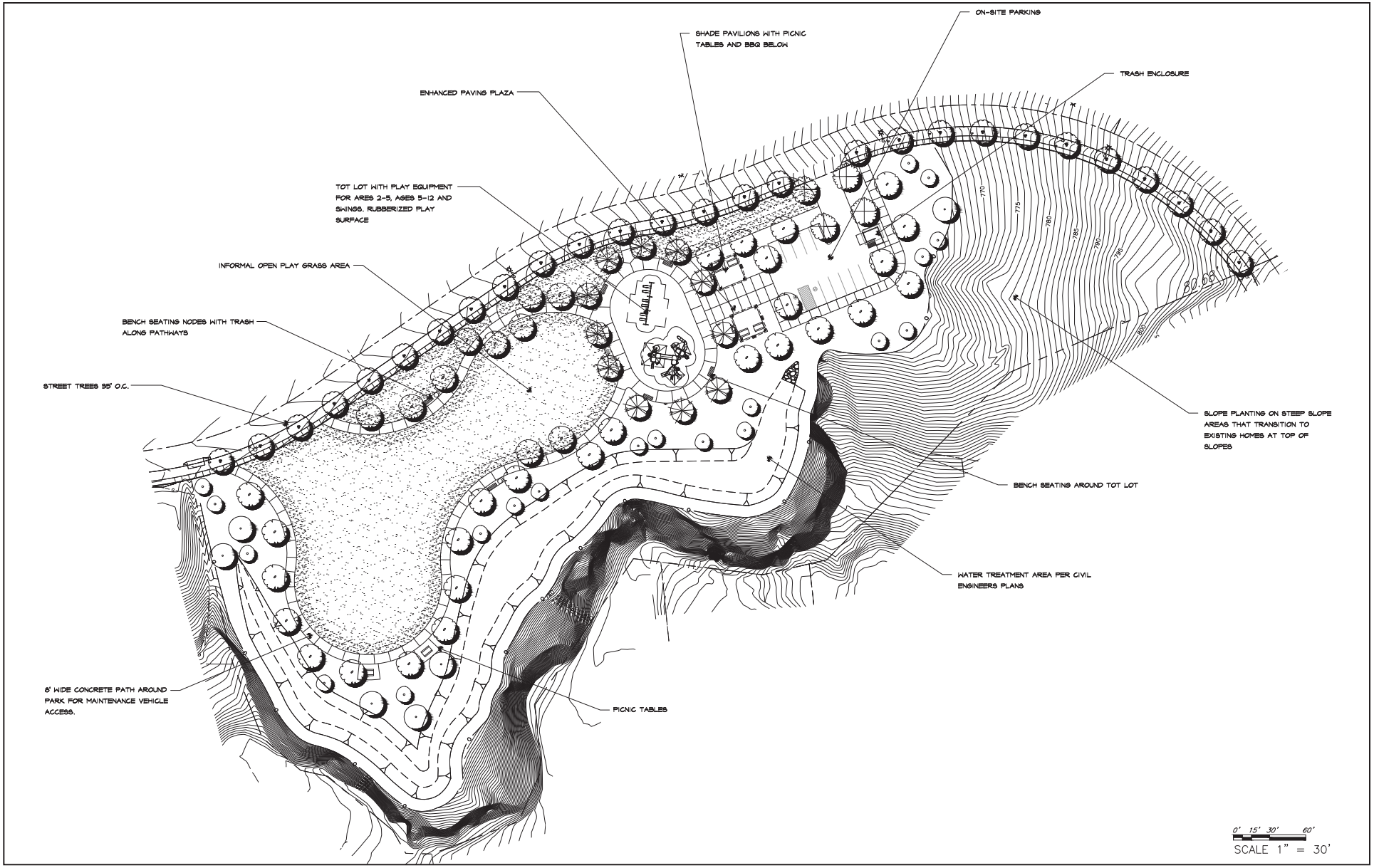
- Substantial changes in the project are proposed which require major revisions to the MND due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.
- Substantial changes occur with respect to the circumstances under which the project is undertaken which require major revisions to the MND due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.

New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time of MND adoption, shows any of the following:

- The project would have one or more significant effects not discussed in the MND. The project would result in impacts substantially more severe than those disclosed in the MND.

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, but the project proponent declines to adopt the mitigation measure or alternative.

- Mitigation measures or alternatives that are considerably different from those analyzed in the MND would substantially reduce one or more significant effects on the environment, but the project proponent declines to adopt the mitigation measure or alternative.




Source: Ian Davidson Landscape Architecture; October 2020.

MONTEOLIVO PROJECT TENTATIVE TRACT MAP 37895
Initial Study/Mitigated Negative Declaration Addendum

## Conceptual Landscape Plan

The Addendum need not be circulated for public review (CEQA Guidelines Section 15164[c]); however, an Addendum must be considered by the decision-making body prior to making a decision on the project (CEQA Guidelines Section 15164[d]). This Addendum to the previously adopted IS/MND demonstrates that the environmental analysis, impacts, and mitigation requirements identified in the previously approved Final IS/MND remains substantively unchanged despite minor project refinements described herein and supports the finding that the proposed project does not raise any new issues and does not exceed the level of impacts identified in the previously approved Final IS/MND.

## 1.5 Mitigation Measures

### PREVIOUSLY APPROVED EXISTING MITIGATION MEASURES

Below is a listing of mitigation measures provided in the previously approved IS/MND that are relevant to the Proposed Project Modifications. Because construction activities for the residential project have been completed, the majority of the mitigation measures from the previously adopted IS/MND are no longer relevant.

AIR-3: During site preparation and grading activities, the applicant or its contractor shall control airborne dust and $PM_{10}$/$PM_{2.5}$ by watering all active areas at least three times per day, as dictated by local soil and wind conditions. If visible emissions of fugitive dust persist beyond a distance of 200 feet from the boundary of the construction site, all feasible measures shall be implemented to eliminate potential nuisance conditions at offsite receptors.

BIO-6: A pre-construction survey for avian nests within seven (7) days of vegetation clearance or grading of the project site, if grading permits are to be issued during the nesting season, March 1st through September 1st.

BIO-7: If passerine birds are found to be nesting, a 250-foot buffer is required around the nesting site, in which the vegetation cannot be disturbed. In the event that the nest is for a raptor, the buffer shall be expanded to 500-feet. If multiple nests are found, grading and grubbing of the project site shall be postponed.

BIO-8: A qualified biologist shall closely monitor the project site and nests until it is determined that the nests are no longer active.

BIO-9: Prior to the issuance of a grading permit, applicable Section 404 permit from the U.S. Army Corps of Engineers and a Streambed Alteration Permit pursuant to Fish and Wildlife Code 1602, and Section 401 Water Quality Certification from the Regional Water Quality shall be obtained.

BIO-10: A Water Quality Management Plan and SWPPP shall be prepared and implement BMPs (Best Management Practices) that will prevent habitat degradation caused by runoff within the adjacent conservation area and pollutants from vehicles and paved surfaces are organic compounds, metals, and oil/grease; from pet waste are bacteria/virus pathogens; and from landscaping are sediment, nutrients, oxygen-demanding substances, and herbicides/pesticides.

CR-15: If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission must be contacted within 24 hours. The Native American Heritage Commission must then immediately identify the "most likely descendant(s)" of receiving notification of discovery. The most likely descendant(s) shall then make recommendations within 48 hours and engage in consultations concerning the treatment of the remains as provided in Public Resources Code 5097.98.

CR-16: The landowner shall relinquish ownership of all cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project area to the appropriate Tribe for proper treatment and disposition.

CR-17: All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible.

CR-18: If inadvertent discoveries of subsurface archaeological/cultural resources are discovered during grading, the Developer shall retain a qualified archaeologist to assess the significance of such resources. Pursuant to California Public Resources Code Section 21083.2(b) avoidance is the preferred method of preservation for archaeological resources. The archaeologist shall be responsible for determining the significance of the cultural resource and mitigation for such resources. The archaeologist shall make the determination based on the provisions of the California Environmental Quality Act with respect to archaeological resources and shall take into account the religious beliefs, customs, and practices of the Tribe(s). If large fossil specimens are encountered during additional grading, the applicant shall immediately cease operation and retain a qualified and trained paleontologist.

GEO-2: During earthwork construction, the applicant shall adhere to the grading recommendations presented in the Preliminary Geotechnical Investigation prepared by Geocon Inland Empire Inc. (2006).

GEO-19: The paleontologist shall salvage all fossils in the area and provide additional field staff in accordance with modern paleontological techniques.

GEO-20: All fossils collected during the project will be prepared to a reasonable point of identification. Excess sediment or matrix will be removed from the specimens to reduce the bulk and cost of storage. Itemized catalogs of all material collected and identified will be provided to the museum repository along with the specimens.

GEO-21: A report prepared by the archeologist documenting the results of the monitoring and salvage activities and the significance of the fossils shall be prepared.

T-4: Prior to the issuance of the first Certificate of Occupancy, the northbound shared left/through/right turn lane of Compton Avenue at Old Temescal Road shall be widened and/or restriped to provide an exclusive left-turn lane and a shared through-right turn lane.

T-5: Prior to the recordation of TTM 36533, the applicant shall pay the fair share cost of 9.55 percent towards the construction of a two-phased signal traffic signal at the intersection of Rimpau Avenue at Old Temescal Road. In addition, the northbound shared left-through lane shall be restriped to provide an exclusive left-turn lane and the southbound shared left-through lane shall be restriped to provide an exclusive left-turn lane.

### PROPOSED MITIGATION MEASURES

The following Mitigation Measures are proposed based on the analysis provided in the Addendum to the IS/MND:

TRANS-1: Prior to map recordation, the project shall constrict or if the signal is constructed, provide a fair share payment for the installation of the traffic signal at the intersection of State Street/Ontario Avenue.

TRANS-2: The following circulation improvements are recommended to enhance safe vehicle within the project area:

- Prior to issuance of first Certificate of Occupancy, Laurel Canyon Way, adjacent to the project boundary, shall be constructed at its ultimate half-section width, including landscaping and parkway improvements in conjunction with development per City standards.
- Prior to issuance of the first Certificate of Occupancy, the project shall provide a secondary access road through the southern portion of the site which would create a stop-controlled secondary access driveway at State Street for project residents only.
- All roadway design, traffic signing and striping, and traffic control improvements relating to the proposed project should be constructed in accordance with applicable engineering standards and to the satisfaction of the City of Corona and applicable portions to the County of Riverside.
- Prior to issuance of first Certificate of Occupancy, site-adjacent roadways shall be constructed or repaired at their ultimate half-section width, including landscaping and parkway improvements in conjunction with development, or as otherwise required by the City of Corona.
- Onsite traffic signing and stripping plans shall be submitted to City of Corona for approval in conjunction with detailed construction plans for the project.
- The final grading, landscaping, and street improvement plans should demonstrate that sight distance standards are met in accordance with applicable City of Corona, County of Riverside and California Department of Transportation sight distance standards.

- The northeast and southeast corners of the project site access driveway at State Street shall be limited to low growing ground cover and/or hardscape to ensure that overgrown landscape would not obstruct driver views along State Street. The final Improvement Plans for the State Street project driveway access shall be approved by the City of Corona and County of Riverside.

## 1.6 Summary of Findings

In accordance with the analysis presented in Section 2.0, and pursuant to Sections 15162, 15164, and 15183 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously prepared IS/MND due to new or substantially more severe significant environmental effects than previously analyzed; and
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed; and
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously prepared EIRs.

# 2.0 ENVIRONMENTAL CHECKLIST

CEQA Guidelines 15168(c)(4) recommends using a written checklist or similar device to confirm whether the environmental effects of a subsequent activity were adequately covered in an original project's IS/MND. The focus of this analysis is on the identified changes associated with the Proposed Project Modifications and whether there would be any difference in identified impacts or required mitigation measures from those identified in the previously approved IS/MND.

The following analysis is used to: (1) compare the environmental impacts of the Proposed Project Modifications with impacts evaluated in the previously adopted IS/MND; (2) to identify whether the Proposed Project Modifications would result in new or more severe significant environmental impacts; and (3) to identify if there have been substantial changes with respect to the circumstances under which the Proposed Project Modifications would be undertaken since adoption of the previously approved IS/MND that would result in new or more severe significant environmental effects. This analysis confirms that the Proposed Project Modifications are within the scope of the previously approved IS/MND, and the Proposed Project Modifications would cause no new or more severe significant effects and no new mitigation measures are required.

The following discussion has been undertaken pursuant to the provisions of CEQA Guidelines Sections 15162 and 15164 to provide the City of Corona with the factual basis for determining whether any changes associated with the Proposed Project Modifications, any changes in circumstance, or any new information since adoption of the previously approved IS/MND requires additional environmental review.

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## 2.1 Aesthetics

| Except as provided in Public Resources Code Section 21099, would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Have a substantial adverse effect on a scenic vista? | ☐ | ☐ | ☒ | ☐ |
| b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? | ☐ | ☐ | ☒ | ☐ |
| c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? | ☐ | ☐ | ☒ | ☐ |
| d. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

#### a) Have a substantial adverse effect on a scenic vista?

**Previously Approved MND Finding No Impact:** According to the City of Corona General Plan, there are no designated scenic vistas on the project site. The previously adopted IS/MND determined that the original project would not impact any scenic vistas.

**Addendum Finding No Impact:** The Proposed Project Modifications would not increase the potential to have a substantial adverse effect on a scenic vista. The Proposed Project Modifications would occur in the same general project area and like the original project, would not have an adverse impact on any designated scenic vistas. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impacts to scenic vistas.

#### b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

**Previously Approved MND Finding No Impact:** The State Scenic Highway Program was established by the California Department of Transportation (Caltrans) to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to state highways. According to Caltrans, State Route 91 (SR-91) is identified as an eligible State Scenic Corridor from I-15 west to SR-91. The previously adopted IS/MND determined that the project site was located southeast of SR-91 and the I-15 interchange, outside of the segment of I-15 that is identified as an eligible scenic corridor and no impacts to scenic resources within the viewshed of a state highway would occur.

**Addendum Finding No Impact:** The Proposed Project Modifications would not increase the potential to substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and

historic buildings within a state scenic highway. The Proposed Project Modifications would occur in the same general project area. Therefore, no potential adverse impacts to scenic resources within the viewshed of a state scenic highway would occur. Compared to the original project, implementation of the Proposed Project Modifications would result in the same level of impacts to state scenic highways.

**c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the original project was consistent with existing developments in the vicinity and would not degrade the visual character of the site or surrounding area.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase the potential to substantially degrade the existing visual character or quality of the site and its surroundings. The construction of the Proposed Project Modifications would temporarily alter the existing aesthetic environment but would not change the overall aesthetic character of the project area. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impacts to the aesthetic visual character of the project area.

**d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the original project would not have any adverse light and glare impacts.

**Addendum Finding No Impact:** The Proposed Project Modifications would not increase the potential to create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. The Proposed Project Modifications would not introduce any new sources of light and glare impacts within the project area, beyond provided by the original project. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of light and glare impacts.

## SUMMARY OF FINDINGS FOR AESTHETICS

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

## 2.2 Agricultural and Forestry Resources

| In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. 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? | ☐ | ☐ | ☒ | ☐ |
| b. Conflict with existing zoning for agricultural use, or a Williamson Act contract? | ☐ | ☐ | ☒ | ☐ |
| c. 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))? | ☐ | ☐ | ☒ | ☐ |
| d. Result in the loss of forest land or conversion of forest land to non-forest use? | ☐ | ☐ | ☒ | ☐ |
| e. Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

**a) 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?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the project does not contain Prime Farmland or Farmland of Statewide Importance, and therefore the original project would not convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance to non-agricultural land uses.

**Addendum Finding No Impact:** The Proposed Project Modifications would not increase the potential to convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The project site has been rough graded. There are no existing agricultural land uses on the project site. Implementation of the Proposed Project Modifications will not convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance to non-agricultural land uses. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impact to agricultural resources.

**b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the original project would not conflict with any existing agricultural zoning or Williamson Act contracts on the property. According to the City of Corona Zoning Code, the project site is not zoned for agricultural land uses or is not under existing Williamson Act contracts.

**Addendum Finding No Impact:** The Proposed Project Modifications would not increase the potential to conflict with existing zoning for agricultural use, or a Williamson Act contract. As identified previously, the project site has been rough graded and there are no agricultural resources within the project area where the Proposed Project Modifications would occur. Therefore, the Proposed Project Modifications would not conflict with any lands zoned for agricultural uses or conflict with lands under a Williamson Act contract. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impact to agricultural resources.

**c) 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))?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the original project would not cause a rezoning of lands that are zoned for forest land or timberland.

**Addendum Finding No Impact:** The Proposed Project Modifications would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production. According to the City of Corona Zoning Code, the project site is not zoned for forest land or timberland. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impact to forest land or timberland uses.

**d) Result in the loss of forest land or conversion of forest land to non-forest use?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the original project would not result in the loss of forest or convert forest land to non-forest land uses.

**Addendum Finding No Impact:** The Proposed Project Modifications would not result in the loss of forest land or conversion of forest land to non-forest use. The project has been rough graded and does not contain forest land resources. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impact to forest land resources.

**e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the original project would not result in the loss of forest or convert forest land to non-forest land uses.

**Addendum Finding No Impact:** The Proposed Project Modifications would not cause any onsite or offsite conversion of farmland or forest land to non-agricultural uses or non-forest uses. The project site and surrounding area does not contain farmland or timberland. Compared to the previously adopted IS/MND, the implementation of the Proposed Project Modifications would result in the same level of impact to farmland or forest land resources.

## SUMMARY OF FINDINGS FOR AGRICULTURAL AND FORESTRY RESOURCES

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

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## 2.3 Air Quality

| Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Conflict with or obstruct implementation of the applicable air quality plan? | ☐ | ☐ | ☒ | ☐ |
| b. 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? | ☐ | ☐ | ☒ | ☐ |
| c. Expose sensitive receptors to substantial pollutant concentrations? | ☐ | ☐ | ☒ | ☐ |
| d. Result in other emissions (such as those leading to odors adversely affecting a substantial number of people? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

#### a) Conflict with or obstruct implementation of the applicable air quality plan?

**Previously Approved MND Finding Less Than Significant Impact:** Potential air quality impacts associated with the construction of the Monteolivo Subdivision were evaluated and mitigated in the previously approved IS/MND. Mitigation Measure AIR-3 was incorporated into the project to reduce potential localized air quality impacts to less than significant. The previously approved IS/MND determined the construction and operation of the original Monteolivo Subdivision Project would not conflict with the South Coast Air Quality Management District's (SCAQMD) Air Quality Management Plan.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase the potential to conflict with or obstruct implementation of the applicable air quality plan. The Proposed Project Modifications would provide private gated circulation access through the project and the replacement of the previously proposed recreation center with an open space park area. The Proposed Project Modifications would not generate additional population, housing, or employment growth beyond what is currently identified in the City of Corona General Plan, and therefore would not conflict with the SCAQMD's Air Quality Management Plan (AQMP). Therefore, the Proposed Project Modifications would be consistent with the AQMP. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impact regarding conflicts with the SCAQMD's Air Quality Management Plan.

#### b) 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?

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The project site is located in a Federal and/or State nonattainment area for $PM_{10}$, $PM_{2.5}$, and $O_3$. The SCAQMD considers the thresholds for project-specific impacts and cumulative impacts to be the same.

The previously approved IS/MND determined the original project would result in less than significant regional operational air quality impacts and less than significant construction related air quality impacts with implementation of Mitigation Measure AIR-3. Therefore, cumulative air quality impacts would also be less than significant.

**Addendum Finding Less Than Significant Impact With Mitigation Incorporated:** The Proposed Project Modifications would not increase the potential to 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 standards. The proposed project would not increase the number of dwelling units or increase the amount of vehicle trips beyond the amount provided in the original project. Therefore, there would be no increase in long-term air quality emissions compared to the original project. Compared to the original project, there would be no increase in construction related emissions. Like the original project, to minimize fugitive dust impacts, the project would be required to implement Mitigation Measure AIR-3 which requires watering all active areas at least three times per day. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of air quality impacts.

**Mitigation Measures:**

AIR-3: During site preparation and grading activities, the applicant or its contractor shall control airborne dust and $PM_{10}$/$PM_{2.5}$ by watering all active areas at least three times per day, as dictated by local soil and wind conditions. If visible emissions of fugitive dust persist beyond a distance of 200 feet from the boundary of the construction site, all feasible measures shall be implemented to eliminate potential nuisance conditions at offsite receptors.

**c) Expose sensitive receptors to substantial pollutant concentrations?**

**Previously Approved MND Finding Less Than Significant Impact:** Sensitive receptors include, but are not limited to, residential uses, hospitals, schools, daycare facilities, elderly housing, and convalescent facilities. Existing residential uses are located west of where the Proposed Project Modifications would occur. The previously approved IS/MND determined that the original project would result in less than significant localized air quality impacts with the incorporation of Mitigation Measure AIR-3.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not expose sensitive receptors to substantial pollutant concentrations. The proposed project would not increase long-term operational air emissions or short-term construction emissions and would not increase the exposure of sensitive receptors to increased levels of air pollutants. As required for the original project, to minimize fugitive dust impacts, the proposed project would be required to implement Mitigation Measure AIR-3 which requires watering all active areas at least three times per day. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of localized air quality impacts.

**Mitigation Measures:** Mitigation Measure AIR-3 is required.

**d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the construction operations for the original project would generate less than significant odor impacts and that no adverse operational odor impacts would occur.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase the potential to result in other emissions that would adversely affect a substantial number of people. Like the original project, odor emissions generated from the operation of construction equipment would be short-term and would not be confined to one specific location and would disperse quickly. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result resulted in the same level of odor impacts.

## SUMMARY OF FINDINGS FOR AIR QUALITY

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

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## 2.4 Biological Resources

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. 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 Game or U.S. Fish and Wildlife Service? | ☐ | ☐ | ☒ | ☐ |
| b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | ☐ | ☐ | ☒ | ☐ |
| c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? | ☐ | ☐ | ☒ | ☐ |
| d. 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? | ☐ | ☐ | ☒ | ☐ |
| e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? | ☐ | ☐ | ☒ | ☐ |
| f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

**a) 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 Game or U.S. Fish and Wildlife Service?**

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously approved IS/MND evaluated potential impacts to sensitive species associated with the construction of the Monteolivo project. The assessment analyzed both onsite conditions associated with the 61.6-acre project site. The assessment included habitat suitability assessments (HSAs) for Narrow Endemic Plant Species [San Diego ambrosia (*Ambrosia pumila*), Brand's phacelia (*Phacelia stellaris*), and San Miguel savory (*Satureja chandleri*)]. The assessment also included potential habitat

for the burrowing owl (*Athene cunicularia hypugea*). Potential burrows were present throughout the site and were not mapped individually during this survey. The biological analysis determined that no suitable habitat exists for the San Diego ambrosia, Brand's Phacelia and San Miguel savory. Finally, no burrowing owls were observed during focused field surveys in the study area. To ensure no impacts could occur to nesting birds, Mitigation Measures BIO-6, BIO-7, and BIO-8 were required. With implementation of Mitigation Measures BIO-6, BIO-7, and BIO-8, potential impacts were determined to be less than significant.

**Addendum Finding Less Than Significant Impact With Mitigation Incorporated:** The Proposed Project Modifications would not increase the potential to have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species. There would be the potential that nesting birds could be present within the vicinity of the proposed open space park area and construction activities associated with improving the open space areas could generate construction noise impacts that could potentially disrupt the breeding patterns of nesting birds. As required for the previously approved project, ensure that no potential construction noise impacts would occur to nesting birds, the proposed project would be required to implement Mitigation Measures BIO-6, BIO-7, and BIO-8. With implementation of Mitigation Measures BIO-6, BIO-7, and BIO-8, potential construction noise impacts to nesting birds would be less than significant.

**Mitigation Measures:**

BIO-6: A pre-construction survey for avian nests within seven (7) days of vegetation clearance or grading of the project site, if grading permits are to be issued during the nesting season, March 1st through September 1st.

BIO-7: If passerine birds are found to be nesting, a 250-foot buffer is required around the nesting site, in which the vegetation cannot be disturbed. In the event that the nest is for a raptor, the buffer shall be expanded to 500-feet. If multiple nests are found, grading and grubbing of the project site shall be postponed.

BIO-8: A qualified biologist shall closely monitor the project site and nests until it is determined that the nests are no longer active.

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

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously approved IS/MND included a Determination of Biologically Equivalent or Superior Preservation (DBESP) Analysis dated January 2014, prepared by LSA, identified the project would result in 0.827 acres of temporary effects including 0.109 acres of streambed and 0.718 acres of riparian streambed, and 1.392 acres of permanent effects including 0.543 acres of streambed and 0.849 acres of riparian streambed. To reduce potential impacts to the riparian habitat, the project was required to implement Mitigation Measure BIO-9, which required a Section 404 permit from the USACE, a Streambed Alternation Agreement from the CDFW and Section 401 Water Quality Certification from the Regional Water Quality Control Board (RWQCB). With implementation of Mitigation Measure BIO-9, potential impacts were determined to be less than significant.

**Addendum Finding No Impact:** The Proposed Project Modifications would not increase the potential to have a substantial adverse effect on any riparian habitat or other sensitive natural community. The area where the Proposed Project Modifications would be implemented has been previously rough graded and the areas currently consist of non-native weeds and are void of any sensitive natural communities. No potential impacts to sensitive natural communities would occur. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in no additional impacts to sensitive natural communities.

**c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously approved IS/MND identified the project would result in temporary and permanent impacts to wetland habitat, that included 0.827 acres of temporary effects including 0.109 acres of streambed and 0.718 acres of riparian streambed, and 1.392 acres of permanent effects including 0.543 acres of streambed and 0.849 acres of riparian streambed. The project was required to implement Mitigation Measure BIO-9 which requires a Section 404 permit from the , a Streambed Alternation Agreement from the CDFW and a Section 401 Water Quality Certification from the RWQCB. With implementation of Mitigation Measure BIO-9, potential impacts were determined to be less than significant.

**Addendum Finding No Impact:** The Proposed Project Modifications would not increase the potential to have a substantial adverse effect on state or federally protected wetlands. The areas where the Proposed Project Modifications would be implemented have been previously rough graded and the areas currently consist of non-native weeds and are void of any wetland habitat. Compared to the previously adopted IS/MND, no additional impacts to riparian habitat would occur.

**d) 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?**

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously approved IS/MND determined the project is not located within or would not provide linage to an open space corridor and potential impacts to wildlife movement were less than significant. To ensure no impacts could occur to nesting birds, Mitigation Measures BIO-6, BIO-7 and BIO-8 were required. With implementation of Mitigation Measures BIO-6, BIO-7 and BIO-8, potential impacts were determined to be less than significant.

**Addendum Finding Less Than Significant Impact With Mitigation Incorporated:** There are no wildlife corridors or wildlife movement in the areas where the Proposed Project Modifications would occur. Therefore, no adverse effects to wildlife movement occurred. There would be the potential that nesting birds could be present within the vicinity of the proposed open space park area and construction activities associated with improving the open space areas could generate construction noise impacts that could potentially disrupt the breeding patterns of nesting birds. Like the previously approved IS/MND, ensure that no potential construction noise impacts would occur to nesting birds, Mitigation Measures BIO-6, BIO-7 and BIO-8 would be required. With implementation of Mitigation Measures BIO-6, BIO-7 and BIO-8, potential construction noise impacts to nesting birds would be less

than significant. Compared to the previously adopted IS/MND, the level of potential impacts to nesting birds would be the same.

**Mitigation Measures:** Mitigation Measures BIO-6, BIO-7 and BIO-8 are required.

**e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

**Previously Approved MND Finding Less Than Significant Impact:** The City of Corona Municipal Code Section 12.22.080 establishes criteria and requirements regarding trees that are determined to be a Landmark Tree. The previously approved IS/MND determined that the trees on the project site were not regulated by the City of Corona Municipal Code Section 12.22.080. Potential impacts were less than significant.

**Addendum Finding No Impact:** The areas where the Proposed Project Modifications would be implemented have been previously rough graded and the areas currently consist of non-native weeds and is void of any trees that would be considered a Landmark Tree as defined by Municipal Code Section 12.22.080. Compared to the previously adopted IS/MND, no additional impacts to landmark trees would occur.

**f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND identified the project site as located within the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP). The MSHCP consists of Area Plans divided into Subunits, and further, into Criteria Cells with specific conservation objectives identified for each. Conservation objectives include target conservation acreages, along with a description of the Planning Species, Biological Issues and Considerations, and Criteria for each Subunit and Criteria Cell. The project site is within the Temescal Canyon Area Plan. The project site does not lie within the MSHCP Criteria Area. The Conservation Summary Report Generator indicates that 0.05 acres of the project site is within Criteria Cell 2018. However, the Western Riverside County Regional Conservation Authority (RCA) in a letter to the City of Corona, dated December 29, 2006, JPR #06-12-19-01, acknowledged the portion of the project located immediately west of Criteria Cell 2018 is not within this cell and no Joint Project Review was required. Use of the project site as proposed would not conflict with MSHCP conservation objectives for the area.

**Addendum Finding No Impact:** The areas where the Proposed Project Modifications would be implemented are not located within a MSHCP Area Plan Subunit, Criteria Cell, or Criteria Cell Group and are also not located within any of the identified existing or proposed Cores and Linkages. The Proposed Project Modifications would not conflict with the Consistency Analysis and a Determination of Biologically Equivalent or Superior Preservation (DBESP) that was prepared for the original project. The revised project would be consistent with MSHCP objectives. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same conclusion regarding MSHCP consistency and the level of impacts would be the same.

## SUMMARY OF FINDINGS FOR BIOLOGICAL RESOURCES

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

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## 2.5 Cultural Resources

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5? | ☐ | ☐ | ☒ | ☐ |
| b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5? | ☐ | ☐ | ☒ | ☐ |
| c. Disturb any human remains, including those interred outside of dedicated cemeteries? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

#### a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously approved IS/MND determined the project site is not known to contain any historical resources. However, because cultural resources are known to occur in the project area, there is the potential that unknown cultural resources could exist and be encountered during construction. To avoid impacts to unknown cultural resources, Mitigation Measures CR-16, CR-17, and CR-18, described below, were recommended. With implementation of Mitigation Measures CR-16, CR-17, and CR-18, potential impacts were determined to be less than significant.

**Addendum Finding Less Than Significant Impact With Mitigation Incorporated:** The Proposed Project Modifications would not increase the potential to cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5. The areas where the Proposed Project Modifications would be implemented have been rough graded and no historic resources were encountered. It would be highly unlikely that implementation of the Proposed Project Modifications would encounter unknown historic resources. However, on the side of caution and in the remote event unknown historic resources are encountered, Mitigation Measures CR-16, CR-17, and CR-18 are recommended. With implementation of Mitigation Measures CR-16, CR-17, and CR-18, potential impacts would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impacts to unknown historical resources.

**Mitigation Measures:**

CR-16: The landowner shall relinquish ownership of all cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project area to the appropriate Tribe for proper treatment and disposition.

CR-17: All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible.

CR-18: If inadvertent discoveries of subsurface archaeological/cultural resources are discovered during grading, the Developer shall retain a qualified archaeologist to assess the significance of such resources. Pursuant to California Public Resources Code Section 21083.2(b) avoidance is the preferred method of preservation for archaeological resources. The archaeologist shall be responsible for determining the significance of the cultural resource and mitigation for such resources. The archaeologist shall make the determination based on the provisions of the California Environmental Quality Act with respect to archaeological resources and shall take into account the religious beliefs, customs, and practices of the Tribe(s). If large fossil specimens are encountered during additional grading, the applicant shall immediately cease operation and retain a qualified and trained paleontologist.

**b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?**

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously approved IS/MND determined the project site is not known to contain any known archaeological resources. However, because cultural resources are known to occur in the project area, there is some potential that unknown cultural resources could exist and be encountered during construction. To avoid impacts to unknown archaeological resources, Mitigation Measures 16, 17 and 18 are recommended. With implementation Mitigation Measures CR-16, CR-17, and CR-18, potential impacts would be less than significant.

**Addendum Finding Less Than Significant Impact With Mitigation Incorporated:** The Proposed Project Modifications would not increase the potential to cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5. As identified previously, no archaeological resources were encountered during rough grading activities on the project site, including the areas where the Proposed Project Modifications would be implemented. It would be highly unlikely that implementation of the Proposed Project Modifications would encounter unknown archaeological resources. However, on the side of caution and in the remote event unknown archaeological resources are encountered, Mitigation Measures CR-16, CR-17, and CR-18 are recommended. With implementation of Mitigation Measures CR-16, CR-17, and CR-18, potential impacts to unknown archaeological resources would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impacts to unknown archaeological resources.

**Mitigation Measures:** Mitigation Measures CR-16, CR-17 and CR-18 are required.

**c) Disturb any human remains, including those interred outside of dedicated cemeteries?**

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously approved IS/MND determined the project site did not contain any sacred burial grounds or formal cemeteries. However, because cultural resources are known to occur in the project area, there could be the potential that unknown burial grounds could exist and be encountered during construction. To avoid potential impacts to unknown burial grounds that could exist within the project site, Mitigation Measure CR-15 was required. With implementation of Mitigation Measure CR-15, potential impacts were determined to be less than significant.

**Addendum Finding Less Than Significant Impact With Mitigation Incorporated:** The Proposed Project Modifications would not increase the potential to disturb any human remains, including those interred outside of dedicated cemeteries. During rough grading of the project site including the areas where the Proposed Project Modifications would be implemented, no human remains or burial grounds were encountered. It would be highly unlikely that implementation of the Proposed Project Modifications would encounter human remains. However, on the side of caution and in the remote event unknown human remains are encountered, Mitigation Measures CR-15 is recommended. With implementation of Mitigation Measure CR-15, potential impacts to unknown human remains would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impacts to unknown human remains and burial grounds.

### Mitigation Measure

CR-15: If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission must be contacted within 24 hours. The Native American Heritage Commission must then immediately identify the "most likely descendant(s)" of receiving notification of discovery. The most likely descendant(s) shall then make recommendations within 48 hours and engage in consultations concerning the treatment of the remains as provided in Public Resources Code 5097.98.

## SUMMARY OF FINDINGS FOR CULTURAL RESOURCES

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

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## 2.6 Energy

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? | ☐ | ☐ | ☒ | ☐ |
| b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

**a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?**

**Previously Approved MND Finding:** The 2019 amendments and additions to the CEQA Checklist includes an Energy Section that analyzes the Proposed Project Modifications energy consumption in order to avoid or reduce inefficient, wasteful, or unnecessary consumption of energy. The previously approved IS/MND was prepared before 2019 and did not evaluate the consumption of energy.

**Addendum Finding Less Than Significant Impact:** Implementation of the Proposed Project Modifications would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. The construction and operation of the project would require the commitment of energy resources. The project site has been previously graded including the area where the Proposed Project Modifications would be implemented. Therefore, no additional energy commitments associated with rough grading would be required. Any final grading for the Proposed Project Modifications would have been included in the overall energy commitments for the project. The Proposed Project Modifications would not increase the number of approved residential units on the project site. Therefore, there would be no additional operation energy commitments associated with implementation of the Proposed Project Modifications. Potential impacts associated with the project resulting in wasteful, inefficient, or unnecessary consumption of energy resources would be less than significant.

**b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?**

**Previously Approved MND Finding:** The 2019 amendments and additions to the CEQA Checklist includes an Energy Section that analyzes if a project would conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The previously approved IS/MND did not evaluate local plans for renewable energy or energy efficiency.

**Addendum Finding Less Than Significant Impact:** The City of Corona Climate Action Plan Update, adopted in 2019, contains applicable goals and policies related to energy. The goals and policies that are appliable to the project with the Proposed Project Modifications are shown in Table 2.6-1,

*Proposed Project Compliance with Applicable Climate Action Plan Update Energy Policies*, along with the project's consistency.

Table 2.6-1
Proposed Project Compliance with Applicable Climate Action Plan Update Energy Policies

| General Plan Goal or Policy | Proposed Project Implementation Actions |
|---|---|
| Goal 1: Increase Energy Efficiency in Existing Residential Units. | Consistent. During construction, water and energy conservation measures would be implemented in accordance Title 24 Energy Efficiency Standards. |
| Goal 2: Increase Energy Efficiency in New Residential Units. | Consistent. During construction, water and energy conservation measures would be implemented in accordance Title 24 Energy Efficiency Standards. |
| Goal 5: Increase Energy Efficiency through Water Efficiency. | Consistent. During construction, water and energy conservation measures would be implemented in accordance Title 24 Energy Efficiency Standards. |
| Goal 6: Decrease Energy Demand through Reducing Urban Heat Island Effect per Title 24 Requirements. | Consistent. During construction, water and energy conservation measures would be implemented in accordance Title 24 Energy Efficiency Standards. |
| Source: VCS Environmental; March 23, 2021. | |

As shown in Table 2.6-1, the project with the Proposed Project Modifications would be consistent with all applicable energy-related policies from the City of Corona General Plan. Therefore, the Proposed Project Modifications would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Impacts would be less than significant.

## SUMMARY OF FINDINGS FOR ENERGY

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

## 2.7 Geology and Soils

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: | | | | |
| 1) 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? Refer to Division of Mines and Geology Special Publication 42. | ☐ | ☐ | ☒ | ☐ |
| 2) Strong seismic ground shaking? | ☐ | ☐ | ☒ | ☐ |
| 3) Seismic-related ground failure, including liquefaction? | ☐ | ☐ | ☒ | ☐ |
| 4) Landslides? | ☐ | ☐ | ☒ | ☐ |
| b. Result in substantial soil erosion or the loss of topsoil? | ☐ | ☐ | ☒ | ☐ |
| c. 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? | ☐ | ☐ | ☒ | ☐ |
| d. 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? | ☐ | ☐ | ☒ | ☐ |
| e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? | ☐ | ☐ | ☒ | ☐ |
| f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

**a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:**

**1) 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? Refer to Division of Mines and Geology Special Publication 42.**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined that there were no Alquist-Priolo Fault Zones on the project site and there would be minimal potential for ground rupture impacts.

**Addendum Finding No Impact:** The Proposed Project Modifications would not increase the potential for the rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map. The Proposed Project Modifications would occur on the same project site and like the original project, there would be minimal potential for ground rupture impacts. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of ground rupture impacts.

**2) Strong seismic ground shaking?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the project site is located within a seismically active area that could be subject to seismic ground shaking impacts. The previously approved project determined that with compliance with the California Building Code, the potential for strong seismic shaking impacts would be less than significant.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase potential seismic shaking impacts. The Proposed Project Modifications would be implemented within the same project site and would be subject to the same level of risks for potential seismic shaking impacts. However, because the Proposed Project Modifications do not involve the construction of a recreation center structure, there would be less risks for potential seismic shaking that could adversely impact property or people. Compared to the previously adopted IS/MND, the Proposed Project Modifications would result in a lower level of seismic shaking risk impacts.

**3) Seismic-related ground failure, including liquefaction?**

**Previously Approved MND Finding Less Than Significant Impact:** Geotechnical studies prepared for the project site identified groundwater levels within the project area are 100 feet or more below ground surface and there would be low potential for liquefaction impacts. The previously approved IS/MND determined that potential liquefaction impacts would be less than significant.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase the potential for liquefaction impacts. The Proposed Project Modifications would be implemented on the same project site and would be subject to the same low-level risk for potential liquefaction impacts. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of liquefaction impacts.

**4) Landslides?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined that the potential for landslide impacts would be less than significant.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase the potential for landslide impacts. The areas where the Proposed Project

Modifications would be implemented are relatively flat. The potential for landslide impacts would be low and the implementation of the Proposed Project Modifications would not create any potential landslide hazards. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of landslide impacts.

**b) Result in substantial soil erosion or the loss of topsoil?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the construction activities for the project would uncover soils and increase the potential for soil erosion impacts. The previously adopted IS/MND identified the project would be required to comply with the City of Corona grading regulations which would require measures to control erosion. With compliance with grading regulations, potential erosion impacts were determined to be less than significant.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase the potential for erosion impacts. Earthwork activities associated with implementation of the Proposed Project Modifications would be required to comply with the City of Corona grading regulations which would require measures to control erosion. Compliance with grading regulations, potential erosion impacts would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of potential erosion impacts.

**c) 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?**

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously approved IS/MND and geotechnical report prepared for the original project determined the project was geotechnically feasible with the incorporation of geotechnical design recommendations. To ensure the geotechnical design recommendations were implemented, Mitigation Measure GEO-2 was required. With implementation of Mitigation Measure GEO-2, potential impacts associated with being located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, would be less than significant.

**Addendum Finding Less Than Significant Impact With Mitigation Incorporated:** The Proposed Project Modifications would not increase potential impacts associated with being located on a geologic unit or soil that is unstable, or that would become unstable, as a result of the project. Any earthwork activities associated with implementation of the Proposed Project Modifications would be required to comply with geotechnical design recommendations provided in the project geotechnical report. With implementation of Mitigation Measure GEO-2, potential impacts associated with being located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Proposed Project Modifications, would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of geologic stability impacts.

**Mitigation Measures:**

GEO-2: During earthwork construction, the applicant shall adhere to the grading recommendations presented in the Preliminary Geotechnical Investigation prepared by Geocon Inland Empire Inc. (2006).

**d) 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?**

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously adopted IS/MND and supporting project geotechnical report determined the project was geotechnically feasible with the incorporation of geotechnical design recommendations presented in the report. With implementation of Mitigation Measure GEO-2, potential expansive soil impacts were determined to be less than significant.

**Addendum Finding Less Than Significant Impact With Mitigation Incorporated:** The Proposed Project Modifications would not increase the potential for adverse soil expansive impacts. Any earthwork activities associated with implementation of the Proposed Project Modifications would be required to comply with geotechnical design recommendations provided in the project geotechnical report. With implementation of Mitigation Measure GEO-2, potential expansive soil impacts would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of expansive soil impacts.

**Mitigation Measures:** Mitigation Measure GEO-2 is required.

**e) 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 wastewater?**

**Previously Approved MND Finding No Impact:** The previously adopted IS/MND identified the project would not include the use of septic tanks or alternative waste disposal systems.

**Addendum Finding No Impact:** Similar to the original project, the Proposed Project Modifications do not include the use of septic tanks or alternative waste disposal systems. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impacts.

**f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously approved IS/MND determined there would be low potential for the discovery of known paleontological resources. To avoid impacts to unknown paleontological resources that might be present, the previously approved IS/MND identifies Mitigation Measures GEO-19, GEO-20, and GEO-21 which establishes requirements for the collection and salvaging of paleontological resources in the event unknown paleontological resources are encountered. With implementation of Mitigation Measures GEO-19, GEO-20, and GEO-21, potential impacts to paleontological resources were determined to be less than significant.

**Addendum Finding Less Than Significant Impact With Mitigation Incorporated:** The Proposed Project Modifications would not increase the potential to directly, or indirectly, destroy a unique paleontological resource or a site or a unique geologic feature. No paleontological resources were encountered during the rough grading activities on the project site including the areas where the Proposed Project Modifications would be implemented. It would be highly unlikely the implementation of the Proposed Project Modifications would encounter unknown paleontological resources. However, on the side of caution and in the remote event unknown paleontological resources are encountered,

Mitigation Measures GEO-19, GEO-20, and GEO-21 are recommended. With implementation of Mitigation Measures GEO-19, GEO-20, and GEO-21, potential impacts to unknown paleontological resources would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impacts to unknown paleontological resources.

**Mitigation Measures:**

GEO-19: The paleontologist shall salvage all fossils in the area and provide additional field staff in accordance with modern paleontological techniques.

GEO-20: All fossils collected during the project will be prepared to a reasonable point of identification. Excess sediment or matrix will be removed from the specimens to reduce the bulk and cost of storage. Itemized catalogs of all material collected and identified will be provided to the museum repository along with the specimens.

GEO-21: A report prepared by the archaeologist documenting the results of the monitoring and salvage activities and the significance of the fossils shall be prepared.

## SUMMARY OF FINDINGS FOR GEOLOGY AND SOILS

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

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## 2.8 Greenhouse Gas Emissions

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? | ☐ | ☐ | ☒ | ☐ |
| b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

**a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously adopted IS/MND estimated the construction of the project would generate 438 annual metric tons of greenhouse gas emissions and the operation of the project would generate 1,955 annual metric tons of greenhouse gas emissions. The construction and operation of the project would not exceed the City's threshold of 3,000 annual metric tons and less than significant greenhouse gas emission impacts would occur.

**Addendum Finding Less Than Significant Impact:** Implementation of the Proposed Project Modifications would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. The Proposed Project Modifications would not increase the number of dwelling units or increase the amount of vehicle trips beyond the amount provided in the previously approved project. Therefore, there would be no increase in long-term greenhouse gas emissions compared to the original project. Additionally, the overall grading for the project included the area where the open space park area would be located. Therefore, compared to the previously approved project, there would be no increase in construction related greenhouse gas emissions. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of greenhouse gas emission impacts.

**b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously prepared IS/MND determined the project would not conflict with the City of Corona Climate Action Plan.

**Addendum Finding Less Than Significant Impact:** Implementation of the Proposed Project Modifications would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. The Proposed Project Modifications would not increase greenhouse gas emissions above the City threshold of 3,000 annual metric tons, and therefore would be consistent with the City of Corona Climate Action Plan. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of

impacts regarding potential conflicts with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

## SUMMARY OF FINDINGS FOR GREENHOUSE GAS EMISSIONS

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

## 2.9 Hazards and Hazardous Materials

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? | ☐ | ☐ | ☒ | ☐ |
| b. 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? | ☐ | ☐ | ☒ | ☐ |
| c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? | ☐ | ☐ | ☒ | ☐ |
| d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | ☐ | ☐ | ☒ | ☐ |
| e. 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? | ☐ | ☐ | ☒ | ☐ |
| f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | ☐ | ☐ | ☒ | ☐ |
| g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

#### a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the project would result in less than significant impacts regarding the transport, use and disposal of hazardous materials.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase the potential for significant impacts regarding the transport, use and disposal of hazardous materials. The construction operations associated with the Proposed Project Modifications could involve the handling of incidental amounts of hazardous substances, such as fuels and oil. Additionally,

long-term maintenance activities of the open space could involve the use of pesticides. To avoid public exposure to hazardous materials, implementation of the Proposed Project Modifications would be required to comply with local, state, and federal laws and regulations regarding the handling and storage of hazardous materials. Compliance with local, state, and federal laws and regulations would reduce the potential impact of creating a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials to less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impacts in regard to the potential to create a hazard to the public or environment associated with the transport, use and disposal of hazardous materials.

**b) 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?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the project would result in less than significant impacts in regard to accidental release of hazardous materials into the environment.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase the potential for the release of hazardous materials into the environment. Construction operations associated with the Proposed Project Modifications would involve the handling of incidental amounts of hazardous materials, such as fuels, oils, and solvents. To minimize the inadvertent release of hazardous materials into the environment, the Proposed Project Modifications would be required to comply with local, state, and federal laws and regulations and implement Best Management Practices. Compliance with local, state, and federal laws and regulations in conjunction with implementation of Best Management Practices would reduce the potential impact for inadvertent release of hazardous materials into the environment to less than significant. Compared to the previously adopted IS/MND, the Proposed Project Modifications would result in the same level of impacts associated with the accidental release of hazardous materials into the environment.

**c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

**Previously Approved MND Finding No Impact:** The closest school near the project location is El Centro Middle School, approximately 1.60 miles from the site. The previously approved IS/MND determined the original project would not emit hazardous emissions within 0.25 miles of an existing or proposed school.

**Addendum Finding No Impact:** The Proposed Project Modifications would not increase the potential hazard emission impacts within 0.25 miles of a school site. The Proposed Project Modifications would occur in the same general area approximately 1.6 miles from the school site. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impacts associated with hazardous emissions within 0.25 miles of a school site.

**d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined that the original project site was not included on a list of hazardous material sites.

**Addendum Finding No Impact:** The Proposed Project Modifications would not occur on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. The Proposed Project Modifications would occur in the same general area and would not be included on a list of hazardous material sites. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impact.

**e) 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?**

**Previously Approved MND Finding No Impact:** The closest airport to the project site would be the Riverside Municipal Airport, which is located approximately 8.3 miles to the northeast. The project site is not within an Airport Influence Area.

**Addendum Finding No Impact:** The Proposed Project Modifications would not increase potential airport related hazards or excessive noise impacts. The Proposed Project Modifications would occur in the same general area and would not be within an Airport Influence Area. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impact.

**f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the construction and operation of the original project would not impair the implementation of emergency response plans or evacuation plans.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase impacts associated with conflicts with adopted emergency plans. The Proposed Project Modifications would not increase the population in the City and the number of residents to be potentially evacuated in the event of an emergency. Additionally, the proposed circulation access would allow adequate emergency access. The construction activities for the Proposed Project Modifications would not involve any activities that would physically impair or interfere with emergency response plans for the project site. During construction, there could be the potential for temporary lane closures to allow for utility connections and traffic improvements. The temporary lane closures would be for a short period of time and would not interfere with emergency response plans. Additionally, the construction activities for the project would be coordinated with the City, which would identify if traffic controls are needed to maintain emergency response plans. With compliance with City traffic control requirements, potential construction impacts with emergency response plans would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impact in regard to potential conflicts with emergency response plans or evacuation plans for the area.

**g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the original project site was not in a Fire Hazard Area and would not expose people or structures to significant wildland fire risks.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase the potential to expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fire. According to Figure PS-11 of the City of Corona General Plan Safety Element, portions of the project site are adjacent to areas considered High Fire Hazard Area. The Monteolivo Project was initially graded with the approval of the City to provide fuel modification measures on the adjacent, offsite Sherborn Property. The City now requires that all fuel modification programs be conducted onsite. Therefore, the project plans were modified to square off Lots 17-21 to remove the common area behind these homes and incorporate a radiant heat wall behind Lots 16-29. Additionally, the CC&R's would include a prohibition of the installation of combustible materials in the 30-foot zone width adjacent to the heat wall within Lots 16-29. With implementation of the fuel modification measures, potential impacts exposing people to death or injury or structures to property loss would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of fire hazard impacts.

## SUMMARY OF FINDINGS FOR HAZARDS AND HAZARDOUS MATERIALS

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

## 2.10 Hydrology and Water Quality

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? | ☐ | ☐ | ☒ | ☐ |
| b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? | ☐ | ☐ | ☒ | ☐ |
| c. 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: | | | | |
| 1) Result in substantial erosion or siltation on- or off-site? | ☐ | ☐ | ☒ | ☐ |
| 2) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? | ☐ | ☐ | ☒ | ☐ |
| 3) 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? | ☐ | ☐ | ☒ | ☐ |
| 4) Impede or redirect flood flows? | ☐ | ☐ | ☒ | ☐ |
| d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? | ☐ | ☐ | ☒ | ☐ |
| e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

**a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?**

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously approved IS/MND determined the project, with implementation of Mitigation Measure BIO-10, would not conflict with the Regional Water Quality Control Board water quality standards.

**Addendum Finding Less Than Significant Impact With Mitigation Incorporated:** The Proposed Project Modifications would not increase the potential to violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. The Proposed Project Modifications would not increase the amounts of impervious surfaces on the project site or increase rates of surface water runoff that were evaluated for the original project. The project

would be required to prepare a Storm Water Pollution Prevention Plan (SWPPP) to avoid degraded surface water runoff being conveyed into downstream water bodies. The Proposed Project Modifications would implement Best Management Practices to manage water quality. Additionally, the project has prepared a Water Quality Management Plan which would manage long-term surface water runoff by capturing and infiltrating stormwater runoff. The Proposed Project Modifications includes a bio-treatment basin that would capture and treat stormwater runoff and ensure that long-term operation of storm water impacts would be less than significant. With Implementation of Mitigation Measure BIO-10, short-term construction and long-term water quality impacts would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of water quality impacts.

**Mitigation Measures:**

BIO-10: A Water Quality Management Plan and SWPPP shall be prepared and implement BMPs (Best Management Practices) that will prevent habitat degradation caused by runoff within the adjacent conservation area and pollutants from vehicles and paved surfaces are organic compounds, metals, and oil/grease; from pet waste are bacteria/virus pathogens; and from landscaping are sediment, nutrients, oxygen-demanding substances, and herbicides/pesticides.

**b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the original project would not interfere with groundwater recharge and would have a less than significant impact on groundwater supplies.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase the potential to substantially decrease groundwater supplies or interfere substantially with groundwater recharge. The Proposed Project Modifications would not involve the extraction of groundwater or involve any activities that would interfere with groundwater recharge. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impact to groundwater supplies.

**c) 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:**

**1) Result in substantial erosion or siltation on- or off-site?**

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously approved IS/MND determined with implementation of Mitigation Measure BIO-10, substantial erosion, or siltation onsite or offsite would not result in substantial erosion onsite or offsite.

**Addendum Finding Less Than Significant Impact With Mitigation Incorporated:** The Proposed Project Modifications would not increase potential erosion and siltation impacts onsite or offsite. The Proposed Project Modifications would prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) that would reduce potential erosion impacts.

With implementation of Mitigation Measure BIO-10, potential erosion and siltation impacts would be reduced to a less than significant level. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of potential erosion and siltation impacts.

**Mitigation Measures:** Mitigation Measure BIO-10 is required.

**2) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the original project would not increase the risk for flooding.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase the potential to substantially increase the amounts of impervious surfaces and associated rate of surface water runoff that would have the potential to flood onsite or offsite properties. The Proposed Project Modifications would not increase the amounts of impervious surfaces on the project site or increase rates of surface water runoff that could result in onsite or offsite flooding impacts. Potential onsite and offsite flood impacts associated with increased surface water runoff would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of potential surface water runoff flooding impacts.

**3) 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?**

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously approved IS/MND determined with implementation of Mitigation Measure BIO-10, the project would not exceed the capacity of existing stormwater drainage systems and would not provide a substantial new source of polluted surface water runoff.

**Addendum Finding Less Than Significant Impact With Mitigation Incorporated:** The Proposed Project Modifications would not increase the potential to 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. The Proposed Project Modifications includes the construction of a bio-treatment basin that treats surface water runoff and ensures that the project would not exceed capacity of existing stormwater drainage systems or provide a substantial new source of polluted surface water runoff to downstream receiving water bodies. With implementation of Mitigation Measure BIO-10, potential storm water management and water quality impacts would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would not result in the same level of potential surface water runoff and water quality impacts.

**Mitigation Measures:** Mitigation Measure BIO-10 is required.

**4) Impede or redirect flood flows?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the project site is not within a flood hazard area and the project would have no impact on the redirection of flood flows.

**Addendum Finding No Impact:** The Proposed Project Modifications would not increase the potential to impede or redirect flood flows. The Proposed Project Modifications would occur in the same general area and would not be subject to flood hazards and would not involve the construction of any structures that redirected flood flows. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impacts in regard to redirecting flood flows.

**d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?**

**Previously Approved MND Finding No Impact:** The previously prepared IS/MND determined the original project was not located within a flood hazard area, tsunami run up area or seiche zone.

**Addendum Finding No Impact:** The Proposed Project Modifications would not result in or increase the potential for flood hazard, tsunami, or seiche zones, or risk release of pollutants due to project inundation. The Proposed Project Modifications would occur in the same general area and are not subject to flood hazards, tsunami run up area or seiche zones. Compared to the previously approved IS/MND, implementation of the Proposed Project Modifications would result in the same level of potential flood hazard impacts.

**e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously prepared IS/MND determined the original project would not conflict with the Santa Ana Region Water Quality Control Board. The California Sustainable Groundwater Management Act (SGMA) was passed in 2014. The previously adopted IS/MND was prepared before 2014 and did not evaluate consistency with SGMA.

**Addendum Finding Less Than Significant Impact:** As identified previously, implementation of the Proposed Project Modifications would not result in any conflicts with the Santa Ana Region Water Quality Control Basin Plan water quality standards. Additionally, the Proposed Project Modifications would not involve any activities that would reduce underground water supplies nor have an adverse effect on the sustainability of groundwater supplies. Potential impacts would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of potential impacts.

**SUMMARY OF FINDINGS FOR HYDROLOGY AND WATER QUALITY**

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.

- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

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## 2.11 Land Use and Planning

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Physically divide an established community? | ☐ | ☐ | ☒ | ☐ |
| b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

#### a) Physically divide an established community?

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the original project would not divide an established community and would have less than significant impacts.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase the potential to physically divide an established community. The Proposed Project Modifications would not create a barrier between existing neighborhoods or prevent access to existing neighborhoods that would result in adverse land use compatibility impacts. Additionally, the project would not redirect traffic through existing neighborhoods. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impacts to established communities.

#### b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the original project would not conflict with land use planning programs or policies that are relevant to the project site.

**Addendum Finding No Impact:** The Proposed Project Modifications would not increase the potential to cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. The Proposed Project Modifications do not involve any changes or activities that would conflict with the City of Corona General Plan or other relevant land use planning programs and policies. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impacts to established communities.

### SUMMARY OF FINDINGS FOR LAND USE AND PLANNING

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

## 2.12 Mineral Resources

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? | ☐ | ☐ | ☒ | ☐ |
| b. 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? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

**a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?**

**Previously Approved MND Finding No Impact:** The previously adopted IS/MND determined the project site does not contain mineral resources and that implementation of the project would not result in the loss of mineral resources that would have value to the region.

**Addendum Finding No Impact:** The Proposed Project Modifications would not increase the potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. The Proposed Project Modifications would occur in the same project area. Like the original project, implementation of the Proposed Project Modifications would not result in the loss of mineral resources that have value to the region. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impacts to mineral resources of regional value.

**b) 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?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the project site does not contain mineral resources and implementation of the project would not result in the loss of mineral resources that have local importance value.

**Addendum Finding No Impact:** The Proposed Project Modifications would not increase the potential to 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. The Proposed Project Modifications would occur in the same project area. Like the original project, implementation of the Proposed Project Modifications would not result in the loss of mineral resources that would have value of local importance. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impact to mineral resources of local importance.

## SUMMARY OF FINDINGS FOR MINERAL RESOURCES

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

## 2.13 Noise

| Would the project result in: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. 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? | ☐ | ☐ | ☒ | ☐ |
| b. Generation of excessive groundborne vibration or groundborne noise levels? | ☐ | ☐ | ☒ | ☐ |
| c. 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? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

### Background

#### NOISE LEVELS

Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighted scale is an adjustment to the actual sound pressure levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz). Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of three dBA, and a sound that is 10 dBA less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dBA greater than the reference sound to be judged as twice as loud. In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, (A-weighted scale) and it perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. For purposes of this report, as well as with most environmental documents, the A-scale weighting is typically reported in terms of A-weighted decibel (dBA). Typically, the human ear can barely perceive the change in noise level of 3 dB. A change in 5 dB is readily perceptible, and a change in 10 dB is perceived as being twice or half as loud. As previously discussed, a doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g., doubling the volume of traffic on a highway), would result in a barely perceptible change in sound level.

SOUND ATTENUATION

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in the level of noise as the distance from the source increases. The manner in which the noise level reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features. Sound from point sources, such as air conditioning condensers, radiate uniformly outward as it travels away from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD) between source and receiver. Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

The sound drop-off rate is highly dependent on the conditions of the land between the noise source and the receiver. To account for this ground-effect attenuation (absorption), two types of site conditions are commonly used in traffic noise models, soft-site and hard-site conditions. Soft-site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. For point sources, a drop-off rate of 7.5 dBA/DD is typically observed over soft ground with landscaping, as compared with a 6.0 dBA/DD drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. For line sources a 4.5 dBA/DD is typically observed for soft-site conditions compared to the 3.0 dBA/DD drop-off rate for hard-site conditions. Caltrans research has shown that the use of soft-site conditions is more appropriate for the application of the Federal Highway Administration (FHWA) traffic noise prediction model used in this analysis.

Additionally, noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about five dBA, while a solid wall or berm reduces noise levels by approximately seven dBA. The manner in which older homes in California were constructed (approximately 30 years old or older) generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units and office buildings constructed to California Energy Code standards is generally 30 dBA or more (Harris, Miller, Miller and Hanson, 2006).

## Existing Setting

The project is currently undeveloped and surrounded by residential uses to the west and south. I-15 is located approximately 0.20 miles from the site. Existing traffic noise levels from the existing residential uses are minimal. Additionally, because of intervening topography and structures between the project site and I-15, traffic noise along I-15 is not discernable.

Other sources of noise are offsite from the FST North Plant Aggregate Mining and Vulcan Materials surface mining operations. Both facilities use a combination of heavy equipment, drilling and blasting to fracture rock material. Generally, the material is loaded on trucks and transported to a processing area or by conveyor for rock crushing. The material is crushed, screened, and conveyed to stockpiles. The materials are further segregated into stockpiles, loaded onto highway trucks to transport to customers. Potential sources of noise affecting the project site would include blasting, operation of heavy construction equipment, rock crushing, and truck hauling of excavated materials. As shown in Figure 2.13-1, *Intervening Topographic Feature Photographs*, situated between Vulcan Materials surface mining operations and the Monteolivo Community is an existing topographic feature ranging

in elevation from 82 feet to a high of 97 feet in elevation. Between FST North Plant and Aggregate Mining and the Monteolivo community the existing topographic feature ranges from 236 feet and 350 feet. Topographic features absorb sound waves which reduce noise levels up to 10dB when separated by line of site and a continuous barrier.

## Regulatory Framework

A decibel (dB) is a unit of measurement that indicates the relative intensity of a sound. The zero point on the dB scale is based on the lowest sound level that a healthy, unimpaired human ear can detect. Changes of three dB or fewer are only perceptible in laboratory environments. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense, and 30 dB is 1,000 times more intense. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness.

### FEDERAL REGULATIONS-FEDERAL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

The most relevant federal agency to the Proposed Project Modifications would be the Occupational Safety and Health Administration (OSHA), which limits noise exposure of workers to 90 dB or less over eight hours or 105 dB or less over one hour.

### STATE OFFICE OF NOISE CONTROL STANDARDS

The California Office of Noise Control has set long-term land use compatibility noise standards for different types of land uses and has encouraged local jurisdictions to adopt them. According to the State Land Use/Noise Compatibility Guideline, office and manufacturing land uses are compatible in locations with noise levels ranging from 65 dB to 85 dB.

### LOCAL NOISE REGULATIONS

#### City of Corona Exterior Noise Ordinance

The City of Corona Noise Ordinance establishes noise level standards to help minimize the effect of noise on sensitive land uses. Sensitive land uses include single family residential, multiple family residential, churches, hospitals and similar health care institutions, convalescent homes, libraries, and school classroom areas. The Noise Ordinance identifies two separate types of noise sources: transportation and stationery.

##### *Transportation Noise Sources*

Transportation related noise sources include freeways, airports, and railroads. The noise metrics used for this noise type is the Community Noise Equivalent Level (CNEL) which is a 24-hour time weighted average noise level. The noise standard for sensitive land uses from transportation related noise sources is shown in Table 2.13-1, *Noise Standards*.

Table 2.13-1
Noise Standards

| Land Use | Max Exterior Noise Level 7 AM to 10 PM | Max Exterior Noise Level 10 PM to 7 AM | Max Interior Noise Level 7 AM to 10 PM | Max Interior Noise Level 10 PM to 7 AM |
|---|---|---|---|---|
| Single-Family Residential | 55 dBA | 50 dBA | 45 dBA | 35 dBA |
| Other Sensitive Land Uses | 55 dBA | 50 dBA | 45 dBA | 35 dBA |



Location No. 1: View from Sherborn Street in front of FST North Plant Aggregate Mining looking west towards the project site.



Location No. 2: View from Sherborn Street in front of FST North Plant Aggregate Mining looking southeast.



Location No. 3: View from Sherborn Street in front of Vulcan Materials looking west towards the project site.



Location No. 4: View from Sherborn Street in front of Vulcan Materials looking southeast towards the project site.

MONTEOLIVO PROJECT TENTATIVE TRACT MAP 37895
Initial Study/Mitigated Negative Declaration Addendum

## Intervening Topographic Feature Photographs

*Stationary Noise Sources*

The other type of noise standard is for stationary noise sources, such as construction noise. The noise metric used for stationary sources is defined as noise levels that cannot be exceeded for certain percentages of time.

Per Section 17.84.040(C)(2)(d) of the City of Corona Municipal Code, Exterior Noise, it is unlawful for any person, entity, or operation at any location within the incorporated area of the City to create any noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other property to exceed:

- The noise standard for a cumulative period of more than 30 minutes in any hour (equivalent to L50).
- The noise standard plus 5 dB for a cumulative period of more than 15 minutes in any hour (L25).
- The noise standard plus 10 dB for a cumulative period of more than five minutes in any hour (L8).
- The noise standard plus 15 dB for a cumulative period of more than one minute in any hour (L2).
- The noise standard plus 20 dB for any period of time (Lmax).

In the event the ambient noise level exceeds any of the first four noise limit categories above, the cumulative period applicable to the category shall be increased to reflect the ambient noise level. In the event the ambient noise level exceeds the fifth noise category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

*Interior Noise*

It shall be unlawful for any person at any location within the incorporated area of the city to create any noise or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such a person which causes the noise level when measured within any other residential dwelling unit or sensitive land use to exceed:

1. The noise standard for a cumulative period of more than five minutes in any hour;
2. The noise standard plus 5 dB for a cumulative period of more than one minute in any hour; or
3. The noise standard plus 10 dB, or the maximum measured ambient, for any period of time.

City of Corona Exemptions to Noise Ordinance Standards

According to the Noise Ordinance, construction is prohibited between the hours of 8:00 PM to 7:00 AM Monday through Saturday and 6:00 PM to 10:00 AM on Sundays and federal holidays.

*City of Corona Vibration Standard*

It shall be unlawful for any person to create, maintain or cause any ground vibration which is perceptible without instruments at any point on any affected property adjoining the property on which

the vibration source is located. For the purposes of this section, the perception threshold shall be presumed to be more than 0.05 inches per second.

## PROJECT IMPACTS

**a) 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?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the original project would not result in adverse construction noise impacts or long-term operational noise impacts that would exceed local noise standards.

**Addendum Finding Less Than Significant Impact:** Implementation of the Proposed Project Modifications would not generate substantial temporary or a 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. The following analysis evaluates construction noise impacts, long-term operational noise impacts associated with implementation of the Proposed Project Modifications and offsite noise and vibration impacts.

### CONSTRUCTION NOISE IMPACTS

The project site, including the residential lots and the area where the open space park area is proposed, has been previously rough graded. The rough grading activities would be the most intrusive source of construction noise impacts. The grading activities for the project were evaluated in the previously adopted IS/MND and were determined to be less than significant. Implementation of the Proposed Project Modifications would not create higher construction noise levels above the noise levels that were evaluated in the adopted IS/MND. Compared to the previously approved IS/MND, implementation of the Proposed Project Modifications would result in the same level of construction noise impacts.

### TRAFFIC NOISE IMPACTS

Potential operation traffic noise impacts generated by the project were determined to be less than significant. The Proposed Project Modifications would not increase the amount of approved residential dwelling units. There would be no additional traffic trips generated by the project and no increase in mobile source impacts and because the project site would be gated and only accessible to residents there would be no increase in traffic noise impacts from offsite land uses. The primary access for the project site is a stop-controlled full access driveway at Laurel Canyon Way. The project would also provide a secondary access road through the southern portion of the Monteolivo site which would create a stop-controlled driveway on State Street that aligns with Bel Air Street for project residents only with a private gate which is not open to the public. There would be no cut through off site traffic that would increase mobile source noise impacts. The proposed project is forecast to generate a total of approximately 971 daily vehicle trips, including 73 vehicle trips during the morning peak hour and 97 vehicle trips during the evening peak hour. Traffic noise impacts were evaluated in the adopted IS/MND and determined to be less than significant. Noise levels from the volume of project traffic would not exceed transportation noise standards shown in table and potential impacts would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of long-term operational noise impacts.

## OFFSITE NOISE IMPACTS

The project site is within the vicinity of two surface mining operations. Potential sources of noise affecting the project site would include blasting, operation of heavy construction equipment, and truck hauling of excavated materials. The Proposed Project Modifications include replacing a community recreation center with an open space park area. According to the City's Noise Ordinance, open space area would not be considered a sensitive land use. The recreation center and open space park area would be utilized by the public and would be considered a sensitive receptor. Onsite blasting construction has occurred on the project site and was evaluated in the adopted IS/MND and determined to be less than significant. The proposed project modifications would not require any additional blasting. The adopted IS/MND did not evaluate compatibility of eh project with nearby surface mining operations. The following analysis evaluates the noise and vibration impacts from surface mining operations on the Monteolivo community.

### Blasting Activities

Blasting activities are typically performed consistent with a blasting plan that specifies the blasting location, material used, depth of the charges and related factors that would minimize impulse noise. By limiting the amount of charge in each hole, and detonating each charge successively with a time delay, the blasting contractor can limit the total energy released at any single time, which in turn reduces the airborne noise and energy associated with each individual detonated charge. The blasting of rocks would result in a temporary single event increase in noise levels, rather than a continuous noise source. A typical sound level for blasting, measured at 50 feet from the source, would be approximately 94 dBA. At each double of distance from the noise source, the noise level would be reduced by 6 dBA.

The project site would be subject to offsite noise sources from the FST North Plant Aggregate Mining and Vulcan Materials Surface Mining Operations. Both facilities use a combination of heavy equipment, drilling, and blasting to fracture rock material. The FST North Plant Aggregate Mining is 2,543 feet (.48 Mile) to the closest residential use and 3,496 feet (.66 Mile) to the proposed open space area. Vulcan Materials Surface Mining Operations is located 2,843 feet (.53 Mile) from the closest residential use and 3,379 feet (.63 Mile) from the proposed open space area. Table 2.13-2, *Estimated Blasting Noise Levels to Closest Residential Use*, and Table 2.13-3, *Estimated Blasting Noise Levels Open Space Area*, identifies the estimated noise levels from a single event blasting at the closest residential lot and the proposed open space area.

Table 2.13-2
Estimated Blasting Noise Levels to Closest Residential Use

| Noise Source | Distance to Closest Residential Lot | Estimated Noise Level |
|---|---|---|
| Vulcan Materials Surface Mining Operations | Lot 29 - 2,843 feet | 62 dB |
| FST North Plant Aggregate Mining | Lot 39 - 2,543 feet | 62 dB |

Table 2.13-3
Estimated Blasting Noise Levels Open Space Area

| Noise Source | Distance to Proposed Open Space Area | Estimated Noise Level |
|---|---|---|
| Vulcan Materials Surface Mining Operations | 3,379 feet | 59 dB |
| FST North Plant Aggregate Mining | 3,496 feet | 59 dB |

The blasting noise source would be overhead. There would be some noise absorption from the intervening topographic. Without consideration of the intervening slope, the estimated noise level at the open space area from a blasting event would be approximately 62 dB from both blasting operations.

The project site is currently vacant, and the existing ambient noise level would be much lower compared to what the ambient noise level would be after the site is developed with residential uses. Assuming that the ambient noise level would meet the City's daytime outdoor noise standard of 55dB, when the blasting operations would be occurring the noise level would be 7dB over the noise standard and would be noticeable but not intrusive. Estimated noise levels at the open space area would be 4dB over the ambient and would barely be discernable. The blasting impact would be considered a single noise event and would be over in seconds. Per Section 17.84.040(C)(2)(d) of the City of Corona Municipal Code, stationary noise impact cannot exceed the noise standard plus 20 dB for any period of time (Lmax). The existing blasting effects would be well below the threshold and would have less than significant noise impact.

### Portable Rock Crusher

A portable crushing/processing facility is typically used onsite to crush and re-use existing rock material. Crushing operations would begin with a front-end loader picking up material and dumping the material into a primary crusher. The material would then be crushed, screened, and stacked in product piles. Electric power would most likely be provided by a diesel engine generator. Based on noise measurements that have been conducted for portable crushing operations (Ldn Consulting 2011), the crushing activity would generate a 3-hour average noise level of approximately 80 dBA at a distance of 100 feet from the combination of a jaw crusher and cone crusher. The rock crusher would be considered a continuous event. Table 2.13-4, *Estimated Rock Crushing Noise Levels to Closest Residential Use*, and Table 2.13-5, *Estimated Rock Crushing Noise Levels Open Space Area*, identifies the estimated noise levels to the closest residential use and proposed open space from rock crushing activities.

Table 2.13-4
Estimated Rock Crushing Noise Levels to Closest Residential Use

| Noise Source | Distance to Closest Residential Lot | Estimated Noise Level |
|---|---|---|
| Vulcan Materials Surface Mining Operations | Lot 29 - 2,843 feet | 53 dB |
| FST North Plant Aggregate Mining | Lot 39 - 2,543 feet | 53 dB |

Table 2.13-5
Estimated Rock Crushing Noise Levels Open Space Area

| Noise Source | Distance to Proposed Open Space Area | Estimated Noise Level |
|---|---|---|
| Vulcan Materials Surface Mining Operations | 3,379 feet | 50 dB |
| FST North Plant Aggregate Mining | 3,496 feet | 50 dB |

The estimated noise level at the closest residential use would be 53 dB and 50 dB at the open space area which would be below the City's exterior noise standard of 55 dBA. With consideration of the topographic feature between the project site the estimated noise level would be approximately 43 dBA at the closest residential use and 40 dB at the open space area.

### Heavy Construction Equipment Noise

Surface mining operations would involve the use of heavy construction equipment. The highest noise generating piece of construction equipment operating would be a bulldozer measured at 82 dB at 50 feet. Table 2.13-6, *Estimated Noise Levels of Heavy Construction Equipment to Closest Residential Use*, and Table 2.13-7, *Estimated Noise Levels of Heavy Construction Equipment Open Space Area*, identifies the estimated noise levels to the closest residential use and proposed open space from operation of heavy construction equipment activities. The estimated noise level at the closest residential use would be 49 dB and 46 dB at the open space area which would be below the City's exterior noise standard of 55 dBA. With consideration of the topographic feature between the project site the estimated noise level would be approximately 39 dBA at the closest residential use and 36 dB at the open space area.

Table 2.13-6
Estimated Noise Levels of Heavy Construction Equipment to Closest Residential Use

| Noise Source | Distance to Closest Residential Lot | Estimated Noise Level |
|---|---|---|
| Vulcan Materials Surface Mining Operations | Lot 29 - 2,843 feet | 49 dB |
| FST North Plant Aggregate Mining | Lot 39 - 2,543 feet | 49 dB |

Table 2.13-7
Estimated Noise Levels of Heavy Construction Equipment Open Space Area

| Noise Source | Distance to Proposed Open Space Area | Estimated Noise Level |
|---|---|---|
| Vulcan Materials Surface Mining Operations | 3,379 feet | 46 dB |
| FST North Plant Aggregate Mining | 3,496 feet | 46 dB |

### Truck Hauling Noise

Materials removed from sand mining operations would be loaded onto large highway trucks to transport to customers. Truck hauling access for Vulcan Materials would occur along Sherborn Street. Table 2.13-8, *Estimated Truck Hauling Noise Levels to Closest Residential Use*, and Table 2.13-9,

*Estimated Truck Hauling Noise Levels Open Space Area*, identifies the estimated noise levels to the closest residential use and proposed open space from truck hauling noise. The estimated noise level at the closest residential use would be 59 dB and 53 dB at the open space area. With consideration of the topographic feature between the project site the estimated noise level would be approximately 49 dBA at the closest residential use and 53 dB at the open space area. Both are well below the City's daytime noise standard.

Table 2.13-8
Estimated Truck Hauling Noise Levels to Closest Residential Use

| Noise Source | Distance to Closest Residential Lot | Estimated Noise Level |
|---|---|---|
| Sherborn Street | 1,500 feet | 59 dB |

Table 2.13-9
Estimated Truck Hauling Noise Levels Open Space Area

| Noise Source | Distance to Proposed Open Space Area | Estimated Noise Level |
|---|---|---|
| Sherborn Street | 3,000 feet | 53 dB |

### Offsite Noise Source Summary

The most noticeable noises activity from the surface mining operations would be from blasting activities. The noise levels would be within the allowable range of noise levels. The noise level would be discernable but would be infrequent and occur for only a second and would not be intrusive to the livelihood of residents. The noise generated from rock crushing, heavy construction equipment and truck hauling activities would be of sufficient distance of the residential and the proposed open space area and with the intervening topography, would result in noise levels that would not exceed the City's exterior noise standard. Implementation of the Proposed Project Modifications would not expose sensitive receptors to increased offsite noise impacts that would result in significant noise impacts. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of offsite noise impacts.

**b) Generation of excessive groundborne vibration or groundborne noise levels?**

### BACKGROUND

Vibration impacts would mostly occur from the operation of equipment. Common sources of vibration impact from construction activities include blasting, pile-driving and the operation of heavy earth-moving equipment. Sensitive receptors for vibration include structures, especially older masonry structures, people and vibration sensitive equipment.

There are several different methods that are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV). Presently, there is not a local threshold that quantifies the level at which excessive groundborne vibration occurs. Caltrans issued the *Transportation- and Construction-Induced Vibration Guidance Manual* in 2004. This manual provides practical guidance to Caltrans engineers, planners, and

consultants who must address vibration issues associated with the construction, operation, and maintenance of Caltrans projects. This manual is also used as a reference point by many lead agencies and CEQA practitioners throughout California, as it provides numeric thresholds for vibration impacts. Thresholds are established for vibration, which found that the human response becomes distinctly perceptible at the 0.25 inch per second PPV. The manual identifies that potential damage could occur at the 1.0 inch per second PPV threshold to residential structures and the 2.0 inch per second PPV threshold for potential damage to industrial and commercial structures.

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the original project would not result in adverse vibration impacts.

**Addendum Finding Less Than Significant Impact:** Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site.

### CONSTRUCTION VIBRATION IMPACTS

The project site including the open space park area is proposed has been previously rough graded. The rough grading activities would be the most intrusive source of construction vibration impacts. The grading activities for the project were evaluated in the previously adopted IS/MND and were determined to be less than significant. Implementation of the Proposed Project Modifications would not create higher construction vibration impacts above levels that were evaluated in the previously adopted IS/MND. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of construction vibration impacts.

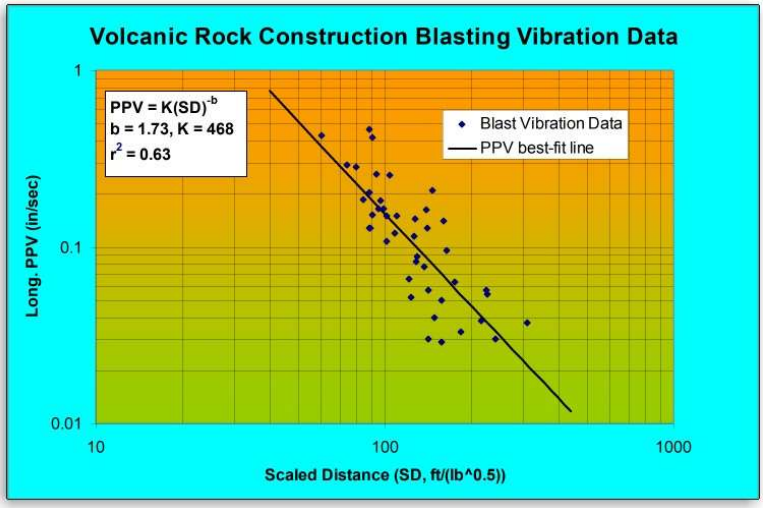
### OPERATIONAL VIBRATION IMPACTS

Long-term operational vibration impacts associated with the project were determined to be less than significant. The Proposed Project Modifications would not include any activities that would increase operational vibration impacts above those evaluated in the previously adopted IS/MND. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of long-term operational vibration impacts.

### OFFSITE VIBRATION IMPACTS

Surface mining operations occurring in the vicinity could be a potential source for vibration impacts. The activity that would have the greatest potential for significant vibration impacts would be from blasting. The magnitude of the vibration varies depending on the type and characteristics of the explosive, amount of charge, the method of explosion, the size of the free surface, the distance between the explosives and the measuring point, the geological condition, and other factors. Graph 2.13-1, *Volcanic Rock Construction Blasting Vibration Data*, provides a sampling of volcanic rock blasting activities at different distances and the associated vibration level. As shown in Graph 2.13-1, the 1.0 inch per second PPV threshold for damage to residential structures would occur at distance below 1,000 feet. The FST North Plant Aggregate Mining is 2,543 feet (0.48 miles) to the closest residential use and 3,496 feet (0.66 miles) to the proposed open space area. Vulcan Materials Surface Mining Operations is located 2,843 feet (0.53 miles) from the closest residential use and 3,379 feet (0.63 miles) from the proposed open space area.

**Graph 2.13-1**
**Volcanic Rock Construction Blasting Vibration Data**




Source: Vibrationdamage.com; accessed on January 15, 2021.

According to the City of Corona Noise Ordinance, it shall be unlawful for any person to create, maintain or cause any ground vibration which is perceptible without instruments at any point on any affected property adjoining the property on which the vibration source is located. For the purposes of this section, the perception threshold shall be presumed to be more than 0.05 inches per second.

To exceed City of Corona Vibration standard of 0.05 PPV, the closest sensitive receptor would need to be as close as 900 feet to the blasting noise. The nearest residential uses are 2,543 feet away from the closest surface mining operation, therefore potential vibration impacts on residential uses would be less than significant; refer to Table 2.13-10, *Estimated Vibration Levels of Heavy Construction Equipment to Closest Residential Use*. Additionally, the proposed open space area is located approximately 3,379 feet from the closest surface mining operation, therefore potential vibration impacts would be less than significant; refer to Table 2.13-11, *Estimated Vibration Levels of Heavy Construction Equipment Open Space Area*. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of vibration impacts.

Table 2.13-10
Estimated Vibration Levels of Heavy Construction Equipment to Closest Residential Use

| Vibration Source | Distance to Closest Residential Lot | Estimated Vibration Level |
|---|---|---|
| Vulcan Materials Surface Mining Operations | Lot 29- 2,843 feet | Less than 0.05 PPV |
| FST North Plant Aggregate Mining | Lot 39- 2,543 feet | Less than 0.05 PPV |

Table 2.13-11
Estimated Vibration Levels of Heavy Construction Equipment Open Space Area

| Vibration Source | Distance to Proposed Open Space Area | Estimated Vibration Level |
|---|---|---|
| Vulcan Materials Surface Mining Operations | 3,379 feet | Less than 0.05 PPV |
| FST North Plant Aggregate Mining | 3,496 feet | Less than 0.05 PPV |

**c) 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?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously adopted IS/MND determined the original project would not be subject to excessive aircraft noise impacts.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would occur in the same general area and are not subject to excessive aircraft noise impacts. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of aircraft noise impacts.

**SUMMARY OF FINDINGS FOR NOISE**

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

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## 2.14 Population and Housing

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. 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)? | ☐ | ☐ | ☒ | ☐ |
| b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

**a) 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)?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the original project would have a less than significant impact regarding unplanned population growth.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase the potential to induce a substantial unplanned population growth in an area, either directly or indirectly. The Proposed Project Modifications would not increase the number of proposed residential units on the project site. The Proposed Project Modifications would not facilitate additional growth within the project area beyond what is planned for in the City's General Plan. Compared to the previously adopted IS/MND, the Proposed Project Modifications would result in the same level of unplanned population growth impacts.

**b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined the original project would not displace existing residential use that would require the construction of replacement housing.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase the potential to displace a substantial number of existing people or housing, necessitating the construction of replacement housing elsewhere. The Proposed Project Modifications would provide private gated circulation through the project and would replace the previously proposed recreation center with an open space park area. The Proposed Project Modifications would not displace existing people or housing that requires the construction of replacement housing. Compared to the previously adopted IS/MND, the Proposed Project Modifications would result in the same level of impacts to existing people and housing and the need for replacement housing.

## SUMMARY OF FINDINGS FOR POPULATION AND HOUSING

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

## 2.15 Public Services

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. 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: | | | | |
| 1) Fire protection? | ☐ | ☐ | ☒ | ☐ |
| 2) Police protection? | ☐ | ☐ | ☒ | ☐ |
| 3) Schools? | ☐ | ☐ | ☒ | ☐ |
| 4) Parks? | ☐ | ☐ | ☒ | ☐ |
| 5) Other public facilities? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

**a) 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:**

#### 1) Fire protection?

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the original project would have no impact on fire protection.

**Addendum Finding No Impact:** Implementation of the Proposed Project Modifications would not increase the number of residential units approved for the project and would not increase the demand for fire protection service beyond the level of demand generated from the project. Compared to the previously adopted IS/MND, the Proposed Project Modifications would result in the same level of impacts to fire protection.

#### 2) Police protection?

**Previous MND Finding No Impact:** The previously approved IS/MND determined the project would have no impact on police protection.

**Addendum Finding No Impact:** Implementation of the Proposed Project Modifications would not increase the number of residential units approved for the project and would not increase demand for police protection beyond the level of demand generated from the

project. Compared to the previously adopted IS/MND, the Proposed Project Modifications would result in the same level of impacts to police protection.

**3) Schools?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the original project would have no impact on schools.

**Addendum Finding No Impact:** Implementation of the Proposed Project Modifications would not increase the number of residential units approved for the project and would not increase the demand for schools beyond the level of demand generated from the original project. Compared to the adopted IS/MND original project, the Proposed Project Modifications would result in the same level of impacts to schools.

**4) Parks?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the original project would have no impact on parks.

**Addendum Finding No Impact:** Implementation of the Proposed Project Modifications would not increase the number of residential units approved for the project and would not increase the demand for parks beyond the level of demand generated from the original project. Compared to the previously adopted IS/MND, the Proposed Project Modifications would result in the same level of impacts to parks.

**5) Other public facilities?**

**Previously Approved MND Finding:** The previously approved IS/MND determined the original project would have no impact on other public facilities.

**Addendum Finding:** Implementation of the Proposed Project Modifications would not increase the number of residential units approved for the project and would not increase the demand for other public facilities beyond the level of demand generated from the original project. Compared to the adopted IS/MND, the Proposed Project Modifications would result in the same level of impacts to other public facilities.

## SUMMARY OF FINDINGS FOR PUBLIC SERVICES

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

## 2.16 Recreation

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. 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? | ☐ | ☐ | ☒ | ☐ |
| b. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

**a) 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?**

**Previously Approved MND Finding:** The previously approved IS/MND did not evaluate potential impacts to recreation facilities.

**Addendum Finding Less Than Significant Impact:** Implementation of the Proposed Project Modifications would not increase the number of residential units approved for the project and would not increase the demand for recreation facilities. The Proposed Project Modifications would replace the proposed recreation center with an equivalent amount of open space for passive and active recreation. Therefore, there would not be any onsite loss of recreation facilities. Implementation of the Proposed Project Modifications would not increase the demand for new recreation facilities nor increase the use of existing recreation facilities.

**b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?**

**Previously Approved MND Finding:** The previously approved IS/MND did not evaluate potential impacts to recreation facilities.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would replace the proposed recreation center with an equivalent amount of open space for passive and active recreation and would not have an adverse impact on the environment.

### SUMMARY OF FINDINGS FOR RECREATION

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.

- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

## 2.17 Transportation

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? | ☐ | ☐ | ☒ | ☐ |
| b. Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)? | ☐ | ☐ | ☒ | ☐ |
| c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | ☐ | ☐ | ☒ | ☐ |
| d. Result in inadequate emergency access? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

The following analysis is based on the Traffic Analysis Report that was conducted by Ganddini Group, Inc., on June 13, 2023. The analysis is presented in Appendix C, *Traffic Analysis Report*.

### Setting

The project site is located east of Interstate 15 (I-15) between Laurel Canyon Way and State Street in the City of Corona. The northern portion of the project site, which is located within the City of Corona, is proposed to be developed with 103 dwelling units of single-family detached housing. The southern portion of the project site, which is located within the County of Riverside, is not being processed at this time. For the purpose of this traffic analysis, the southern portion would be considered as a future phase of the overall site in the cumulative traffic conditions that could be potentially developed with 38 dwelling units of single-family detached housing.

#### STUDY AREA INTERSECTIONS

Based on the study intersections identified in the approved scoping agreement, the study area consists of the following study intersections within the County of Riverside, Caltrans and City of Corona jurisdictions; refer to Figure 2.17-1, *Project Study Intersection Locations*, and Table 2.17-1, *Study Area Intersections*.

Table 2.17-1
Study Area Intersections

| Study Intersections | | Jurisdiction |
|---|---|---|
| 1. | Rimpau Avenue (NS) at Magnolia Avenue (EW) | City of Corona |
| 2. | Rimpau Avenue (NS) at California Avenue (EW) | City of Corona |
| 3. | Rimpau Avenue (NS) at Olympic Drive (EW) | City of Corona |
| 4. | Rimpau Avenue (NS) at Old Temescal Road (EW) | City of Corona |
| 5. | California Avenue (NS) at Old Temescal Road (EW) | City of Corona |
| 6. | Compton Avenue (NS) at Old Temescal Road (EW) | City of Corona |

| Study Intersections | | Jurisdiction |
|---|---|---|
| 7. | Laurel Canyon Way (NS) at Project Driveway (EW) | City of Corona |
| 8. | State Street (NS) at Bel Air Street/Project Driveway (EW) | County of Riverside |
| 9. | State Street (NS) at Ontario Avenue (EW) | County of Riverside |
| 10. | I-15 Southbound Ramps (NS) at Ontario Avenue (EW) | Caltrans |
| 11. | I-15 Northbound Ramps (NS) at Ontario Avenue (EW) | Caltrans |
| 12. | California Avenue (NS) at Ontario Avenue (EW) | City of Corona |
| 13. | El Sobrante Road (NS) at Magnolia Avenue (EW) | City of Corona |
| 14. | I-15 Southbound Ramps (NS) at Magnolia Avenue (EW) | Caltrans |
| 15. | I-15 Northbound Ramps (NS) at Magnolia Avenue (EW) | Caltrans |
| 16. | Compton Avenue at Ontario Avenue | City of Corona |
| Notes: (NS) = north-south roadway; (EW) = east-west roadway<br>Source: Ganddini Group, Inc., *Monte Olivo (Northern Portion) Traffic Analysis*, June 13, 2023. | | |

## STUDY AREA ROADWAY LINKS

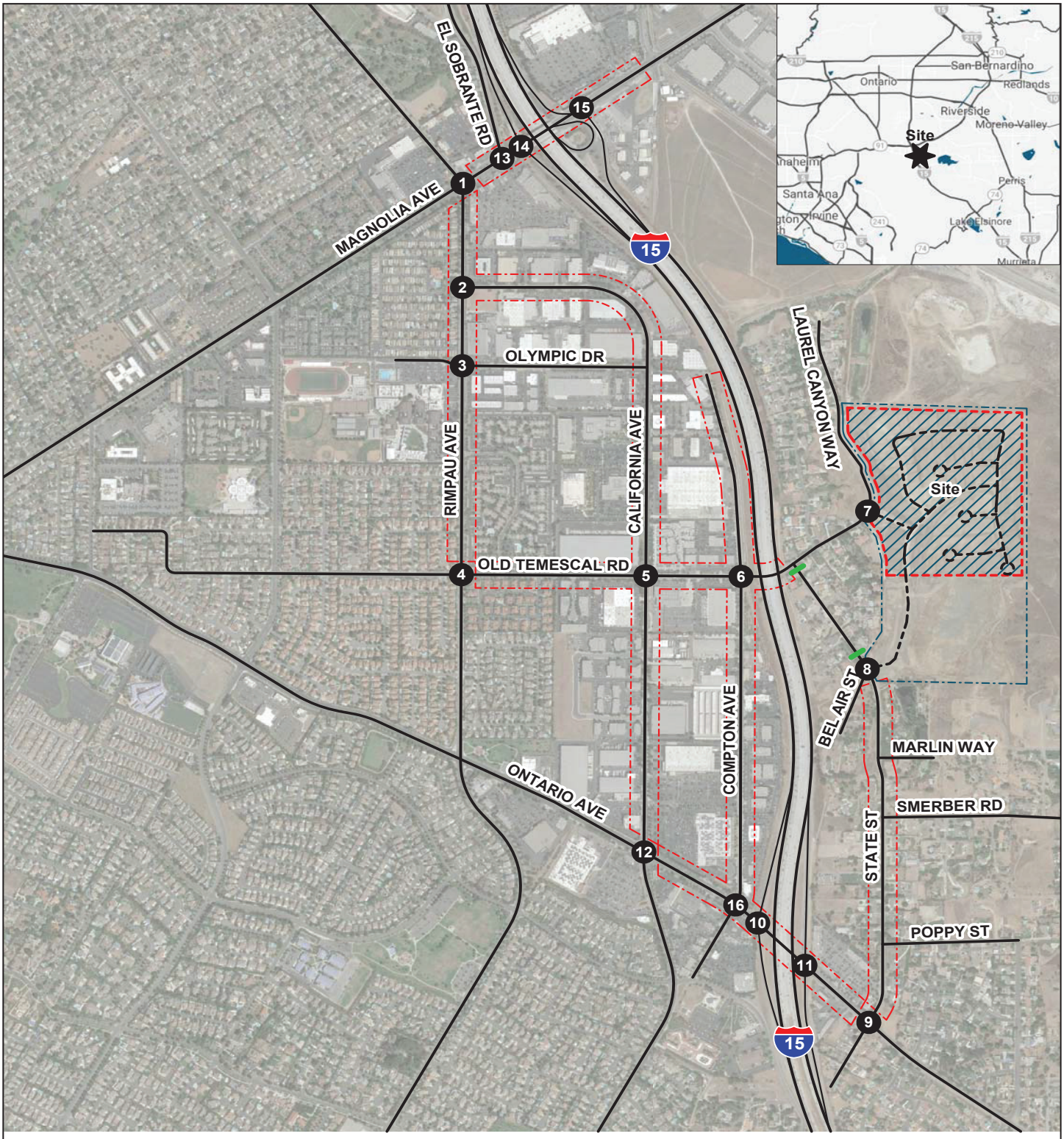
Based on the study intersections identified in the approved scoping agreement, the study area consists of the following study roadway links:

- Compton Avenue, north of Old Temescal Road
- Compton Avenue, Old Temescal Road to Ontario Avenue
- State Street, Bel Air Street to Ontario Avenue
- Old Temescal Road, Rimpau Avenue to California Avenue
- Old Temescal Road, California Avenue to Compton Avenue
- Old Temescal Road, Compton Avenue to Bel Air Street
- Ontario Avenue, California Avenue to Compton Avenue
- Ontario Avenue, I-15 Northbound Ramps to State Street
- Rimpau Avenue, Magnolia Avenue to California Avenue
- Rimpau Avenue, California Avenue to Olympic Drive
- Rimpau Avenue, Olympic Drive to Old Temescal Road
- Magnolia Avenue, Rimpau Avenue to El Sobrante Road

Regional access to the project site is provided by I-15 located just south of the project site. Key roadways providing local circulation include Rimpau Avenue, California Avenue, Compton Avenue, Old Temescal Road, Laurel Canyon Way, Ontario Avenue and State Street. Figure 2.17-2, *Existing Lane Geometry and Intersection Traffic Controls*, identifies the lane geometry and intersection traffic controls for Existing conditions based on a field survey of the study area.

## EXISTING ROADWAY VOLUMES

The Existing 2022 average daily traffic volumes within the study area are shown in Figure 2.17-3, *Existing Average Daily Traffic Volumes*. As part of the analysis, some 2017 traffic volumes provided by the City of Corona have been factored up to Year 2022 conditions with an annual growth rate of 2% over 5 years or a total growth factor of 10%. For locations where 24-hour roadway link traffic counts were not available, the Existing average daily traffic volumes have been factored from peak hour intersection turning movement volumes. The peak hour to daily volume factor was derived based on a comparison of the existing evening peak hour intersection turning movement volumes with sample 24-hour roadway segment volume counts collected in the study area. This is a conservative estimate and may overestimate the average daily traffic volumes.



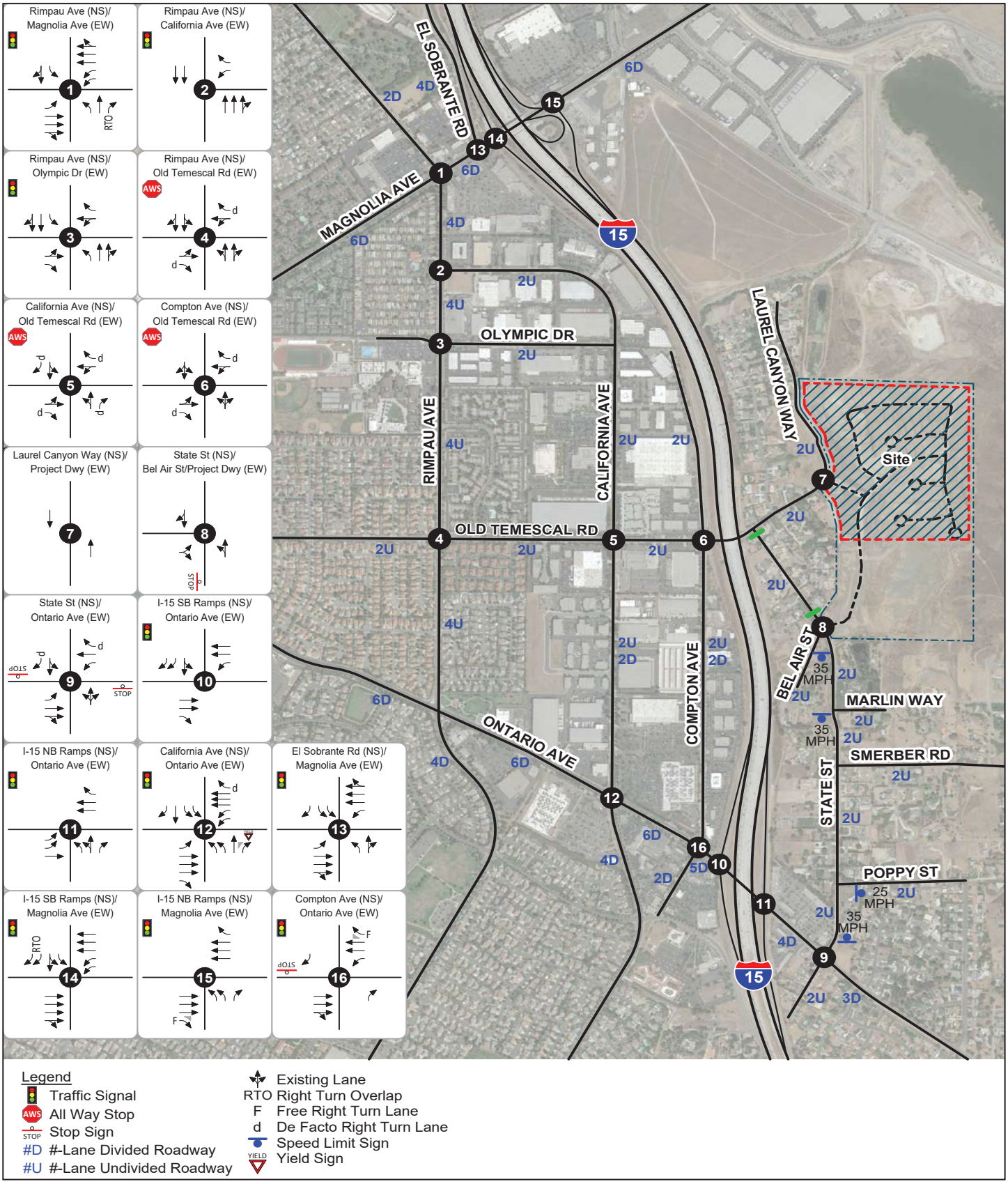

Source: Ganddini Group, Inc.; June 13, 2023.

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## Project Study Intersection Locations

VCS Environmental

**Figure 2.17-1**



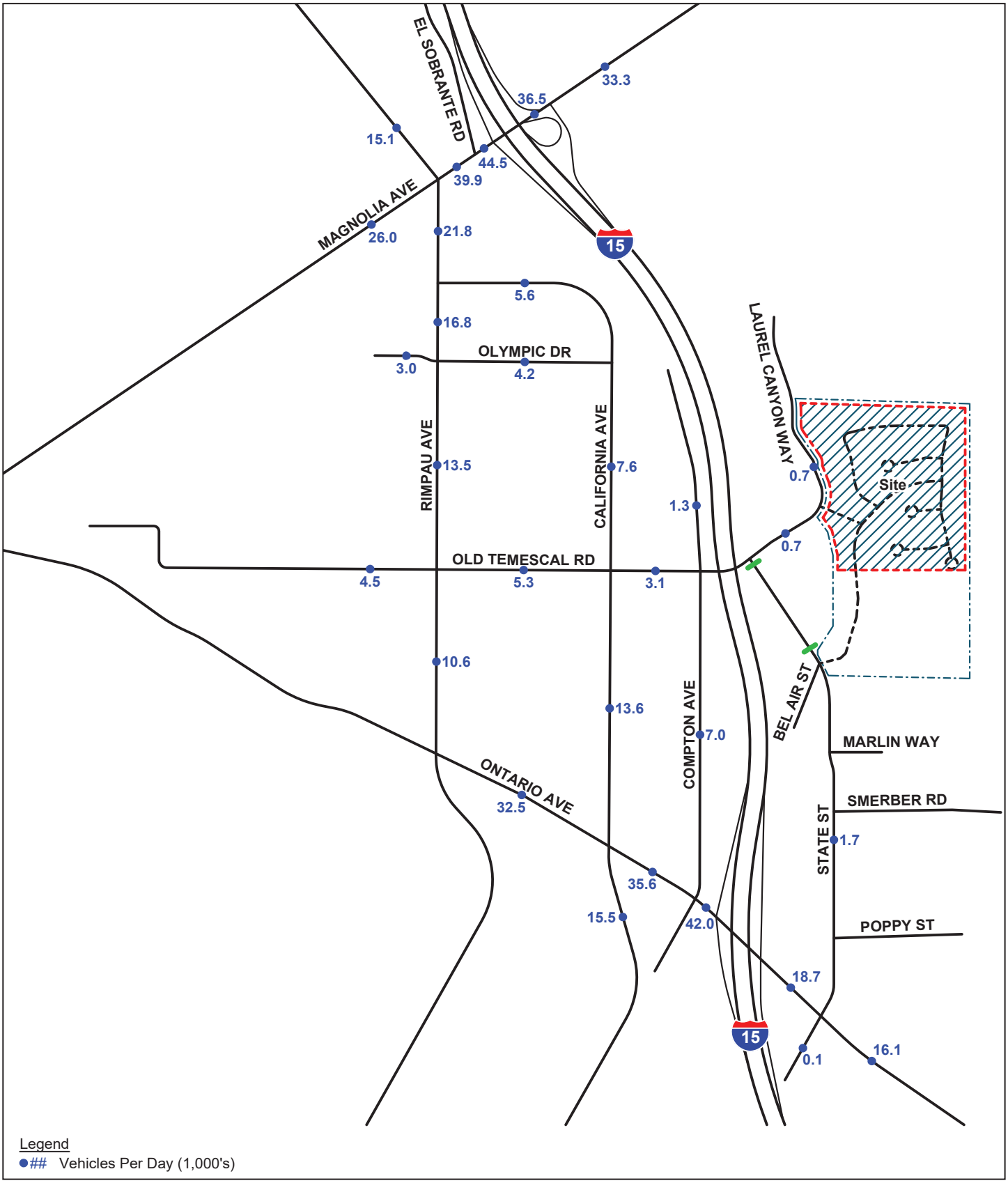

Source: Ganddini Group, Inc.; June 13, 2023.

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## Existing Lane Geometry and Intersection Traffic Controls

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**Figure 2.17-2**




Source: Ganddini Group, Inc.; June 13, 2023.

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## Existing Average Daily Traffic Volumes

VCS Environmental

**Figure 2.17-3**

Existing peak hour traffic conditions are based upon morning peak period and evening peak period intersection turning movement counts that were obtained in November 2022 and April 2023 during typical weekday conditions. The weekday morning peak period was counted between 7:00 AM and 9:00 AM and the weekday evening peak period was counted between 4:00 PM and 6:00 PM. The actual peak hour within the peak period is the four consecutive 15-minute periods with the highest total volume when all movements are added together. Thus, the weekday evening peak hour at one intersection may be 4:45 PM to 5:45 PM if those four consecutive 15-minute periods have the highest combined volume. Figure 2.17-4, *Existing AM Peak Hour Intersection Turning Movement Volumes*, and Figure 2.17-5, *Existing PM Peak Hour Intersection Turning Movement Volumes*, show the Existing morning peak hour and evening peak hour intersection turning movement volumes.

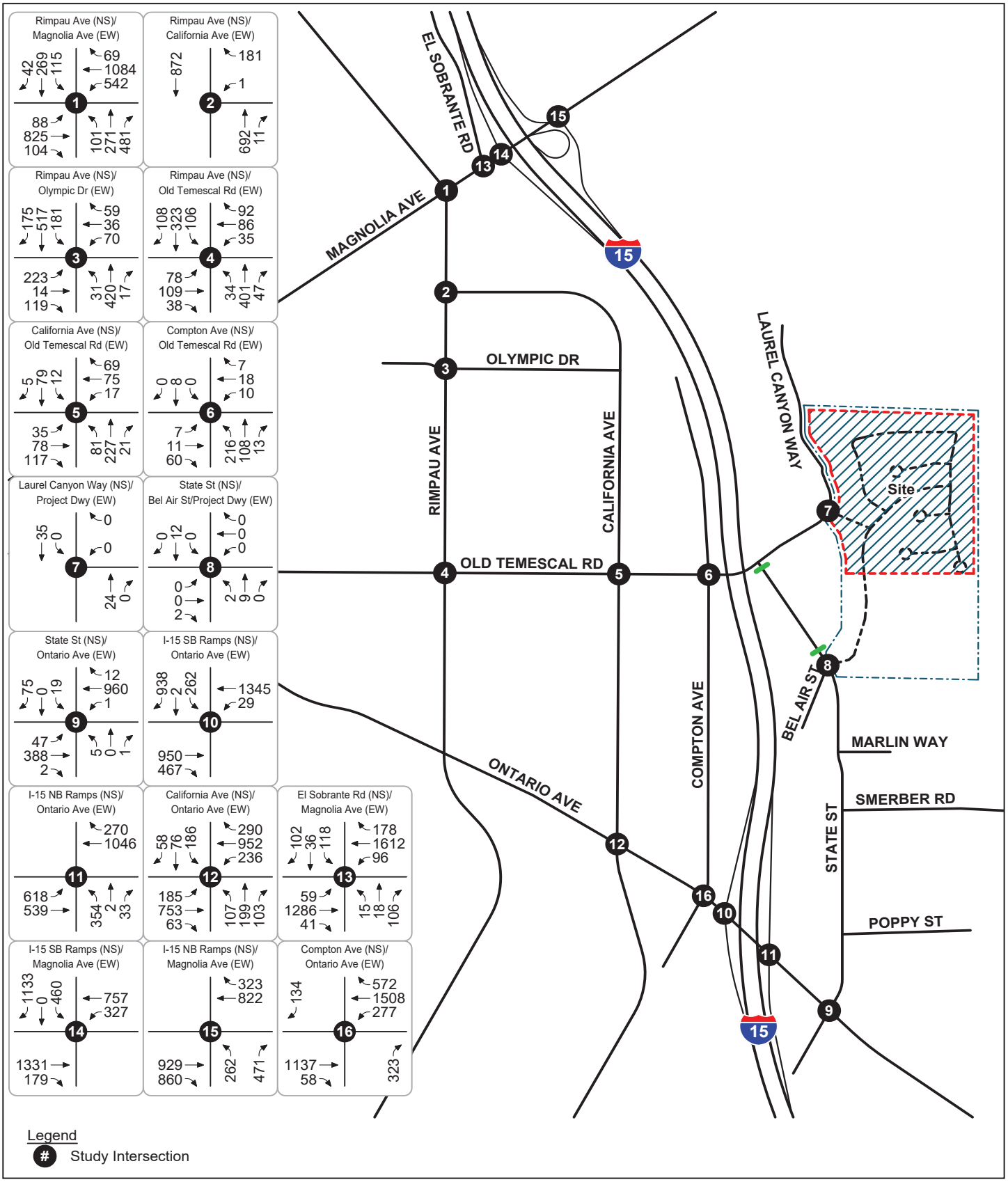
## EXISTING LEVEL OF SERVICE

The intersection Levels of Service for Existing conditions have been calculated and are shown in Table 2.17-2, *Existing Intersection Level of Service*. As shown in Table 2.17-2, the study intersections currently operate within acceptable Levels of Service (LOS) during the peak hours for Existing conditions, except for State Street/Ontario Avenue – #9 that is projected to operate at deficient Levels of Service (E or F). Additionally, a traffic signal appears to currently be warranted at State Street/Ontario Avenue – #9 intersection based upon the California Manual on Uniform Traffic Control Devices (2014), peak hour volume warrant (Warrant 3), for Existing conditions.

Table 2.17-2
Existing Intersection Level of Service

| Intersection | | AM Peak Hour LOS | PM Peak Hour LOS |
|---|---|---|---|
| 1. | Rimpau Avenue at Magnolia Avenue | C | C |
| 2. | Rimpau Avenue at California Avenue | A | B |
| 3. | Rimpau Avenue at Olympic Drive | B | B |
| 4. | Rimpau Avenue at Old Temescal Road | C | B |
| 5. | California Avenue at Old Temescal Road | B | B |
| 6. | Compton Avenue at Old Temescal Road | A | A |
| 8. | State Street at Bel Air Street/Project Driveway | A | A |
| 9. | State Street at Ontario Avenue | D | E |
| 10. | I-15 SB Ramps at Ontario Avenue | C | B |
| 11. | 1-15 NB Ramps at Ontario Avenue | B | B |
| 12. | California Avenue at Ontario Avenue | C | C |
| 13. | El Sobrante Rd at Magnolia Avenue | D | D |
| 14. | I-15 SB Ramps at Magnolia Avenue | C | D |
| 15. | I-15 NB Ramps at Magnolia Avenue | B | B |
| 16. | Compton Avenue at Ontario Avenue | C | B |

Source: Ganddini Group, Inc., *Monte Olivo (Northern Portion) Traffic Analysis*, June 13, 2023.



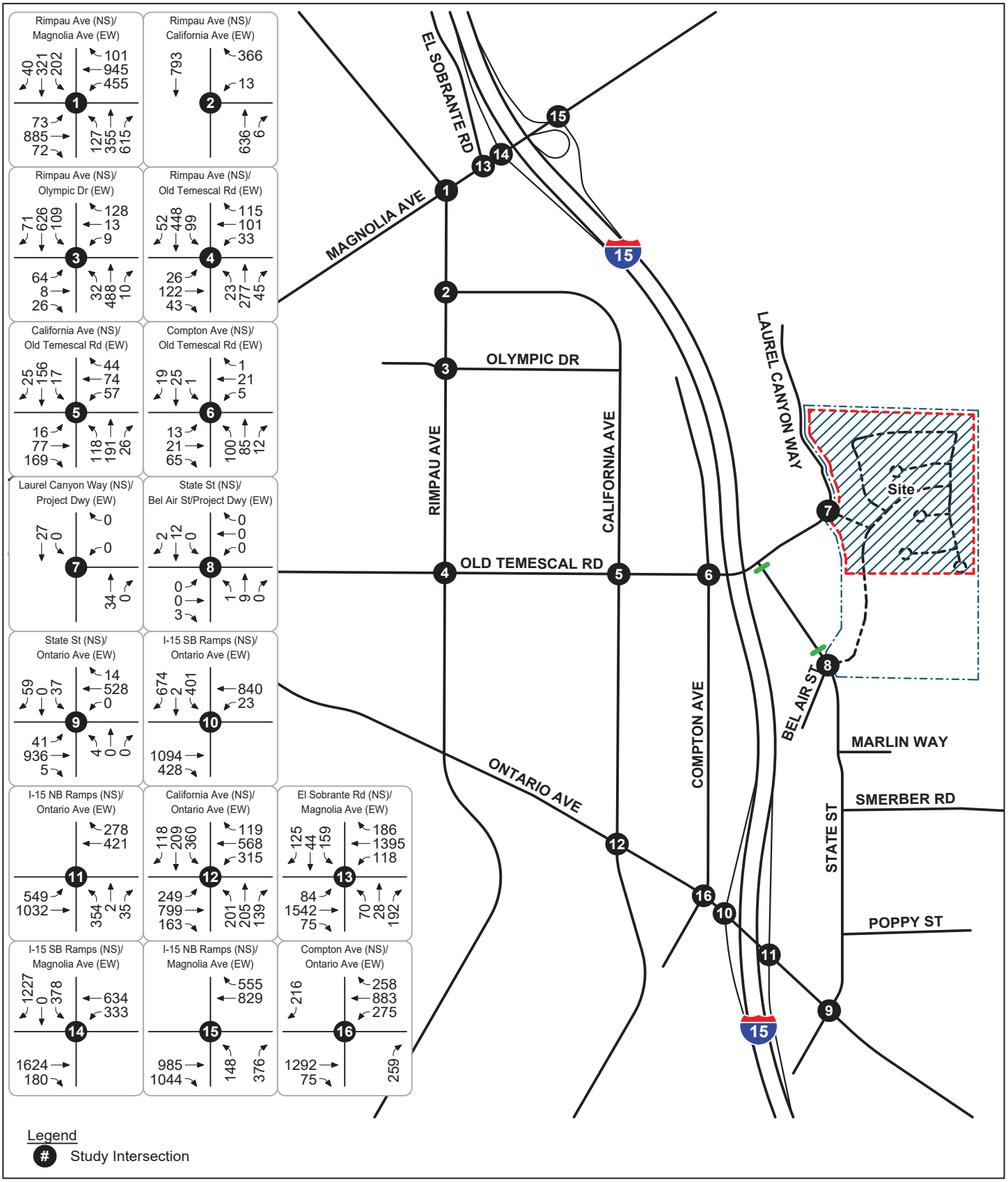

Source: Ganddini Group, Inc.; June 13, 2023.

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## Existing AM Peak Hour Intersection Turning Movement Volumes

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**Figure 2.17-4**




Source: Ganddini Group, Inc.; June 13, 2023.

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## Existing PM Peak Hour Intersection Turning Movement Volumes

VCS Environmental

**Figure 2.17-5**

## METHODOLOGY AND PERFORMANCE STANDARDS

This section discusses the analysis methodologies used to assess transportation facility performance as adopted by the respective jurisdictional agencies.

### Intersection Delay Analysis Methodology

The technique used to assess the performance of intersections within the traffic analysis is known as the intersection delay methodology based on the procedures contained in the *Highway Capacity Manual* (Transportation Research Board, 6th Edition). The methodology considers the traffic volume and distribution of movements, traffic composition, geometric characteristics, and signalization details to calculate the average control delay per vehicle and corresponding LOS. Control delay is defined as the portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign) and includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay. The intersection control delay is then correlated to LOS based on the following thresholds shown in Table 2.17-3, *Level of Service*.

Table 2.17-3
Level of Service

| Level of Service | Intersection Control Delay (Seconds/Vehicle) | |
|---|---|---|
| | Signalized Intersection | Unsignalized Intersection |
| A | ≤ 10.0 | ≤ 10.0 |
| B | > 10.0 to ≤ 20.0 | > 10.0 to ≤ 15.0 |
| C | > 20.0 to ≤ 35.0 | > 15.0 to ≤ 25.0 |
| D | > 35.0 to ≤ 55.0 | > 25.0 to ≤ 35.0 |
| E | > 55.0 to ≤ 80.0 | > 35.0 to ≤ 50.0 |
| F | > 80.0 | > 50.0 |
| Source: Ganddini Group, Inc., *Monte Olivo (Northern Portion) Traffic Analysis*, June 13, 2023. | | |

LOS is used to qualitatively describe the performance of a roadway facility, ranging from LOS A (free-flow conditions) to LOS F (extreme congestion and system failure); refer to Figure 2.17-6, *Traffic Levels of Service*. At intersections with traffic signals or all way stop control, the LOS is determined by the average control delay for the overall intersection. At intersections with cross street stop control (i.e., one- or two-way stop control), the LOS is determined by the average control delay for the worst individual movement (or movements sharing a single lane).

### Roadway Link Capacity Analysis

The road link capacity analysis is assessed based on the theoretical 24-hour average daily traffic (ADT) capacity for roadways in terms of volume over capacity ratios. The roadway link daily traffic capacity is shown as the maximum allowed under "Estimated 24 Hour Traffic (ADT)" in the "City of Corona Street Design Table" for a particular street classification. In accordance with the City's General Plan, Riverside County roadways located with the City's Sphere of Influence shall be maintained at LOS "C" or better per the "Riverside County Level of Service Criteria".

| Level of Service (LOS) | | Description |
|---|---|---|
| A |  | LOS A describes primarily free-flow operations. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at the intersections is minimal. The travel speed exceeds 85% of the base free-flow speed. |
| B |  | LOS B describes reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted, and control delay at the intersections is not significant. The travel speed is between 67% and 85% of the base free-flow speed. |
| C |  | LOS C describes stable operation. The ability to maneuver and change lanes at midsegment locations may be more restricted than at LOS B. Longer queues at the intersections may contribute to lower travel speeds. The travel speed is between 50% and 67% of the base free-flow speed. |
| D |  | LOS D indicates a less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volume, or inappropriate signal timing at the intersections. The travel speed is between 40% and 50% of the base free-flow speed. |
| E |  | LOS E is characterized by unstable operation and significant delay. Such operations may be due to some combination of adverse progression, high volume, and inappropriate signal timing at the intersections. The travel speed is between 30% and 40% of the base free-flow speed. |
| F |  | LOS F is characterized by flow at extremely low speed. Congestion is likely occurring at the intersections, as indicated by high delay and extensive queuing. The travel speed is 30% or less of the base free-flow speed. |

Source: Stantec Consulting Services Inc.

### Performance Standards

City of Corona. The City of Corona has established LOS D as the minimum acceptable LOS.

County of Riverside. The definition of an intersection deficiency has been obtained from the County of Riverside General Plan. The County General Plan states that peak hour intersection operations of LOS C or better are generally acceptable along all County maintained roads and conventional state highways. As an exception, LOS D may be allowed in Community Development areas, only at intersections of any combination of Secondary Highways, Major Highways, Arterial Highways, Urban Arterial Highways, Expressways, convention state highways, or freeway ramp intersections.

California Department of Transportation (Caltrans). As stated in the Guide for the Preparation of Traffic Impact Studies (State of California, 2002), the "California Department of Transportation endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities". Caltrans acknowledges this may not always be feasible and recommends consultation with Caltrans to determine the appropriate target LOS. For consistency with local requirements, this analysis defines LOS D as the minimum acceptable LOS for State Highway facilities.

## PROJECT IMPACTS

**a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?**

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously approved IS/MND determined that all study area intersections and roadway segments would operate at acceptable levels of service except for the intersection of Compton Avenue at Old Temescal Road and Rimpau Avenue at Old Temescal Road. Mitigation Measures T-4 and T-5 were recommended which required improvements to both intersections. With the incorporation of Mitigation Measures T-4 and T-5, the previously adopted IS/MND determined potential traffic impacts would be less than significant.

**Addendum Finding Less Than Significant Impact With Mitigation Incorporated:** The proposed Project Modifications would not conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities.

### VEHICULAR CIRCULATION SYSTEM

The identification of deficient operations is a requirement of the California Environmental Quality Act. The County General Plan and Circulation Element have been adopted in accordance with the California Environmental Quality Act requirements, and any roadway improvements within the County of Riverside that are consistent with these documents are not considered deficient, so long as the project contributes its "fair share" funding for improvements. A traffic deficiency is considered significant if the project both: (i) contributes measurable traffic to and (ii) substantially and adversely changes the LOS at any offsite location projected to experience deficient operations (LOS E or F) under foreseeable cumulative conditions, where feasible improvements consistent with the County General Plan cannot be constructed.

The following scenarios are analyzed during typical weekday morning and evening peak hour conditions:

- Existing Conditions
- Existing Plus Project Conditions
- Opening Year (2025) With Project Conditions

### Proposed Project Circulation System

The northern portion of the project site, which is located within the City of Corona, is proposed to be developed with 103 dwelling units of single-family detached housing. The southern portion of the project site, which is located within the County of Riverside, is being processed separately from this portion. For the purpose of this analysis, the southern portion would be considered as a future phase of the overall site in the cumulative traffic conditions that could be potentially developed with 38 dwelling units of single-family detached housing.

The primary access for the project site is a stop-controlled full access driveway at Laurel Canyon Way with a private gate. The project would also provide a secondary access road through the southern portion of the Monteolivo site which would create a stop-controlled driveway on State Street that aligns with Bel Air Street for project residents only with a private gate which is not open to the public.

### Project Trip Generation

Trip generation rates were determined for daily trips, morning peak hour inbound and outbound trips, and evening peak hour inbound and outbound trips for the proposed land uses. Table 2.17-4, *Trip Generation*, shows the project trip generation based upon trip generation rates obtained from the Institute of Transportation Engineers, Trip Generation Manual, 11th Edition, 2021. Trip generation rates were determined for daily trips, morning peak hour inbound and outbound trips, and evening peak hour inbound and outbound trips for the proposed land uses. The number of trips forecast to be generated by the proposed project are determined by multiplying the trip generation rates by the land use quantities.

Table 2.17-4
Trip Generation

| Land Use | DU | AM Peak | | | PM Peak | | | Weekday Daily |
|---|---|---|---|---|---|---|---|---|
| | | In | Out | Total | In | Out | Total | |
| Phase 1 (Northern Portion) Single-Family Detached Housing | 103 | 19 | 54 | 73 | 61 | 36 | 97 | 971 |
| Phase 2 (Southern Portion) Single-Family Detached Housing | 38 | 7 | 20 | 27 | 22 | 13 | 35 | 358 |
| Note: DU-Dwelling Units<br>Source: Ganddini Group, Inc., *Monte Olivo (Northern Portion) Traffic Analysis*, June 13, 2023. | | | | | | | | |

As shown in Table 2.17-4, the proposed project is forecast to generate a total of approximately 971 daily vehicle trips, including 73 vehicle trips during the morning peak hour and 97 vehicle trips during the evening peak hour.

### PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The forecast directional outbound and inbound distribution patterns for the project generated trips is shown in Figure 2.17-7, *Project Trip Generation*. The project trip distribution patterns are based on the review of existing volume data, surrounding land uses, designated truck routes, and the local and

regional roadway facilities in the project vicinity. Based on the identified project trip generation and distributions, project average daily traffic volumes have been calculated and shown on Figure 2.17-8, *Project Average Daily Traffic Volumes*. Project morning and evening peak hour intersection turning movement volumes expected from the project are depicted on Figure 2.17-9, *Project AM Peak Hour Intersection Turning Movement Volumes*, and Figure 2.17-10, *Project PM Peak Hour Intersection Turning Movement Volumes*.

### PROJECT DESIGN FEATURES

This analysis assumes the following improvements would be constructed by the project to provide project site access:

PDF-T-1: At the project driveway at Laurel Canyon Way (Intersection No. 7)

- Install a westbound stop sign with a private gate.
- Provide a westbound shared left-right lane.

PDF-T-2: At the project driveway at State Street (Intersection No. 8 – Opposite Bel Air Street)

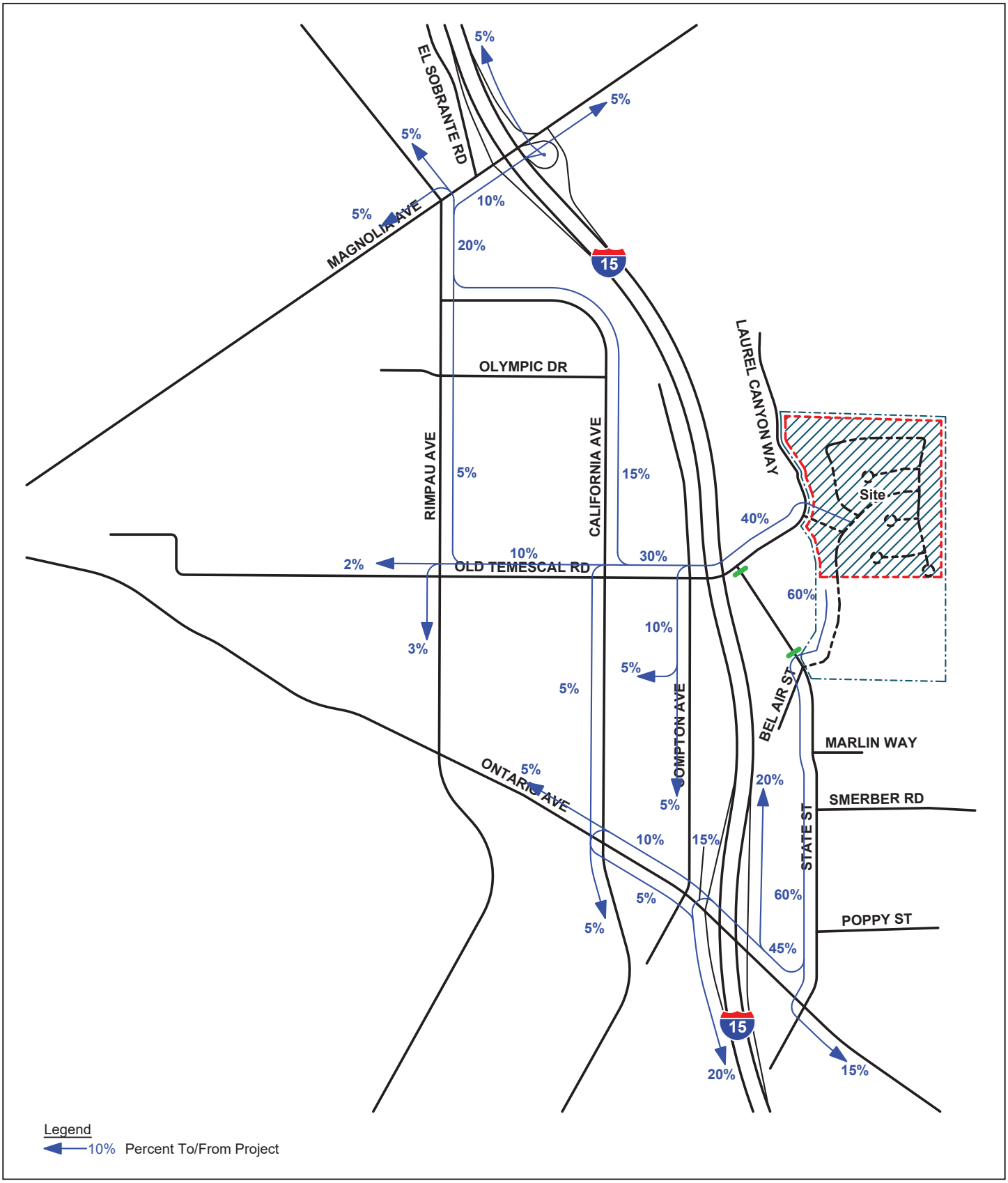
- Install a westbound stop sign with private gate.
- Provide a westbound shared left-right lane.

The primary access for the Monteolivo community would be a stop-controlled full access driveway at Laurel Canyon Way with a private gate. The project would also provide a secondary access road through the southern portion of the Monteolivo community which would create a stop-controlled driveway on State Street that aligns with Bel Air Street for project residents only with a private gate and would not be open to the public.

### FUTURE CUMULATIVE TRAFFIC TRIPS

#### Ambient Growth Rate

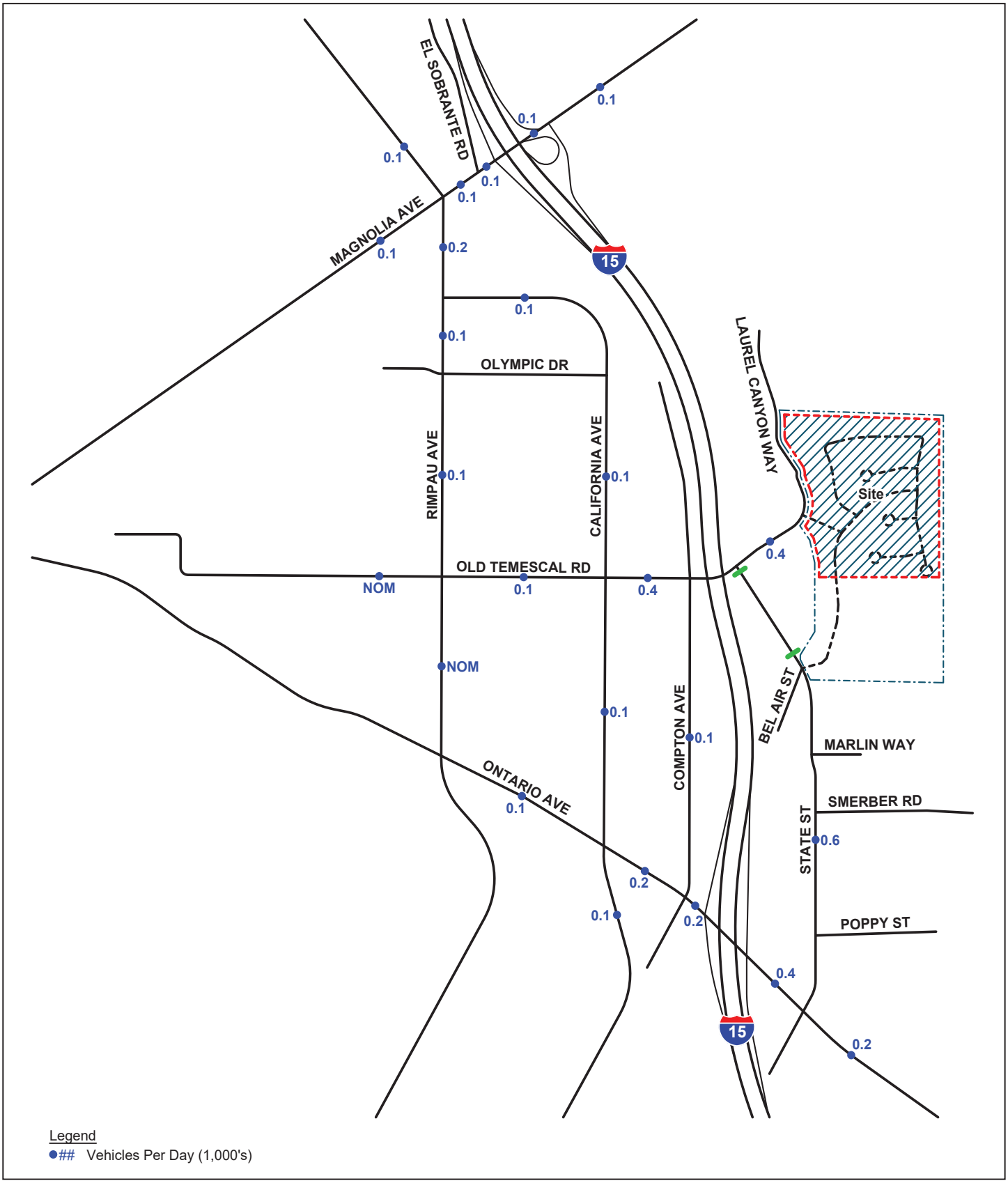
To account for ambient growth on roadways, existing 2022 roadway volumes were increased by a growth rate of two percent (2%) per year over three years for Opening Year (2025) conditions. This equates to a total growth factor of approximately six percent (6%). The ambient growth rate was conservatively applied to all movements at the study intersections.




Source: Ganddini Group, Inc.; June 13, 2023.

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## Project Trip Generation



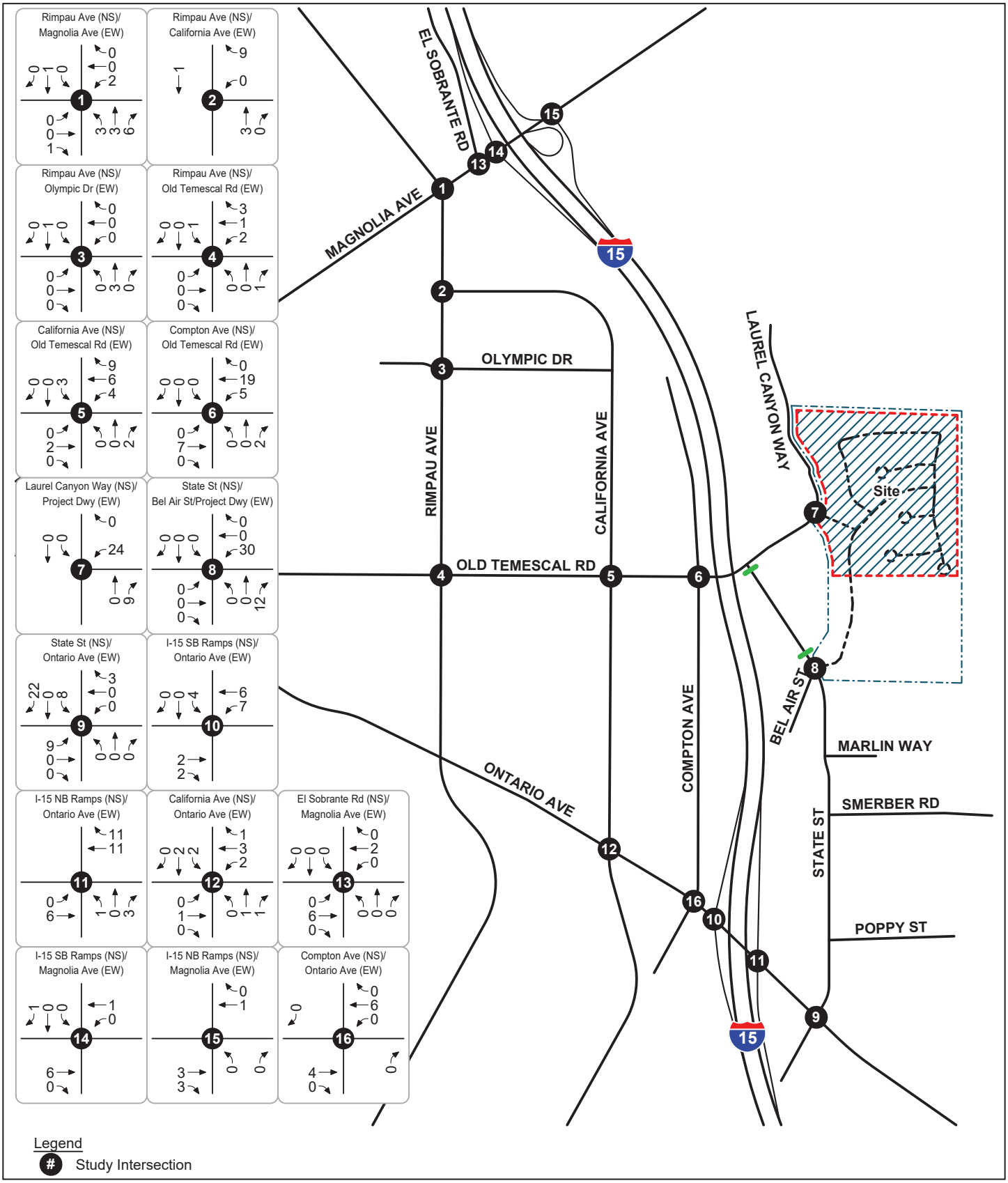

Source: Ganddini Group, Inc.; June 13, 2023.

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## Project Average Daily Traffic Volumes

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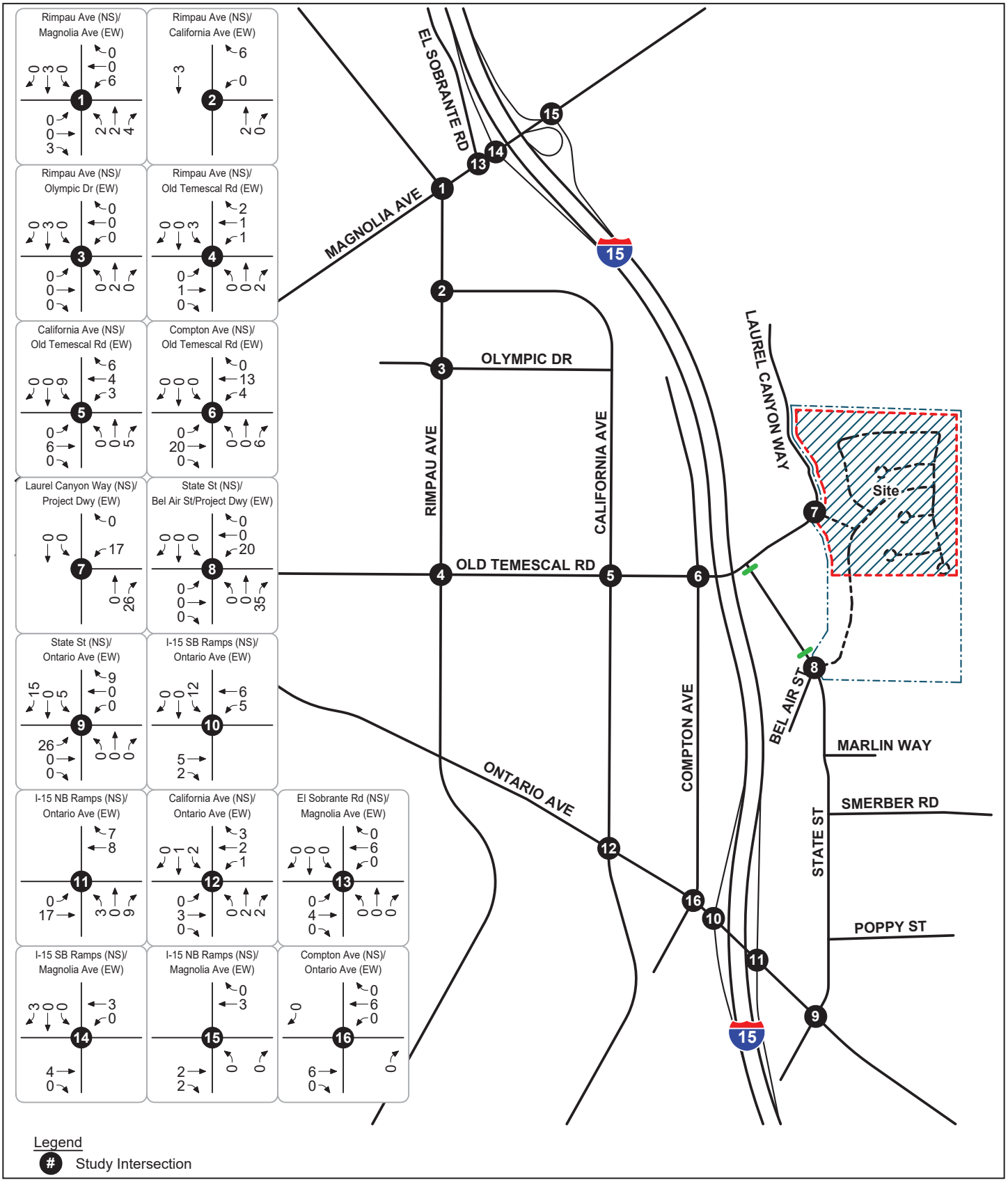
**Figure 2.17-8**




Source: Ganddini Group, Inc.; June 13, 2023.

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## Project AM Peak Hour Intersection Turning Movement Volumes




Source: Ganddini Group, Inc.; June 13, 2023.

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## Project PM Peak Hour Intersection Turning Movement Volumes

VCS Environmental

**Figure 2.17-10**

### Other Development

To account for trips generated by future development, trips generated by pending or approved other development projects in the City of Corona and County of Riverside were added to the study area. The development projects include single-family residential, multi-family residential and commercial land uses. A listing of the other development projects considered in the analysis is provided in Section 5 of the Traffic Analysis Report. The southern portion of the project site, which is located within the County of Riverside, is being processed separately from this portion. For the purpose of this analysis, the southern portion would be considered as a future phase of the overall site in the cumulative traffic conditions that could be potentially developed with 38 dwelling units of single-family detached housing. Figure 2.17-11, *Cumulative Project (Monteolivo – Southern Portion) Trip Distribution*, shows the trip distribution patterns for the southern portion of the Monteolivo project. Figure 2.17-12, *Other Development Average Daily Traffic Volumes*, shows the forecast average daily traffic volumes for the other development. Figure 2.17-13, *Other Development AM Peak Hour Intersection Turning Movement Volumes*, and Figure 2.17-14, *Other Development PM Peak Hour Intersection Turning Movement Volumes*, show the forecast morning and evening peak hour intersection turning movement volumes for trips generated by other developments.

## OPERATIONAL ANALYSIS

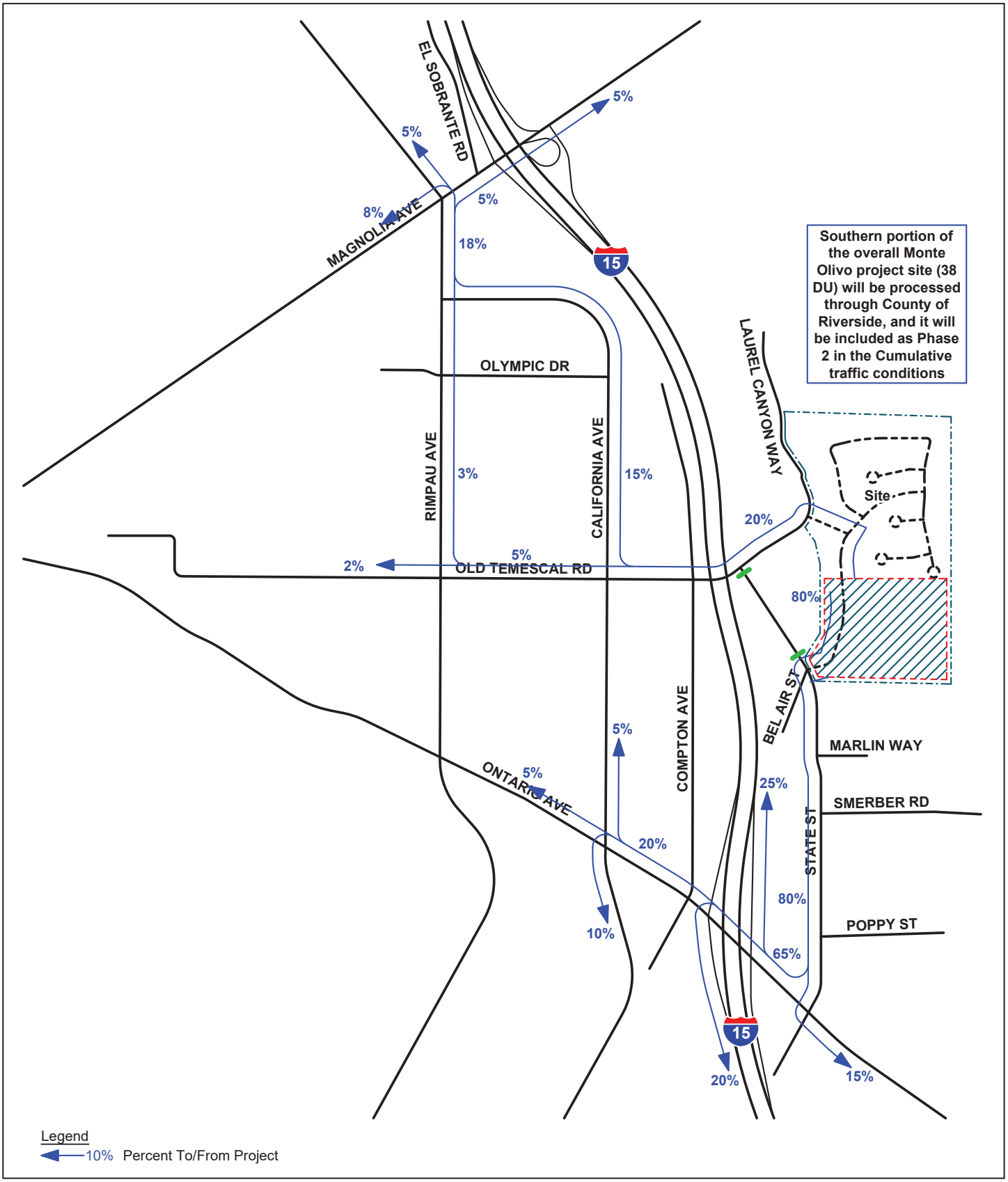
### Existing Plus Project Condition

The intersection Levels of Service for Existing Plus Project conditions are shown in Table 2.17-5, *Existing Plus Project Intersection Levels of Service*. Existing Plus Project average daily traffic volumes are shown on Figure 2.17-15, *Existing Plus Project Average Daily Traffic Volumes*. Existing Plus Project morning and evening peak hour intersection turning movement volumes are shown on Figure 2.17-16, *Existing Plus Project AM Peak Hour Intersection Turning Movement Volumes*, and Figure 2.17-17, *Existing Plus Project PM Peak Hour Intersection Turning Movement Volumes*.

Table 2.17-5
Existing Plus Project Intersection Levels of Service

| Intersection | | AM Without Project | AM With Project | PM Without Project | PM With Project |
|---|---|---|---|---|---|
| 1. | Rimpau Avenue at Magnolia Avenue | C | C | C | C |
| 2. | Rimpau Avenue at California Avenue | A | A | B | B |
| 3. | Rimpau Avenue at Olympic Drive | B | C | B | B |
| 4. | Rimpau Avenue at Old Temescal Road | C | E | B | B |
| 5. | California Avenue at Old Temescal Road | B | C | B | B |
| 6. | Compton Avenue at Old Temescal Road | A | C | A | A |
| 7. | Laurel Canyon Way at Project Driveway | A | A | A | A |
| 8. | State Street at Bel Air Street | A | A | A | A |
| 9. | State Street at Ontario Avenue<br>• Traffic Signal | D<br>- | D<br>A | E<br>- | E<br>A |
| 10. | I-15 SB Ramps at Ontario Avenue | C | C | B | B |
| 11. | 1-15 NB Ramps at Ontario Avenue | B | B | B | B |
| 12. | California Avenue at Ontario Avenue | C | C | C | C |
| 13. | El Sobrante Rd. at Magnolia Avenue | D | D | D | D |
| 14. | I-15 SB Ramps at Magnolia Avenue | C | C | D | D |
| 15. | I-15 NB Ramps at Magnolia Avenue | B | B | B | B |
| 16. | Compton Avenue at Ontario Avenue | C | C | B | B |

Source: Ganddini Group, Inc., *Monte Olivo (Northern Portion) Traffic Analysis*, June 13, 2023.



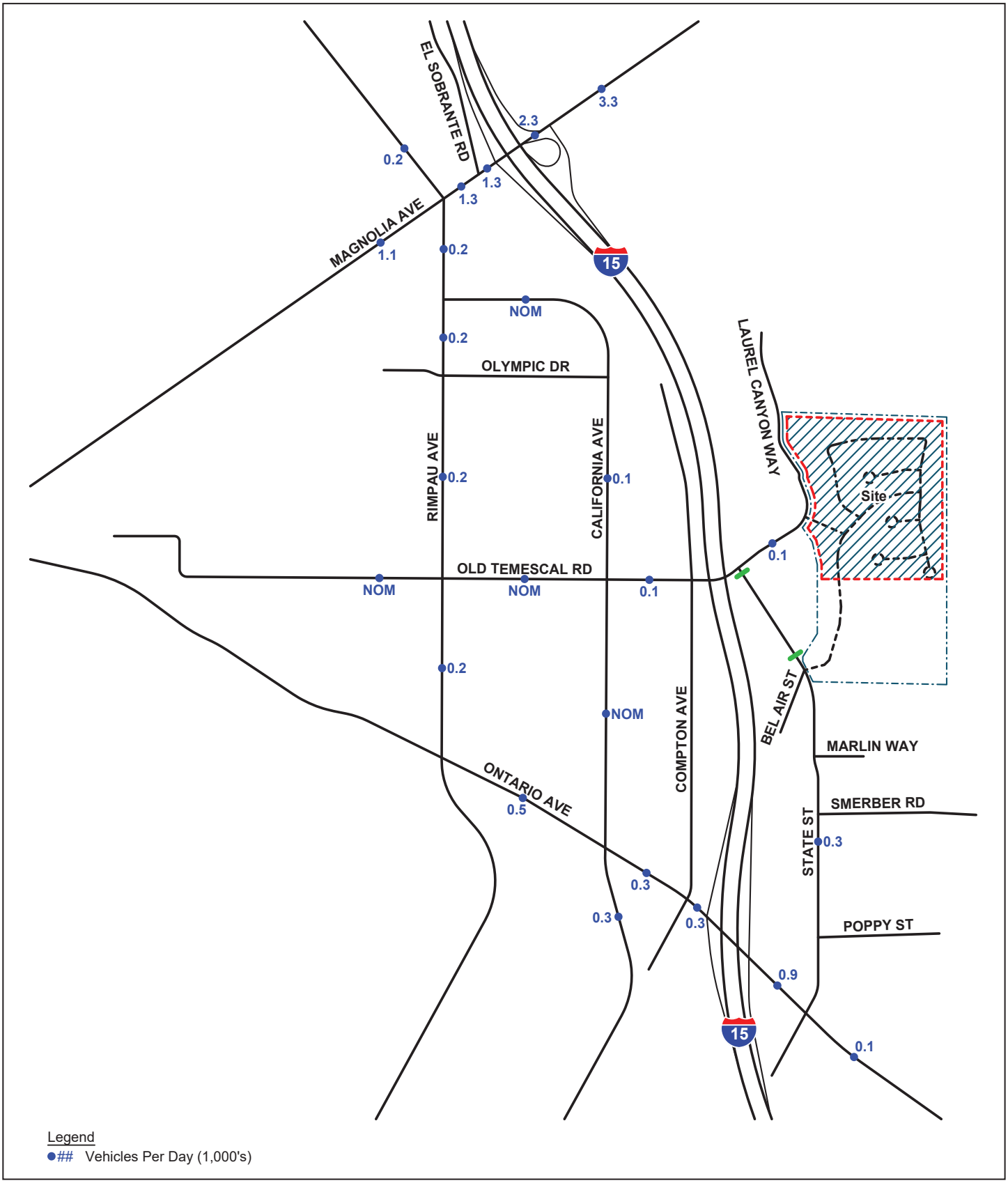

Source: Ganddini Group, Inc.; June 13, 2023.

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## Cumulative Project (Monteolivo – Southern Portion) Trip Distribution

VCS Environmental

**Figure 2.17-11**



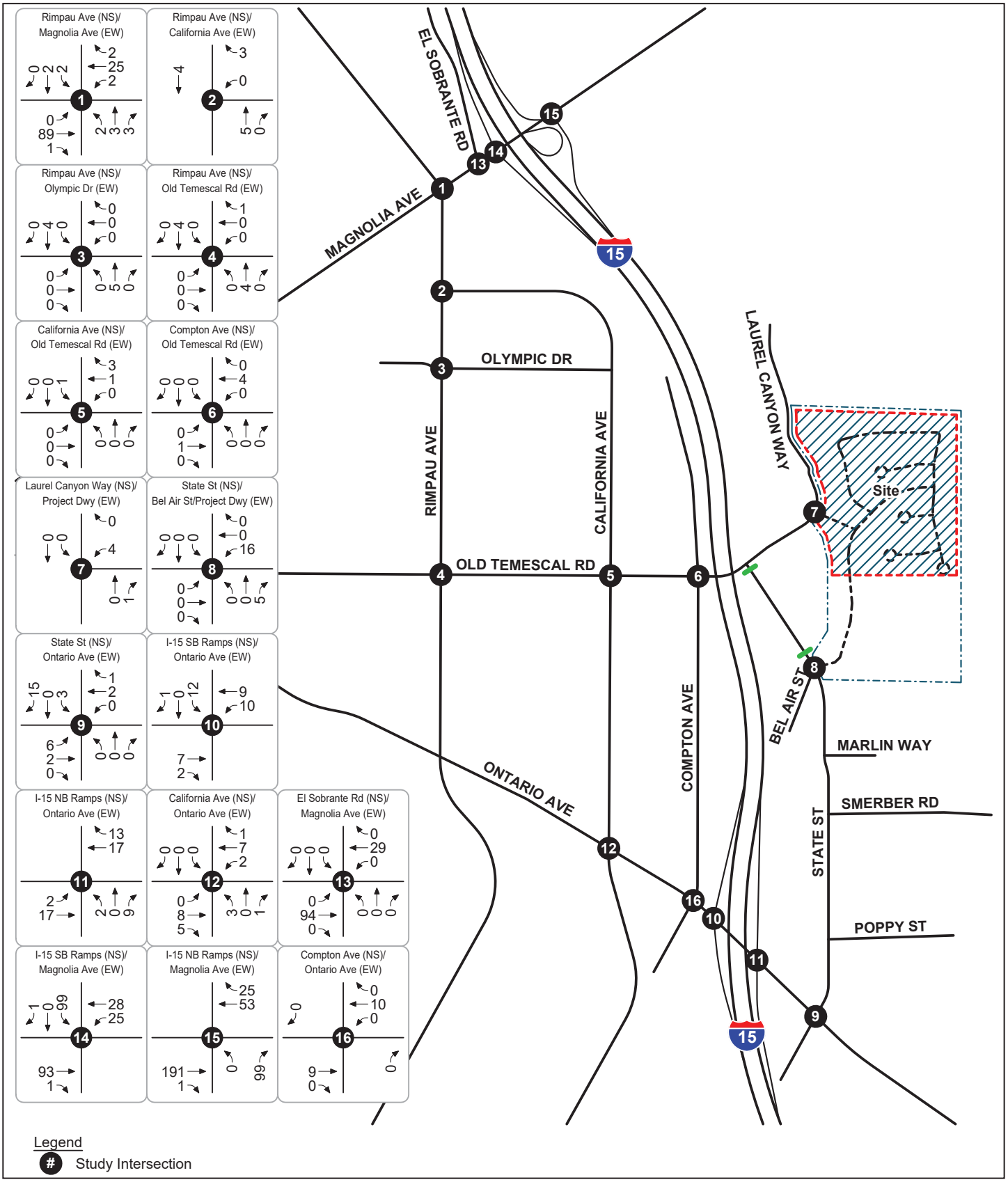

Source: Ganddini Group, Inc.; June 13, 2023.

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## Other Development Average Daily Traffic Volumes

VCS Environmental

**Figure 2.17-12**



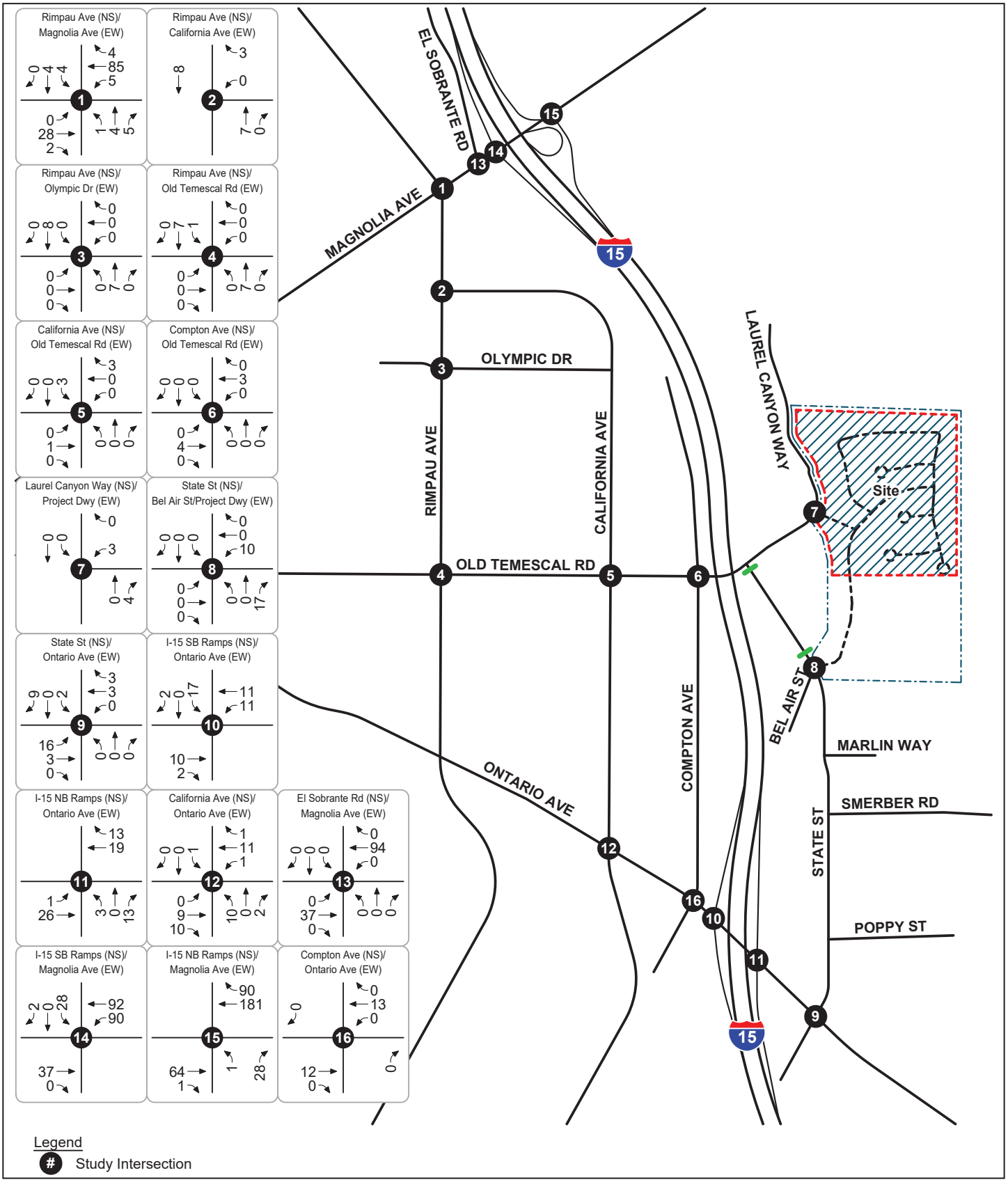

Source: Ganddini Group, Inc.; June 13, 2023.

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## Other Development AM Peak Hour Intersection Turning Movement Volumes

VCS Environmental

**Figure 2.17-13**



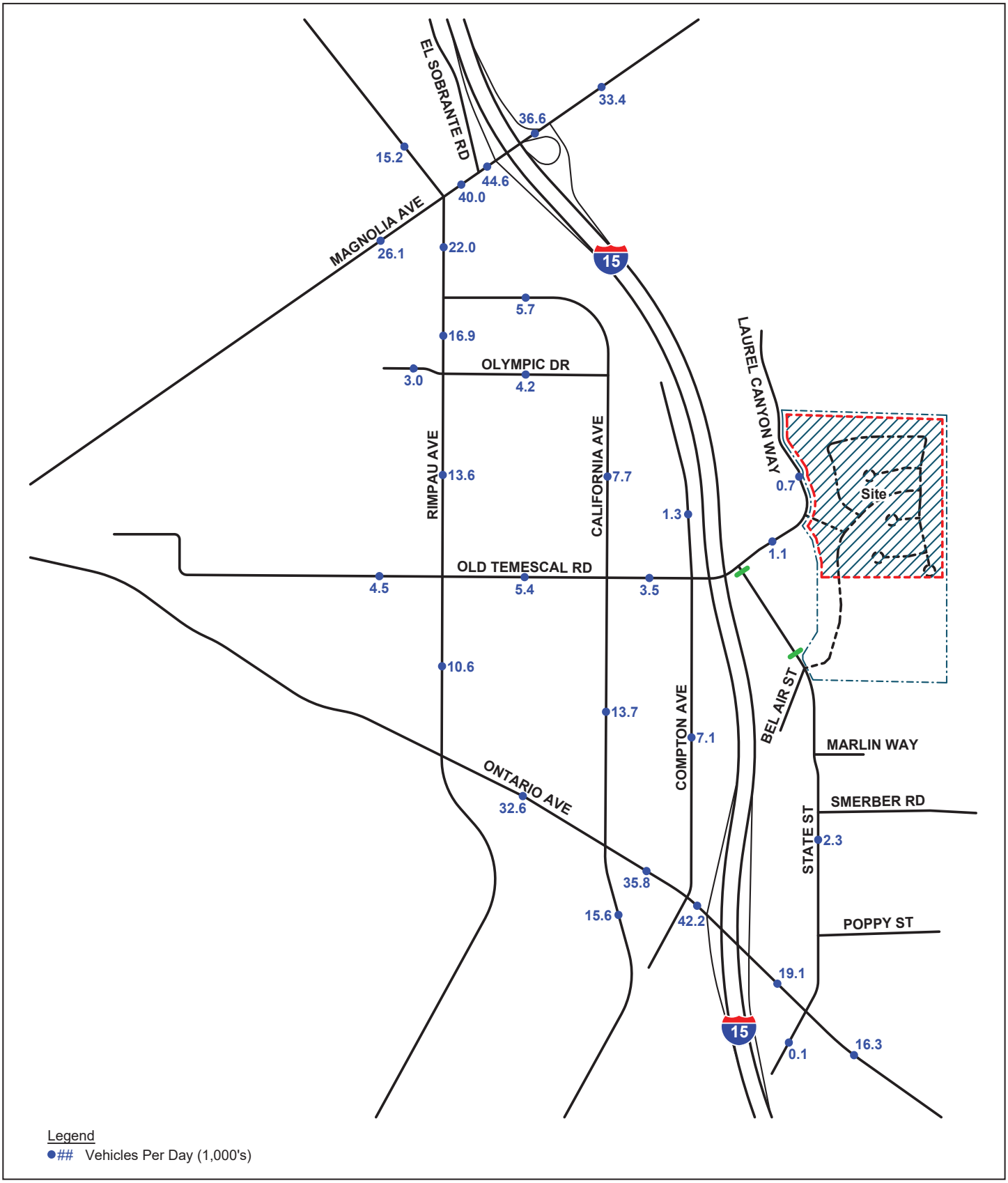

Source: Ganddini Group, Inc.; June 13, 2023.

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## Other Development PM Peak Hour Intersection Turning Movement Volumes

VCS Environmental

**Figure 2.17-14**



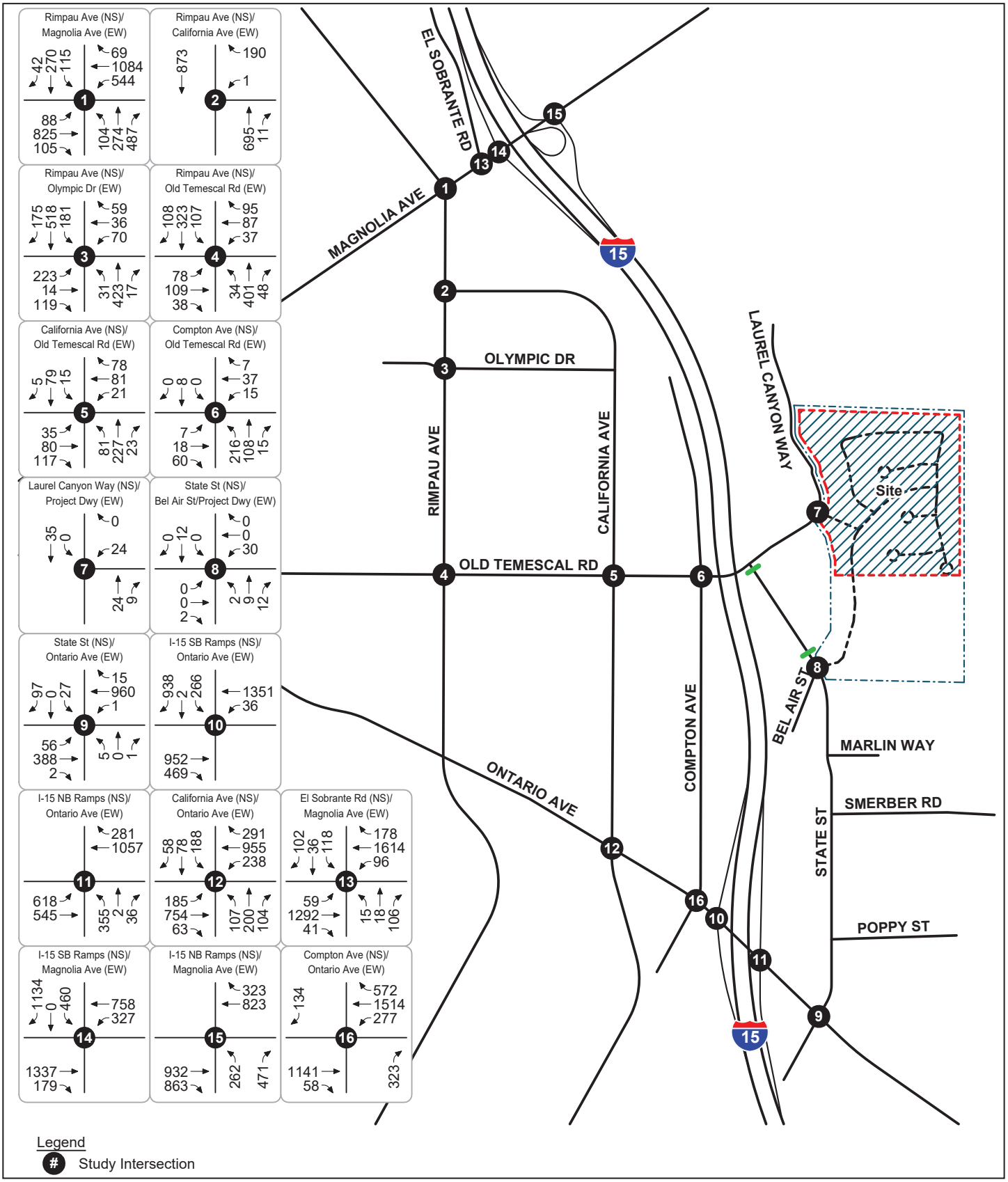

Source: Ganddini Group, Inc.; June 13, 2023.

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## Existing Plus Project Average Daily Traffic Volumes

VCS Environmental

**Figure 2.17-15**



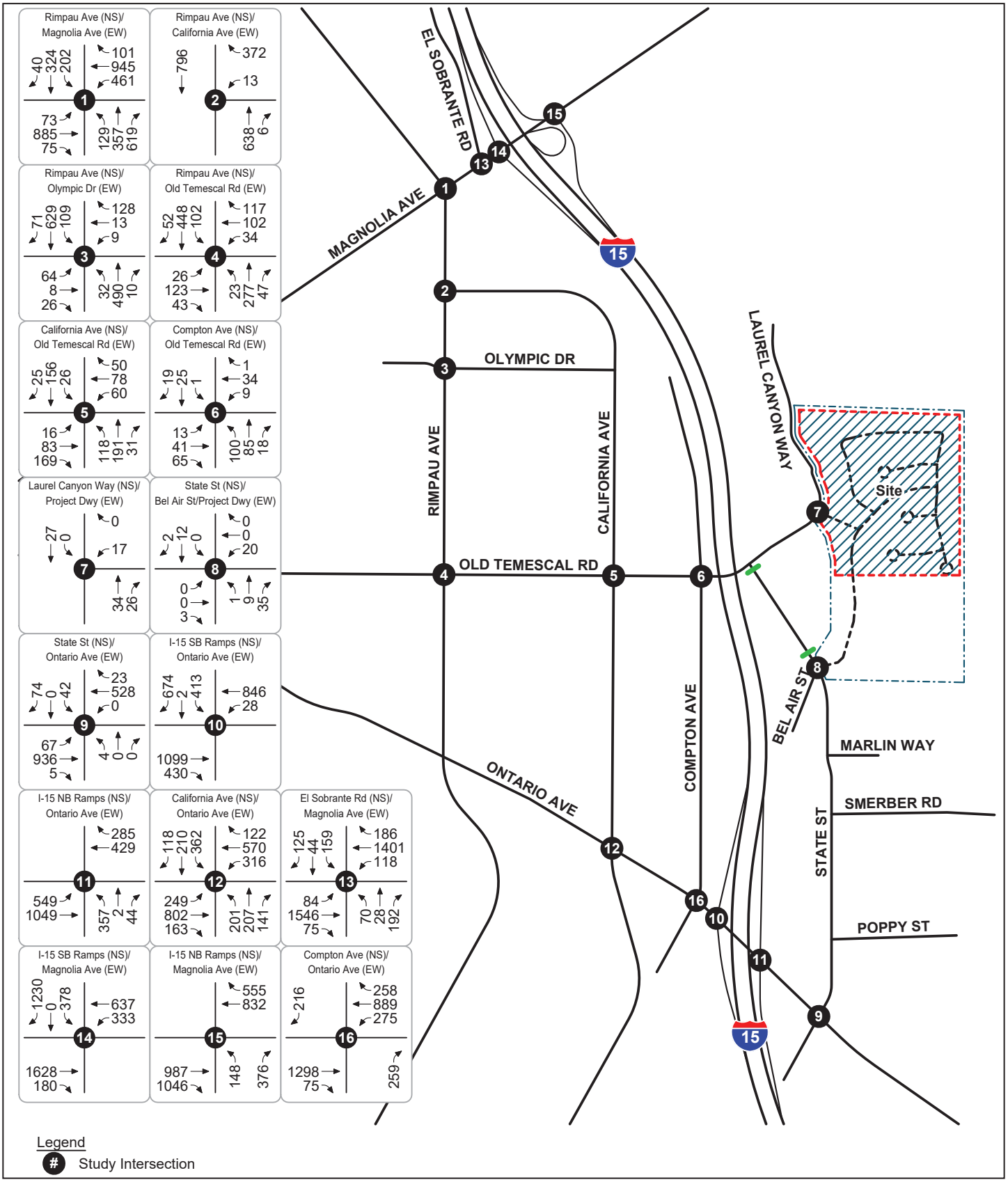

Source: Ganddini Group, Inc.; June 13, 2023.

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## Existing Plus Project AM Peak Hour Intersection Turning Movement Volumes

VCS Environmental

**Figure 2.17-16**




Source: Ganddini Group, Inc.; June 13, 2023.

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## Existing Plus Project PM Peak Hour Intersection Turning Movement Volumes

VCS Environmental

**Figure 2.17-17**

As shown in Table 2.17-5, the study intersections are forecast to operate within acceptable LOS (D or better) during the peak hours for Existing Plus Project conditions, except for the following study intersection that is projected to operate at deficient Levels of Service:

- State Street/Ontario Avenue – #9 (PM peak hour)

To mitigate the deficient intersections for Existing Plus Project conditions, the following improvements are required:

- State Street/Ontario Avenue – #9: Install a traffic signal.

### Opening Year (2025) With Project

The intersection Levels of Service for Opening Year (2025) With Project conditions are shown in Table 2.17-6, *Opening Year (2023) With Project Intersection Levels of Service*. Opening Year (2025) With Project average daily traffic volumes are shown on Figure 2.17-18, *Opening Year (2025) With Project Average Daily Traffic Volumes*. Opening Year (2025) With Project morning and evening peak hour intersection turning movement volumes are shown on Figure 2.17-19, *Opening Year (2025) With Project AM Peak Hour Intersection Turning Movement Volumes* and Figure 2.17-20, *Opening Year (2025) With Project PM Peak Hour Intersection Turning Movement Volumes*.

Table 2.17-6
Opening Year (2025) With Project Intersection Levels of Service

| Intersection | | AM Without Project | AM With Project | PM Without Project | PM With Project |
|---|---|---|---|---|---|
| 1. | Rimpau Avenue at Magnolia Avenue | C | C | C | D |
| 2. | Rimpau Avenue at California Avenue | A | A | B | B |
| 3. | Rimpau Avenue at Olympic Drive | C | C | B | B |
| 4. | Rimpau Avenue at Old Temescal Road | C | C | C | C |
| 5. | California Avenue at Old Temescal Road | B | B | B | B |
| 6. | Compton Avenue at Old Temescal Road | B | B | A | A |
| 7. | Laurel Canyon Way at Project Driveway | A | A | A | A |
| 8. | State Street at Bel Air Street | A | A | A | A |
| 9. | State Street at Ontario Avenue<br>• Traffic Signal | D<br>- | E<br>A | F<br>- | F<br>A |
| 10. | I-15 SB Ramps at Ontario Avenue | C | C | B | B |
| 11. | 1-15 NB Ramps at Ontario Avenue | B | B | B | B |
| 12. | California Avenue at Ontario Avenue | C | C | C | C |
| 13. | El Sobrante Rd. at Magnolia Avenue | D | D | D | D |
| 14. | I-15 SB Ramps at Magnolia Avenue | C | C | D | D |
| 15. | I-15 NB Ramps at Magnolia Avenue | B | B | B | B |
| 16. | Compton Avenue at Ontario Avenue | C | C | C | C |

Source: Ganddini Group, Inc., *Monte Olivo (Northern Portion) Traffic Analysis*, June 13, 2023.

As shown in Table 2.12-17, the study intersections are projected to operate within acceptable LOS (D or better) during the peak hours for Opening Year (2025) With Project conditions, except for the following study intersection that is forecast to continue operating at deficient LOS (E or F):

- State Street/Ontario Avenue – #9 (AM & PM peak hours)

The following improvement is needed to address the deficient intersections for Opening Year (2025) With Project conditions:

- State Street/Ontario Avenue – #9: Install a traffic signal.

Since this is a degradation of LOS for the already deficient intersection operations under Existing conditions, the project applicant is responsible for its fair share of fees to an applicable program for the recommended improvements. The intersection of State Street at Ontario Avenue currently satisfies the traffic signal warrant based on Existing conditions. Figure 2.17-21, *Recommended Intersection Improvements*, shows the recommended intersection improvements.

### ROADWAY SEGMENT ANALYSIS

The road link capacity analysis is assessed based on the theoretical 24-hour average daily traffic (ADT) capacity for roadways in terms of volume over capacity ratios. The project traffic report identifies that for Opening Year (2025) With Project conditions the study roadway links are projected to function at LOS "C" or better, except for the following roadway links which would operate at LOS "D" with existing roadway width:

- Rimpau Avenue, from Magnolia Avenue to California Avenue
- Magnolia Avenue, from El Sobrante Road to I-15 Southbound Ramps
- Ontario Avenue, from Compton Avenue to I-15 Southbound Ramps

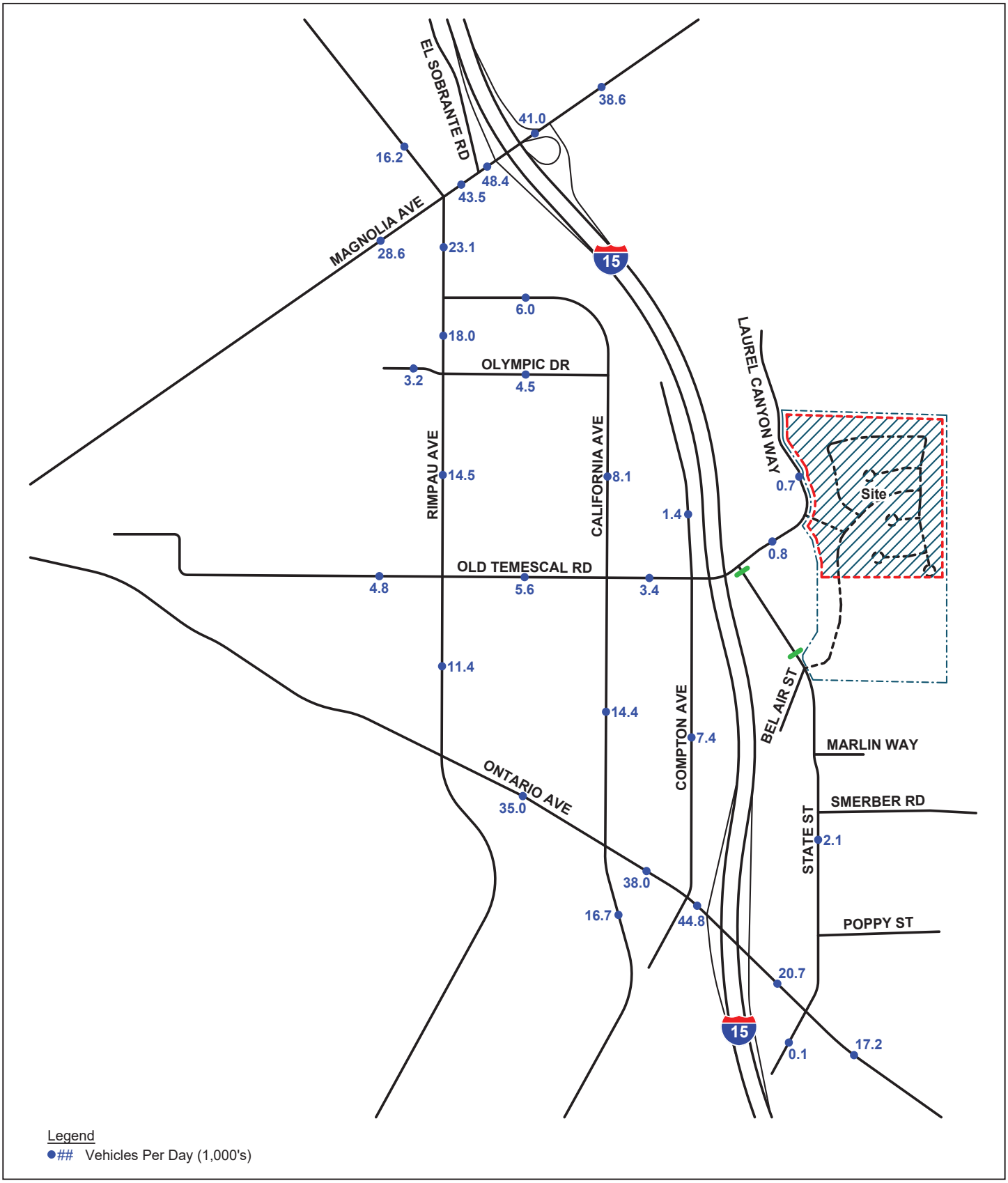
Since the City of Corona would be improving and widening Ontario Avenue from California Avenue to State Street, no additional improvements are recommended for Ontario Avenue. The study intersections along Rimpau Avenue and Magnolia Avenue are projected to operate at an acceptable LOS "D" or better; therefore, no additional improvements are recommended for Rimpau Avenue and Magnolia Avenue.

### BICYCLE FACILITIES

The proposed project would construct sidewalks on local streets to facilitate pedestrian circulation. The City of Corona bike paths are illustrated in Figure 2.17-22, *City of Corona General Plan Bike Routes*. As shown in Figure 2.17-22,there are no designated bikeways near the project site. Therefore, the construction and operation would not conflict with existing or planned pedestrian or bikeway circulation systems.

### TRANSIT SERVICE

The Riverside Transit Agency (RTA) and Metro Klink Rail Service provide transit facilities for the City of Corona. Figure 2.17-23, *City of Corona General Plan Transit Routes*, shows existing public transit facilities and routes in the project vicinity. As shown in Figure 2.17-23 there are no transit facilities near the project site. Therefore, the construction and operation would not conflict with existing or planned transit facilities.



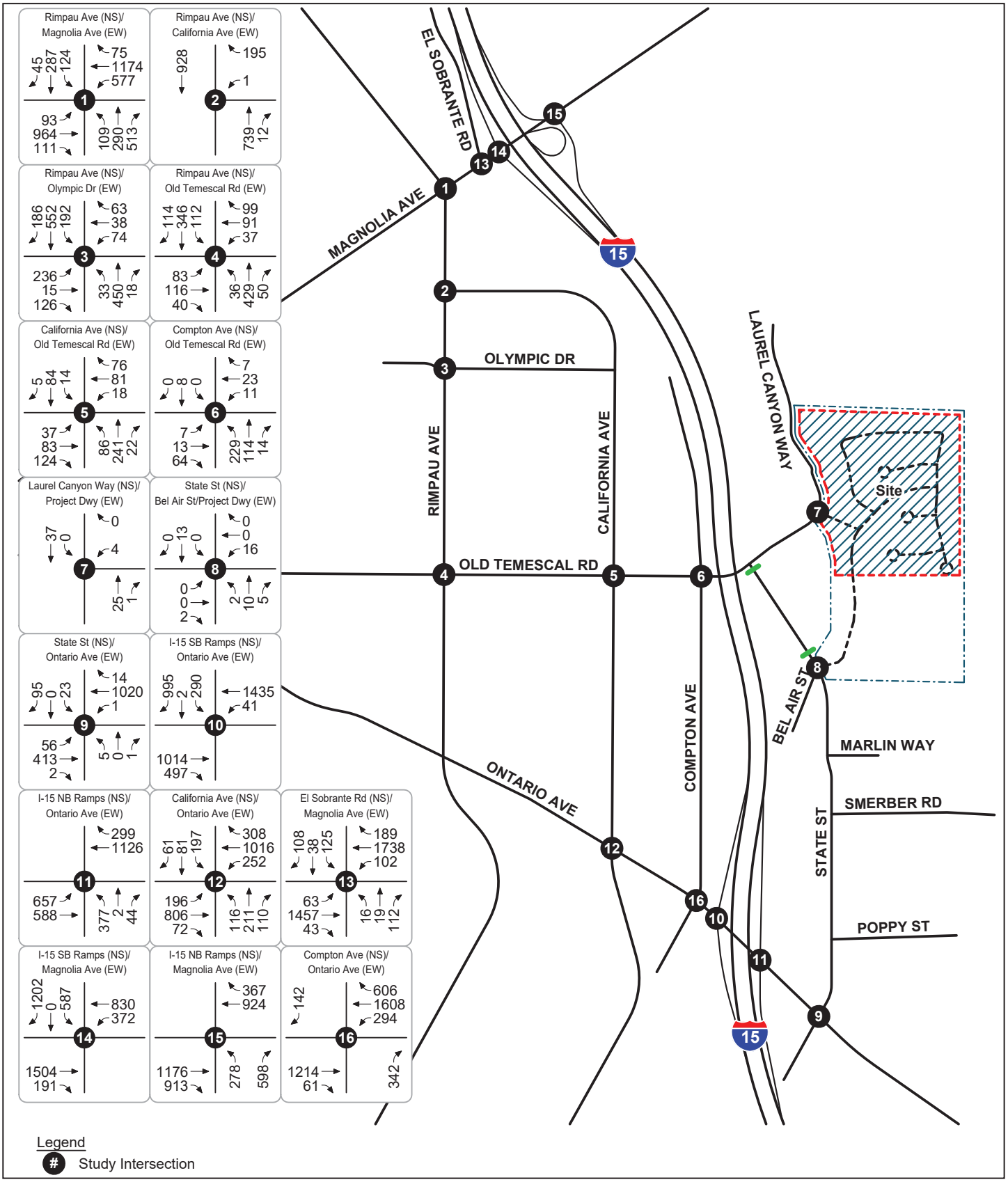

Source: Ganddini Group, Inc.; June 13, 2023.

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## Opening Year (2025) With Project Average Daily Traffic Volumes

VCS Environmental

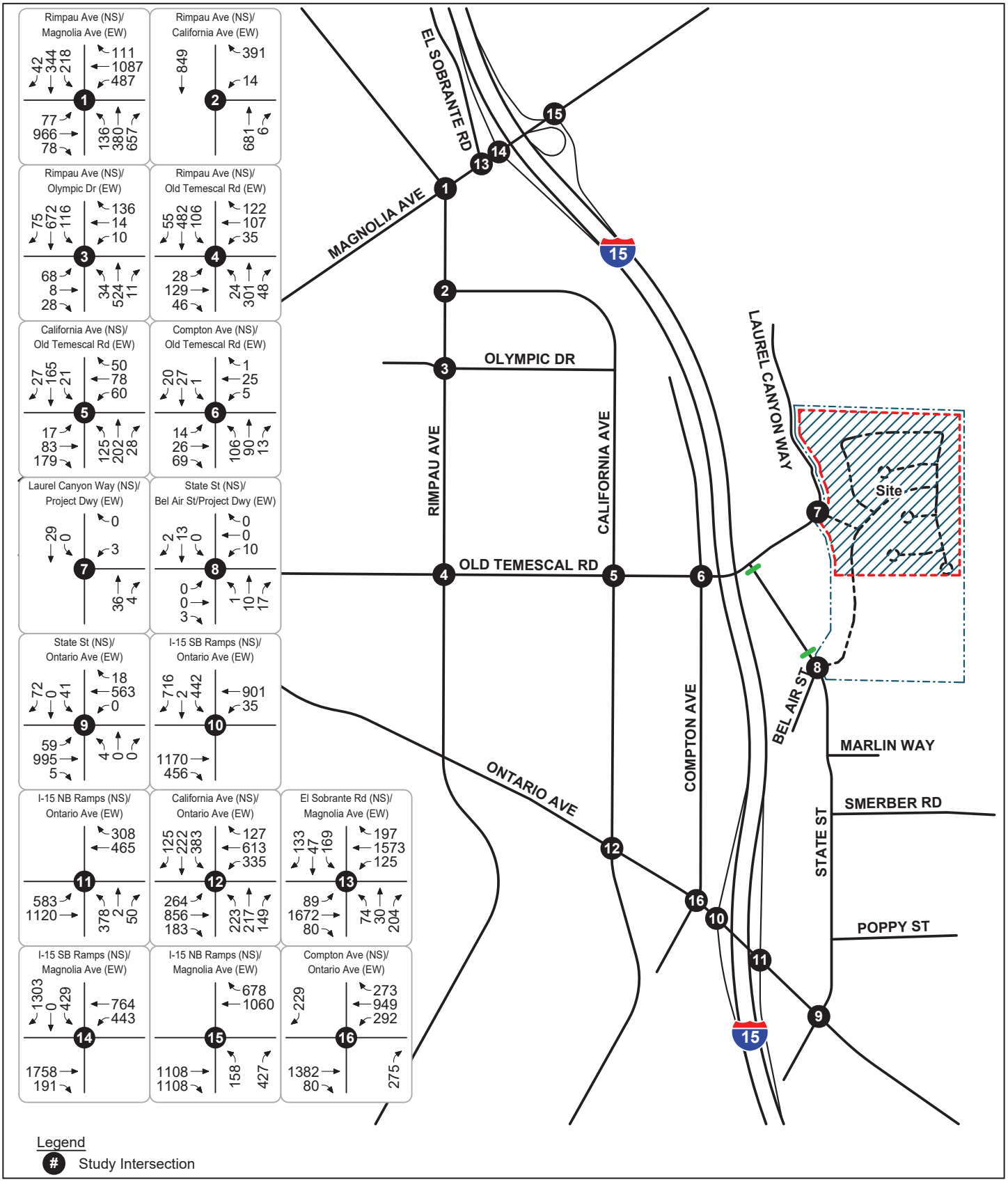
**Figure 2.17-18**




Source: Ganddini Group, Inc.; June 13, 2023.

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## Opening Year (2025) With Project AM Peak Hour Intersection Turning Movement Volumes



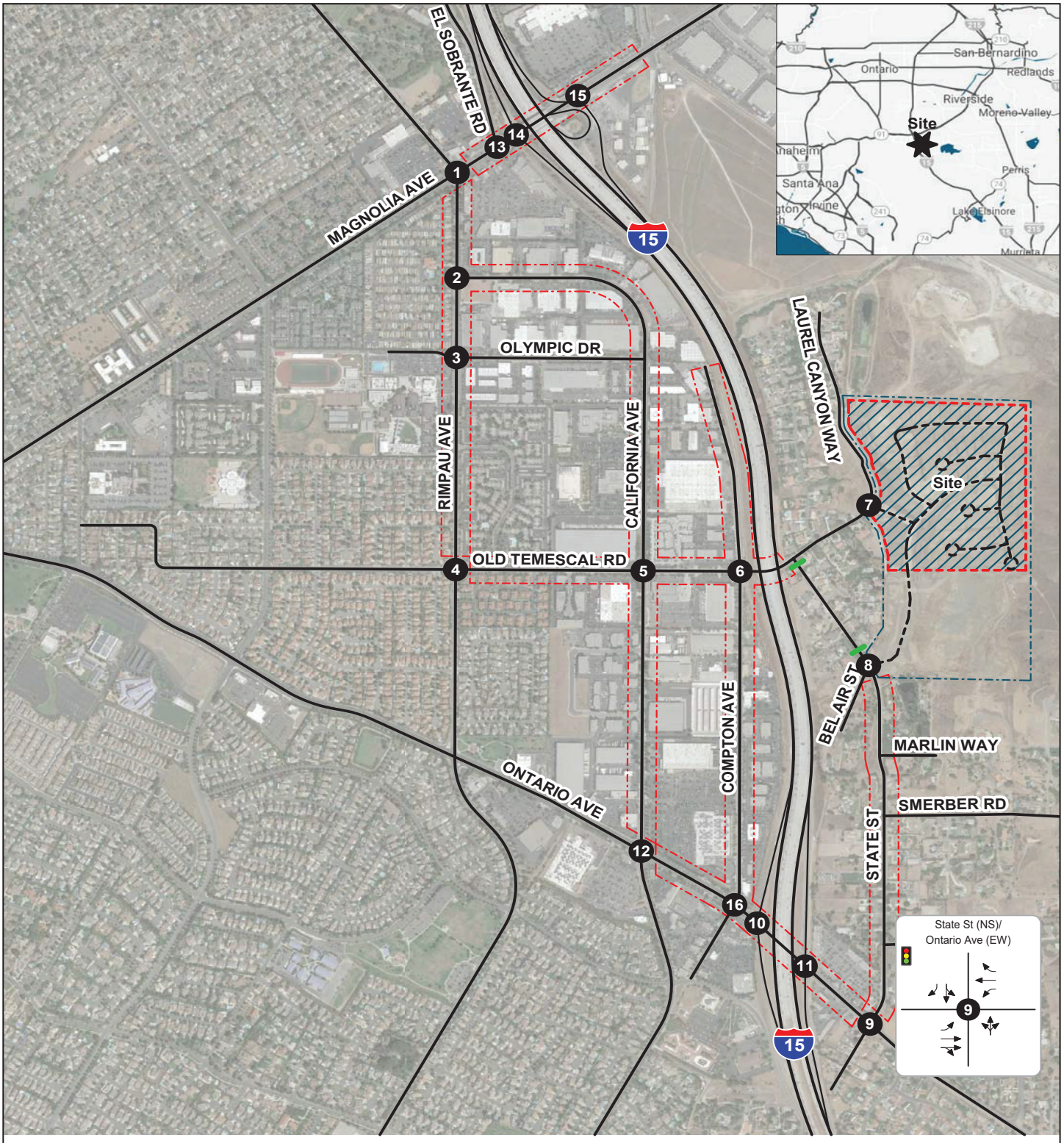

Source: Ganddini Group, Inc.; June 13, 2023.

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## Opening Year (2025) With Project PM Peak Hour Intersection Turning Movement Volumes

VCS Environmental

**Figure 2.17-20**



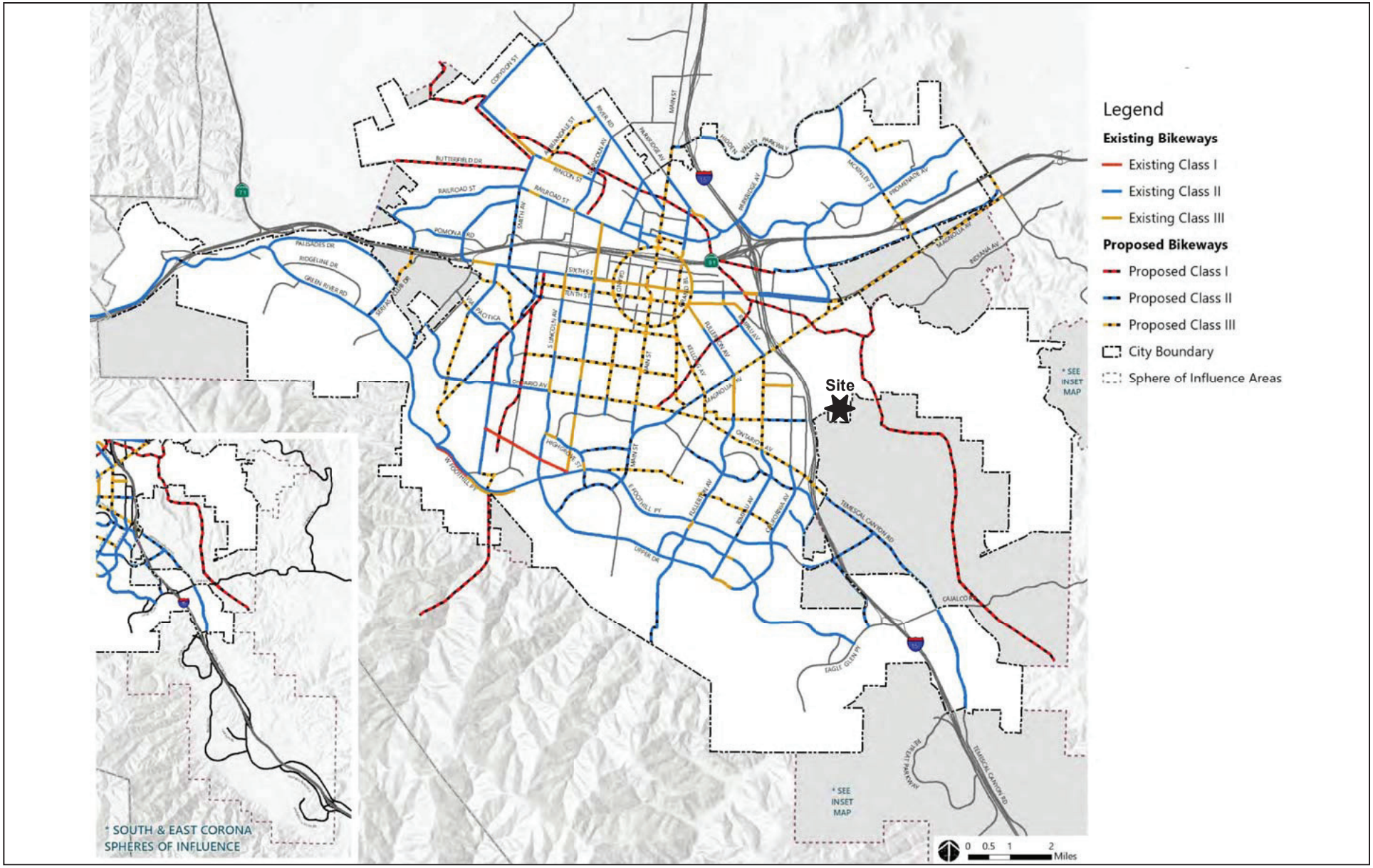

Source: Ganddini Group, Inc.; June 13, 2023.

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## Recommended Intersection Improvements

VCS Environmental

**Figure 2.17-21**



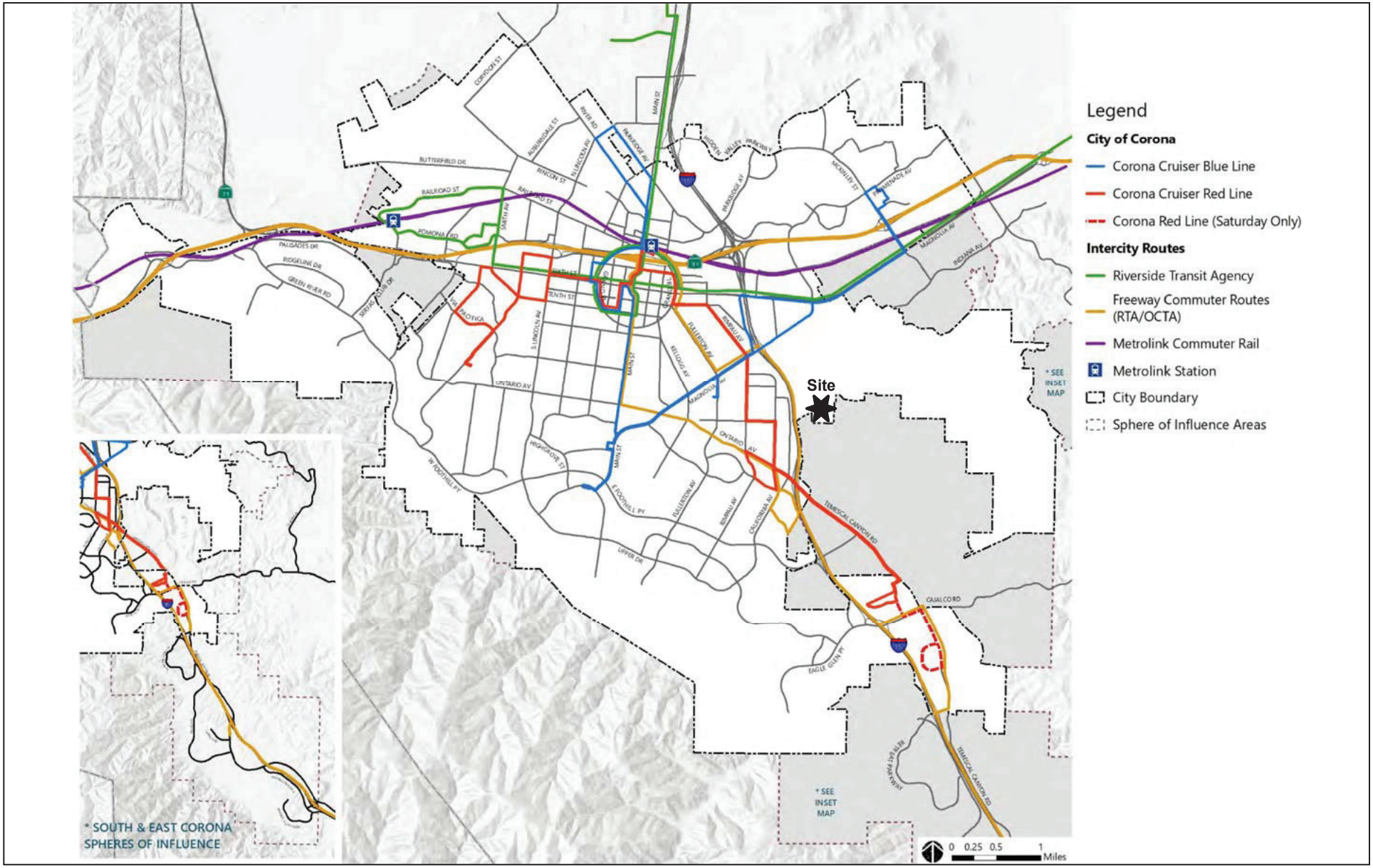

Source: City of Corona; 2017.

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## City of Corona General Plan Bike Routes

VCS Environmental

**Figure 2.17-22**




Source: City of Corona and Riverside Transportation Agency; 2019.

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## City of Corona General Plan Transit Routes

VCS Environmental

**Figure 2.17-23**

**Mitigation Measures:**

TRANS-1: Prior to map recordation, the project shall constrict or if the signal is constructed, provide a fair share payment for the installation of the traffic signal at the intersection of State Street/Ontario Avenue.

**b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?**

**Previously Approved MND Finding:** The previously approved IS/MND was adopted prior to inclusion of Section 15064.3 in the CEQA Guidelines. Therefore, no Vehicle Miles Traveled (VMT) analysis was prepared.

**Addendum Finding Less Than Significant Impact:** The Vehicle Miles Traveled (VMT) analysis has been assessed based on the City of Corona guidelines. Using the Western Riverside Council of Governments (WRCOG) VMT Screening Tool, the project site is located within a low VMT generating Traffic Analysis Zone (TAZ) based on total VMT (28.13 VMT/SP) and Residential Home-Based VMT (14.3 VMP/PC). Appendix H of the Traffic Analysis Report shows the VMT screening results for the project site. Per the City of Corona guidelines, it is presumed to be less than significant VMT impact for projects located in low VMT generating model TAZ. These TAZs generate total daily VMT/SP that is less than the baseline level for the City/jurisdiction.

Per the secondary screening step, the proposed project land use is consistent to the City of Corona General Plan land use destination of Estate Residential (ER) of 1 to 3 dwelling units (DU) per acre. The project site is approximately 61.6 acres with 103 DU, which is 1.8 DU per acre. The proposed project site is also located within one-half mile of a bus stop and within one mile of employment and shopping destinations. Based on the screening steps, the project is anticipated to generate less than significant VMT impact and no additional improvements are recommended.

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

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined that traffic hazards that could be associated with the project were less than significant.

**Addendum Finding Less Than Significant Impact:** The construction and operation of the proposed project would occur on the project site and would not involve any construction or long-term operational activities on a public roadway that would increase traffic hazards.

There were some traffic safety concerns raised by local residents near the neighborhoods along State Street. Therefore, this section evaluates the following safety concerns along State Street:

- Speed limit signage and vehicular speeds
- Sight distance at project driveway
- Crash history
- Lane width reduction
- Street lighting

### SPEED LIMIT SIGNAGE AND VEHICULAR SPEED

State Street has a posted speed limit of 35 miles per hour (mph). There are currently three (3) speed limit signs posted along State Street at the following locations as previously shown in Figure 2.17-2, *Existing Lane Geometry and Intersection Traffic Controls*:

- Northbound direction south of Poppy Street
- Southbound direction south of Bel Air Street
- Southbound direction south of Marlin Way

A speed survey was conducted on October 25, 2022 on State Street between Smerber Road and Poppy Street (refer to Appendix I of the Traffic Analysis Report). The speed survey shows that the 85th-percentile speed on State Street is 39 miles per hour (mph). Based on the California Manual on Uniform Traffic Control Devices (CA MUTCD) guidelines, the speed limit should be rounded to the nearest 5 mph increment of the 85th-percentile speed, which would be 40 mph in this case. However, for cases in which the nearest 5 mph increment of the 85th-percentile speed would require a rounding up, then the speed limit may be rounded down to the nearest 5 mph increment below the 85th percentile speed if no further reduction is used. Therefore, the current posted speed limit of 35 mph is considered appropriate and reasonable.

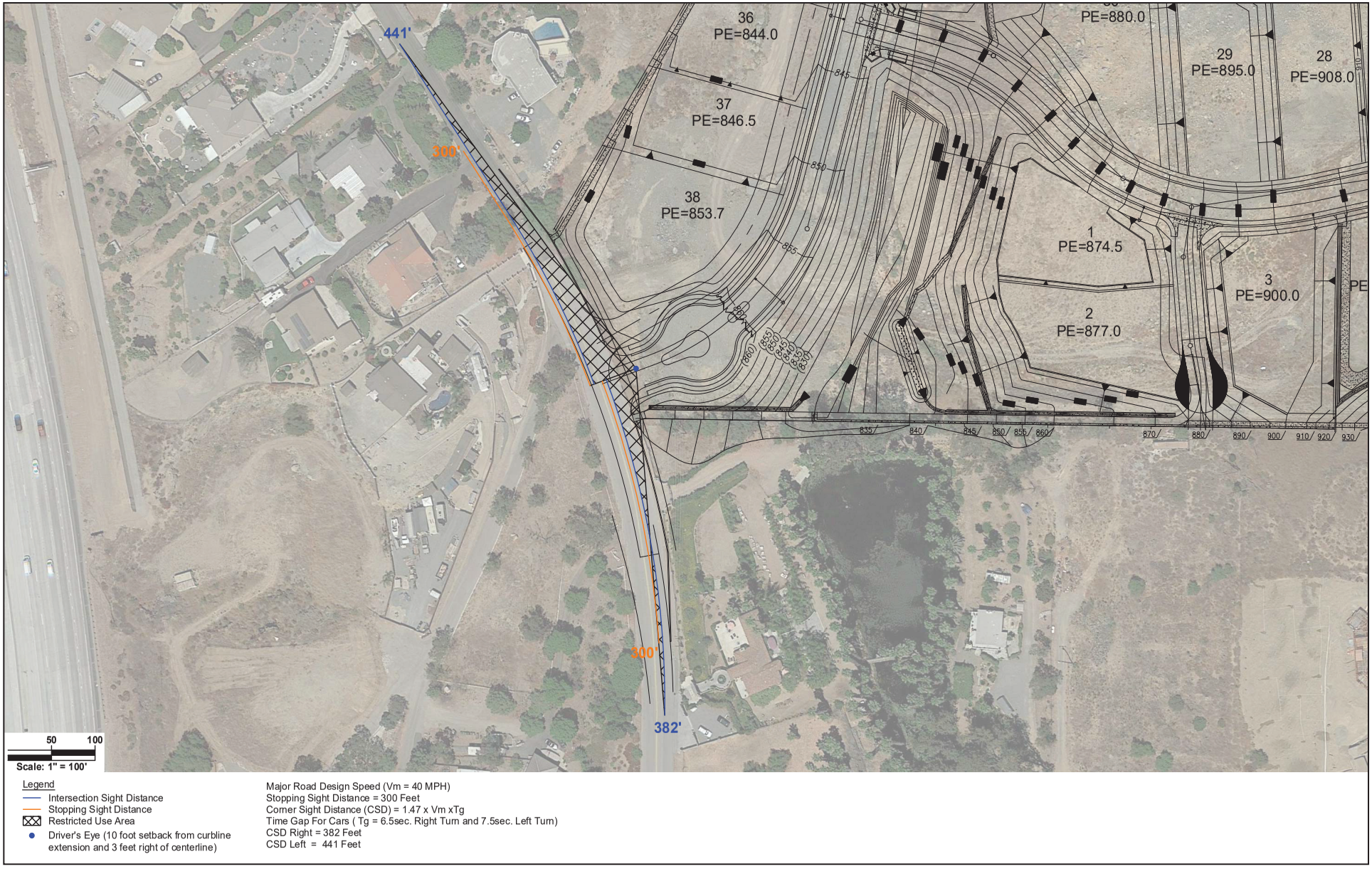
Currently, there is a speed limit sign on the southbound direction south of Marlin Way while the remainder 2,500 feet of State Street from Marlin Way toward the south has no other speed limit sign. Since the southbound direction of State Street is going downhill where vehicles tend to travel at higher speeds, it is recommended that an additional speed limit sign be installed on the southbound direction south of Smerber Road to warn the motorists to slow down and adhere to the appropriate speed. Another option is to replace the existing speed limit sign on the southbound direction south of Marlin Way with a radar speed sign which is more visible and illuminated. This location of State Street is near the vertical crest of State Street and has a steeper grade than other segments.

### SIGHT DISTANCE AT PROJECT DRIVEWAY

The sight distance analysis for the project driveway on State Street is shown in Figure 2.17-24, *Sight Distance Analysis for the Project Driveway on State Street*. The sight distance is evaluated based on sight distance guidelines specified in the American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Street (7th Edition, 2018)* ["*AASHTO Greenbook*"]. As shown in Figure 2.17-24, adequate sight distances can be provided as long as any landscaping near the northeast and southeast corners of the curb returns at the driveway on State Street does not obstruct drivers' views. A design speed of 40 miles per hour was used based on the results of the radar speed survey (85th-percentile speed of 39 miles per hour). Based on the sight distance formulas, an intersection sight distance of 441 feet is desirable with a minimum stopping sight distance of 300 feet.

### CRASH HISTORY

Based on the crash history records from the County of Riverside, there are no recent vehicular crashes along State Street from the project site to Ontario Avenue. Since State Street appears to be relatively safe with no recent vehicular crashes, there should be no major safety concerns regarding sight distance and speed factors.




Source: Source: Ganddini Group, Inc.; January 26, 2023.

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## Sight Distance Analysis for the Project Driveway on State Street

### LANE WIDTH REDUCTION

The approximate widths of the existing pavement and travel lanes along State Street are listed below:

- Ontario Avenue to Poppy Street: 38 to 42 feet (Travel lanes are 19 to 21 feet)
- Poppy Street to Smerber Road : 40 to 42 feet (Travel lanes are 19 to 23 feet)
- Smerber Road to Marlin Way : 42 feet (Travel lanes are 19 to 21 feet)
- Marlin Way to Bel Air Street: 42 feet (Travel lanes are 19 to 21 feet)

The travel lane widths along State Street are between 19 feet and 23 feet which are wider than a typical travel lane that is usually between 12 and 14 feet. A wider travel lane usually results in higher vehicle speed while a narrow travel lane would likely encourage motorists to slow down. Even though lane width reduction is an effective tool to reduce vehicular speed in most cases, it is unnecessary to implement lane reduction on State Street because vehicular speed does not appear to be a safety issue due to the lack of recent vehicular crashes and there is adequate sight distance for the proposed project driveway. Other speed reduction strategies such as installing additional speed limit signs and radar speed signs should be considered prior to lane width reduction.

### STREET LIGHTING

There are no street lights on State Street except for a short 400-foot segment where there are street lights on the west side of State Street from Ontario Avenue to the northern boundary of the shopping center located west of State Street. Therefore, it is dark along most of State Street during the evenings. The County may consider installing new street lighting that would improve nighttime visibility, however, this may result in increased vehicular speeds on State Street at night.

**Mitigation Measures:**

TRANS-2: The following circulation improvements are recommended to enhance safe vehicle within the project area:

- Prior to issuance of first Certificate of Occupancy, Laurel Canyon Way, adjacent to the project boundary, shall be constructed at its ultimate half-section width, including landscaping and parkway improvements in conjunction with development per City standards.
- Prior to issuance of the first Certificate of Occupancy, the project shall provide a secondary access road through the southern portion of the site which would create a stop-controlled secondary access driveway at State Street for project residents only.
- All roadway design, traffic signing and striping, and traffic control improvements relating to the proposed project should be constructed in accordance with applicable engineering standards and to the satisfaction of the City of Corona and applicable portions to the County of Riverside.
- Prior to issuance of first Certificate of Occupancy, site-adjacent roadways shall be constructed or repaired at their ultimate half-section width, including landscaping and parkway improvements in conjunction with development, or as otherwise required by the City of Corona.

- Onsite traffic signing and stripping plans shall be submitted to City of Corona for approval in conjunction with detailed construction plans for the project.
- The final grading, landscaping, and street improvement plans should demonstrate that sight distance standards are met in accordance with applicable City of Corona, County of Riverside and California Department of Transportation sight distance standards.
- The northeast and southeast corners of the project site access driveway at State Street shall be limited to low growing ground cover and/or hardscape to ensure that overgrown landscape would not obstruct driver views along State Street. The final Improvement Plans for the State Street project driveway access shall be approved by the City of Corona and County of Riverside.

### d) Result in inadequate emergency access?

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND determined that potential emergency impacts would be less than significant.

**Addendum Finding Less Than Significant Impact:** The Proposed Project Modifications would not increase impacts associated with conflicts with adopted emergency plans. The Proposed Project Modifications to provide proposed circulation access would not impede adequate emergency access to areas offsite from the project. Temporary construction activities associated with the project could result in temporary partial lane closures to access the project site. The project would be required to coordinate with the City of Corona to ensure adequate emergency access is maintained at all times. With compliance with the City of Corona Traffic Control requirements, potential emergency access impacts would be less than significant. Compared to the previously adopted IS/MND, the Proposed Project Modifications would result in the same level of potential traffic hazard impacts.

### SUMMARY OF FINDINGS FOR TRANSPORTATION

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

## 2.18 Tribal Cultural Resources

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: | | | | |
| 1) 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), or | ☐ | ☐ | ☒ | ☐ |
| 2) A 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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

### PROJECT IMPACTS

**a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:**

**1) 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)?**

**2) A 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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.**

**Previously Approved MND Finding Less Than Significant Impact With Mitigation Incorporated:** The previously approved IS/MND evaluated impacts to tribal resources as part of the evaluation of potential impacts to cultural resources and determined potential impacts to be less than significant.

**Addendum Finding Less Than Significant Impact With Mitigation Incorporated:** The area where the Proposed Project Modifications would be implemented has been rough graded and no Native American cultural resources were encountered. It would be highly unlikely that implementation of the Proposed Project Modifications would encounter unknown cultural resources. On the side of caution and in the remote event unknown Native American cultural resources are encountered, Mitigation Measures CR-16, CR-17 and CR-18, described in Section 1.0, *Introduction*, are recommended. With implementation of Mitigation Measures CR-16, CR-17, and CR-18 potential impacts to unknown Native American cultural resources would be less than significant. Compared to the previous adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of impacts to unknown Native American cultural resources.

**Mitigation Measures:** Mitigation Measures CR-16, CR-17 and CR-18 are required.

## SUMMARY OF FINDINGS FOR TRIBAL CULTURAL RESOURCES

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

## 2.19 Utilities and Service Systems

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Require or result in the relocation or construction of new or expanded water, or wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? | ☐ | ☐ | ☒ | ☐ |
| b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? | ☐ | ☐ | ☒ | ☐ |
| c. Result 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? | ☐ | ☐ | ☒ | ☐ |
| d. 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? | ☐ | ☐ | ☒ | ☐ |
| e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

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

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the original project would have no impact on utility services.

**Addendum Finding No Impact:** Implementation of the Proposed Project Modifications would not require the relocation or construction of new or expanded utility services beyond what was required for the original project. Compared to the previously adopted IS/MND, the Proposed Project Modifications would result in the same level of impacts.

**b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the original project would have no adverse impacts on utility services.

**Addendum Finding No Impact:** Implementation of the Proposed Project Modifications would not increase the number of residential units approved for the project and would not increase the demand for water supplies to serve the project and the foreseeable future development during normal, dry, and multiple dry years beyond the level of demand generated from the original project. Compared to the previously adopted IS/MND, the Proposed Project Modifications would result in the same level of impacts.

**c) Result 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?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the original project would have no adverse impacts on utility services.

**Addendum Finding No Impact:** Implementation of the Proposed Project Modifications would not increase the number of residential units approved for the project and would not increase the demand for wastewater treatment beyond the level of demand generated from the original project. Compared to the previously adopted IS/MND, the Proposed Project Modifications would result in the same level of impacts.

**d) 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?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the original project would not generate solid waste in excess of State or local standards.

**Addendum Finding No Impact:** Implementation of the Proposed Project Modifications would retain the same dwelling unit count and would not increase in demand for solid waste disposal services beyond the level of demand for the original project. Compared to the previously adopted IS/MND, the Proposed Project Modifications would result in the same level of impacts.

**e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?**

**Previously Approved MND Finding No Impact:** The previously approved IS/MND determined the original project would not conflict with federal, state, and local management and reduction statutes and regulations related to solid waste.

**Addendum Finding No Impact:** Like the original project, any solid waste generated by the Proposed Project Modifications would be hauled from the site, diverted, and recycled, in accordance with the California Integrated Waste Management Act and other local management and reduction statutes related to solid waste. Compared to the previously adopted IS/MND, the Proposed Project Modifications would result in the same level of impacts.

## SUMMARY OF FINDINGS FOR UTILITIES AND SERVICE SYSTEMS

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

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## 2.20 Wildfire

| If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Substantially impair an adopted emergency response plan or emergency evacuation plan? | ☐ | ☐ | ☒ | ☐ |
| b. 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? | ☐ | ☐ | ☒ | ☐ |
| c. 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? | ☐ | ☐ | ☒ | ☐ |
| d. 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? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

A wildland fire is a non-structural fire that occurs in vegetative fuels. Wildland fires can occur in undeveloped areas and spread to urban areas where the landscape and structures are not designed and maintained to be ignition resistant. The potential for wildland fires represents a hazard where development is adjacent to open space or designated Fire Hazard Safety Zones. Subsequent to approval of the previously approved MND, the California Department of Forestry and Fire Protection Fire Severity Zone Maps have been updated. According to the California Department of Forestry and Fire Protection, portions of the project site are adjacent to Moderate Fire Hazard and State Responsibility areas.

#### a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

**Previously Approved MND No Impact:** The previously adopted IS/MND determined the original project site was not in a Fire Hazard Area and would not expose people or structures to significant wildland fire risks or impair an adopted emergency response plan or emergency evacuation plan.

**Addendum Finding No Impact:** In the event an emergency response plan or evaluation plan is required to be implemented, the City of Corona Police Department would be in charge of evacuating neighborhoods in the event of a fire that threatens homes. These evacuations would be decided within the Incident Command Structure in consultation with the fire department, other law enforcement, public works, and local government liaisons in order to establish when and where they would occur. In the event of an emergency, residents would be directed to specific evacuation routes to avoid conflicts with emergency response plans. With implementation of the Incident Command Structure, the proposed project would not substantially impair an adopted emergency response plan or emergency

evacuation plans and potential impacts would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of fire hazard impacts.

**b) 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?**

**Previously Approved MND Finding No Impact:** The previously adopted IS/MND determined the original project site was not in a Fire Hazard Area.

**Addendum Finding No Impact:** Topography influences the movement of air and the direction of a fire course. Additionally, wind events magnify the risks of wildfire and would have the potential to expose inhabitants to elevated pollutant concentrations. To minimize project contiguity to wildland slope areas that could act as conduit for wildland fire, the project plans have been modified to square off Lots 17-21 to remove the common area behind homes and incorporate a radiant heat wall behind Lots 16-29. Additionally, the CC&R's would include a prohibition of the installation of combustible materials in the 30-foot zone width adjacent to the heat wall within Lots 16-29. Additionally, the proposed project would have surrounding roadways and driveways which would also act as fire breaks. Therefore, the proposed project would not exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire and potential impacts would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of fire hazard impacts.

**c) 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?**

**Previously Approved MND Finding No Impact:** The previously adopted IS/MND determined the original project site was not in a Fire Hazard Area and would not expose people or structures to significant wildland fire risks.

**Addendum Finding No Impact:** The project was initially graded which included the removal of all vegetation. The proposed fuel modification program would remove common area vegetation behind homes, provide radiant heat walls and prohibit the installation of combustible materials in a 30-foot zone. Implementation of these fuel modification measures would not result in any adverse temporary impacts or ongoing impacts to the environment. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of fire hazard impacts.

**d) 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?**

**Previously Approved MND Finding No Impact:** The previously adopted IS/MND determined the original project site was not in a Fire Hazard Area and would not expose people or structures to significant wildland fire risks.

**Addendum Finding No Impact:** Landslides, including mud and debris flows can be triggered by erosion and downslope runoff caused by rain following a fire. The project site is not in an area that is subject to landslides or downstream flooding that would increase the risk for post-fire slope instability, or drainage change impacts and potential impacts would be less than significant. Compared to the previously adopted IS/MND, implementation of the Proposed Project Modifications would result in the same level of fire hazard impacts.

## SUMMARY OF FINDINGS FOR WILDFIRE

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

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## 2.21 Mandatory Findings of Significance

| Would the project: | New Potentially Significant Impact | New Mitigation is Required | No New Impact/ No Impact | Reduced Impact |
|---|---|---|---|---|
| a. Have the potential to substantially 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 a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | ☐ | ☐ | ☒ | ☐ |
| b. 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)? | ☐ | ☐ | ☒ | ☐ |
| c. Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? | ☐ | ☐ | ☒ | ☐ |

### ENVIRONMENTAL ANALYSIS

**a) Have the potential to substantially 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 a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND identified that the original project would have less than significant impacts in regard to the potential for the project to degrade 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 a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory.

**Addendum Finding Less Than Significant Impact:** Implementation of the Proposed Project Modifications would not change the biological analysis and conclusions included in the previously adopted IS/MND. Additionally, the Proposed Project Modifications would not result in additional significant impacts to cultural resources. No new impacts or intensification of previously identified impacts would occur with implementation of the Proposed Project Modifications.

**b) 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)?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND identified the original project would not have adverse cumulative impacts.

**Addendum Finding Less Than Significant Impact:** Although the Proposed Project Modifications would provide a new private gated access driveway at Laurel Canyon Way and would replace the previously planned recreation center with open space park area, the general configuration of the subdivision and the overall number of dwelling units remains the same. Since the most intense short-term construction impacts entailing rough grading within the original project boundaries have already occurred, the construction impacts associated with the Proposed Project Modifications are substantially less. For this reason, no new or greater cumulative impacts would occur from the Proposed Project Modifications. Since there is no change in land use or intensity of development, the long-term operational significant impacts associated with the Proposed Project Modifications would remain consistent with the cumulative analysis provided in the previously approved IS/MND and there would be no changes to the analysis or conclusions regarding cumulative impacts.

**c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?**

**Previously Approved MND Finding Less Than Significant Impact:** The previously approved IS/MND identified that the original project would not have substantial adverse impacts on human beings.

**Addendum Finding Less Than Significant Impact:** The changes associated with the Proposed Project Modifications are minor. No new impacts or more severe impacts to human beings, either directly or indirectly, would occur as a result of the implementation of the Proposed Project Modifications.

## SUMMARY OF MANDATORY FINDINGS OF SIGNIFICANCE

In accordance with the analysis above, and pursuant to Sections 15162 and 15164 of the State CEQA Guidelines, the City of Corona has determined that:

- The Proposed Project Modifications do not result in substantial changes that would require major revisions to the previously adopted IS/MND due to new or substantially more severe significant environmental effects than previously analyzed.
- No substantial changes in circumstances have occurred that would result in new or more severe significant environmental impacts than previously analyzed.
- No new information of substantial importance as described in Section 15162 (a)(3) has been identified that would require major revisions to the analysis or conclusions presented in the previously adopted IS/MND.

# APPENDIX A

City of Corona
Initial Study/Environmental Checklist
June 26, 2014

# CITY OF CORONA
# INITIAL STUDY / ENVIRONMENTAL CHECKLIST

**PROJECT TITLE: CZ13-003 and TTM 36533**

**PROJECT LOCATION:** East side of Laurel Canyon Road and approximately 200 feet north of Shadow Valley Drive (APN's: 278-040-007, 008, 025, 036 and 037)

**PROJECT PROPONENTS:**

Bill Brooks of Armstrong and Brooks Consulting Engineers - P.O. Box 78088, Corona, CA 92877-9998

Corona 1591, LLC, - 7638 E. Santiago Canyon Road, Anaheim Hills, CA 92869

Nova Homes Inc. – 245 Fiascher Avenue, Units A-8A, Costa Mesa, CA 92626

**PROJECT DESCRIPTION:**

*CZ13-003* is an application to change the zone of 61.6 acres from R-1-20 (Single Family Residential, minimum lot size 20,000 square feet) to R-1-12 (Single Family Residential, minimum lot size 12,000 square feet) which is accompanied by *TTM 36533* an application to subdivide 61.6 acres into 103 single family residential lots in the proposed R-1-12 (Single Family Residential, minimum lot size 12,000 square feet) zone.

**ENVIRONMENTAL SETTING:**

The majority of the project site is located east of the intersection of Laurel Canyon Way and Old Temescal Road. The remainder of the project site is located northwest of the intersection of Laurel Canyon Way and Old Temescal Road within an abandoned quarry. The project site is asymmetrical in shape featuring north-south ridgelines with intervening drainages. Elevations range from 720 feet above Mean Sea Level (MSL) in the north-central area to 940 feet above MSL in the southeastern area of the property. The project site is vacant and consists of tall dense grasses along the hills and riparian vegetation and trees within the channels. The site is traversed by five drainage features of which 0.543 acres of streambed and 0.849 acres of riparian habitat are subject to California Department of Fish and Wildlife (CDFW) jurisdiction.

The proposed project is bordered by existing development to the west. The north, east and south interfaces with wildland or open space. The northern interface is a borrow site associated with a ready mix concrete batch plan. The east interface is open space and the southerly portion is also open space with future development in the unincorporated area of Riverside County.

**GENERAL PLAN \ ZONING:**

The project site is presently zoned R-1-20 (Single Family Residential, minimum lot area of 20,000 square feet) and has an Estate Residential or ER and Low Density Residential or LDR land use designation per the city's General Plan land use map. The project proposes a zoning designation of R-1-12 (Single Family Residential, minimum lot area of 12,000 square feet). The ER designation of the project site allows a maximum residential density of three dwellings units to the acre, whereas, the LDR designation of the project site allows a maximum density of six dwelling units per acre. TTM 36533 proposes to create 103 lots, resulting in a density of 1.67 du/ac, which is consistent with the density allowed under the site's General Plan designation. Furthermore, the proposed R-1-12 zoning designation allows for lot sizes that are consistent with and compatible with the underlying General Plan designation. The properties located to the west are zoned R-1-20 and are designated LDR per the city's General Plan land use map. The properties located to the north are zoned M-1 (Light Manufacturing) and are designated MUII or Mixed Use II (Industrial and Commercial) per the city's General Plan land use map. The properties to the south and east are zoned RR (Rural Residential), but are located outside of the city's boundary in an unincorporated area of Riverside County. The proposed residential subdivision is consistent with the

properties to the west, south and east, as the residential subdivision will result in single family homes having compatible densities and lot sizes as the surrounding residential developments. The project is also consistent with the properties to the north as the project site is buffered through a variety of design standards, which includes elevation differentials, landscaping, and open space areas. Furthermore, future development of the industrial property will result in decorative block screen walls and on-site landscape buffers.

**STAFF RECOMMENDATION:**
The City's Staff, having undertaken and completed an initial study of this project in accordance with the City's "Local Guidelines for Implementing the California Environmental Quality Act (CEQA)", has concluded and recommends the following:

___ The proposed project could not have a significant effect on the environment. **Therefore, a NEGATIVE DECLARATION will be prepared.**

___ The proposed project could have a significant effect on the environment, however, the potentially significant effects have been analyzed and mitigated to below a level of significance pursuant to a previous EIR as identified in the Environmental Checklist attached. **Therefore, a NEGATIVE DECLARATION WILL BE PREPARED.**

_X_ The Initial Study identified potentially significant effects on the environment but revisions in the project plans or proposals made by or agreed to by the applicant would avoid or mitigate the effects to below a level of significance. **Therefore, a MITIGATED NEGATIVE DECLARATION will be prepared.**

___ The proposed project may have a significant effect on the environment. **Therefore, an ENVIRONMENTAL IMPACT REPORT is required.**

___ The proposed project may have a significant effect on the environment, however, a previous EIR has addressed only a portion of the effects identified as described in the Environmental Checklist discussion. As there are potentially significant effects that have not been mitigated to below significant levels, a **FOCUSED EIR will be prepared to evaluate only these effects.**

___ There is no evidence that the proposed project will have the potential for adverse effect on fish and wildlife resources, as defined in Section 711.2 of the Fish and Game Code.

## ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The following indicates the areas of concern that have been identified as "Potentially Significant Impact" or for which mitigation measures are proposed to reduce the impact to less than significant.

| | | |
|---|---|---|
| ☐ Land Use Planning | ☒ Biological Resources | ☐ Aesthetics |
| ☐ Population and Housing | ☐ Mineral Resources | ☒ Cultural Resources |
| ☒ Geologic Problems | ☐ Hazards / Hazardous Materials | ☐ Agricultural Resources |
| ☐ Hydrology and Water Quality | ☐ Noise | ☐ Greenhouse Gases |
| ☒ Air Quality | ☐ Public Services | ☐ Mandatory Findings of Significance |
| ☒ Transportation / Traffic | ☐ Utilities | |

Date Prepared: June 26, 2014 Prepared By: Jason Moquin, Senior Planner

Contact Person: Jason Moquin, Senior Planner Phone: (951) 736-2268

**AGENCY DISTRIBUTION**
(check all that apply)

_____ Responsible Agencies

_____ Trustee Agencies (CDFG, SLC, CDPR, UC)

_____ State Clearinghouse (CDFW, USFWS, Redev. Projects)

_____ AQMD

_____ WQCB

_____ Other_____

**UTILITY DISTRIBUTION**

_____ Southern California Edison

Southern California Edison
Local Public Affairs
Louis Davis
24487 Prielipp Road
Wildomar, CA 92595

Southern California Edison
Karen Cadavona
Third Party Environmental Review
2244 Walnut Grove Ave.
Quad 4C 472A
Rosemead, CA 91770

*Note: This form represents an abbreviation of the complete Environmental Checklist found in the City of Corona CEQA Guidelines. Sources of reference information used to produce this checklist may be found in the City of Corona Community Development Department, 400 S. Vicentia Avenue, Corona, CA.*

| 1. LAND USE AND PLANNING: | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Conflict with any land use plan/policy or agency regulation (general plan, specific plan, zoning) | ☐ | ☐ | ☐ | ☒ |
| b. Conflict with surrounding land uses | ☐ | ☐ | ☒ | ☐ |
| c. Physically divide established community | ☐ | ☐ | ☐ | ☒ |

**Discussion:**
The project site is presently zoned R-1-20 (Single Family Residential, minimum lot area of 20,000 square feet) and has an Estate Residential or ER and Low Density Residential or LDR land use designation per the city's General Plan land use map. The project proposes a zoning designation of R-1-12 (Single Family Residential, minimum lot area of 12,000 square feet). The ER designation of the project site allows a maximum residential density of three dwellings units to the acre, whereas, the LDR designation of the project site allows a maximum density of six dwelling units per acre. TTM 36533 proposes to create 103 lots, resulting in a density of 1.67 du/ac, which is consistent with the density allowed under the site's General Plan designation. Furthermore, the proposed R-1-12 zoning designation allows for lot sizes that are consistent with and compatible with the underlying General Plan designation. The properties located to the west are zoned R-1-20 and are designated LDR per the city's General Plan land use map. The properties located to the north are zoned M-1 (Light Manufacturing) and are designated MUII or Mixed Use II (Industrial and Commercial) per the city's General Plan land use map. The properties to the south and east are zoned RR (Rural Residential), but are located outside of the city's boundary in an unincorporated area of Riverside County. The proposed residential subdivision is consistent with the properties to the west, south and east, as the residential subdivision will result in single family homes having compatible densities and lot sizes as the surrounding residential developments. The project is also consistent with the properties to the north as the project site is buffered through a variety of design standards, which includes elevation differentials, landscaping, and open space areas. Future development of the industrial property will result in decorative block screen walls and on-site landscape buffers. Therefore, the project does not pose any impacts to the city's current land use policies or plans, nor does it conflict with surrounding land uses. The the project site is vacant and bounded by residential developments; as such development associated with TTM 36533 will not physically divide an established community.

| 2. POPULATION AND HOUSING: | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Induce substantial growth | ☐ | ☐ | ☒ | ☐ |
| b. Displace substantial numbers of existing housing or people | ☐ | ☐ | ☒ | ☐ |

**Discussion:**
The project does not induce substantial growth as the site is designated for residential development, per the City's General Plan. Per the City of Corona's General Plan EIR, the land uses of the General Plan were evaluated with respect to population growth and were weighted as a less than significant impact. Based on the City's household size of 3.46 persons and the 2000 Census, the City is expected to experience a population increase of 22,084 persons based on General Plan build-out in Year 2025. With the addition of the property in the City's Sphere of Influence, the City's overall population increases by 51,425 persons in Year 2025. However, implementation of the City's General Plan by Year 2025 would not exceed SCAG's (Southern California Association of Governments) projections for the City of Corona. In fact, build-out based upon the General Plan would result in 20,724 fewer persons in the City than projected by SCAG at the time of General Plan adoption. Therefore, development based upon the General Plan does not provide housing to meet the City's population projections. The development of the project site would not result in population growth beyond that already projected to occur in the area. Therefore, there are no potential impacts and no mitigation is warranted.

It should also be noted that under the site's General Plan designation of Estate Residential and Low Density Residential up to 194 residential units are allowed on the property based on a maximum density. However, the project only proposes 103 units, which is significantly fewer than that allowed under the city's current land use plan. As such, the development of the project site would not result in population growth beyond that already projected to occur in the area; therefore, this is considered a less than significant impact and no mitigation is warranted. Lastly, the project area is not occupied with people or housing; therefore, the potential displacement of people or housing is not considered an impact

| 3. GEOLOGIC PROBLEMS: | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Fault /seismic failures (Alquist-Priolo zone) /Landslide/Liquefaction | ☐ | ☐ | ☒ | ☐ |
| b. Grading of more than 100 cubic yards | ☐ | ☐ | ☒ | ☐ |
| c. Grading in areas over 10% slope | ☐ | ☐ | ☒ | ☐ |
| d. Substantial erosion or loss of topsoil | ☐ | ☐ | ☒ | ☐ |
| e. Unstable soil conditions from grading | ☐ | ☒ | ☐ | ☐ |
| f. Expansive soils | ☐ | ☐ | ☒ | ☐ |

**Discussion:**
A geotechnical analysis was prepared for the project site (GEOCON West Inc., January 30, 2013). The study concluded that although there are active faults within the vicinity of the project site; it is unlikely that any faults underlie the project site. In the event of a seismic activity the project site would be subject to strong ground shaking; however, this is common through the Southern California basin. Adherence to and in conformance with the California Building Codes and engineering practices reduces potential impacts associated with seismic activity to a less than significant level. Therefore, no mitigation is warranted.

Project grading will involve more than 800,000 cubic yards of dirt and in areas that have over 10 percent slopes. The southeast and northwest sections of the project site involve hillsides with 25 percent and greater slopes. According to the city's Environmental Resources Element of the General Plan, up to 44.9% of the 25% slope areas can be graded or disturbed in order for the project to utilize 100% of its allowable density under the General Plan. A slope and grading analysis was prepared for the project site by Armstrong and Brooks Consulting Engineers. The analysis concluded that approximately 45% (25.99 acres) of the project site contains hillsides having 25% or greater slope. Per the analysis, 25.99 acres of this area will be graded to accommodate the project's residential lots and streets. Based on the site's entire 61.59 acres, 59.97 acres (97.4 percent) will be graded, leaving 1.62 acres (2.6 percent) in its natural condition including existing roads.

Proposed slopes are constructed at a ratio of 2:1 and will be comprised of engineered fill derived from existing site materials and importing competent site material, which are both grossly and surficially stable. The large cut slopes proposed toward the northernmost and easternmost portions of the site has also been determined to be suitable with respect to gross stability (GEOCON Inland Empire, INC., April, 2006). An existing quarry wall is located along the westerly boundary of the project site. Due to the rock formation and the proposal to construct a community center and open space area, it is necessary to reduce the hazards associated with a rock fall. This is accomplished by the construction of 2:1 soil buttress fill against the quarry wall. Furthermore, prior to construction of the aforementioned mitigation measures, loose and perched boulders shall be removed from the face of the slope (Mitigation Measure 1). Implementation of the aforementioned mitigation measures will result in a less than significant impact. Therefore, unstable slope conditions from project grading are not anticipated and are not considered an impact.

Due to the site's geologic and soils condition, it will be necessary to utilize blasting throughout the project site to break or rip large forms of granite in order to achieve level building pad and construct the necessary infrastructure associated with residential development. The City of Corona requires that the PPV or Peak Particle Velocity be no greater than 0.5 inches per second and that noise associated with blasting be limited to 129 Db, measured at the closest neighbor. A blasting study has been prepared for the project site (Edick & Watt, Inc, December 1, 2006) and supplemental analysis prepared by California Drilling and Blasting Co. Inc., August 29, 2013. The supplemental analysis concluded that the closest blast to existing residences is 300 feet and that all blasts will be within the aforementioned thresholds, furthermore, per the City's blasting guidelines, all residences within 1,500 feet will be notified prior to any blasting activity. As such, blasting results in a less than significant impact and no mitigation is warranted.

The applicant is required to adhere to the city's grading regulations and ordinances to reduce any impacts associated with the grading process, such as frequent watering of the project site, and the cleaning of haul roads. However, the site's geologic condition does warrant some grading recommendations during project construction, which are being included in Mitigation Measure 2.

***Mitigation Measures:***

1. ***Prior to construction loose and perched boulders shall be removed from the face of the slope.***
2. ***During earthwork construction, the applicant shall adhere to the grading recommendations presented in the Preliminary Geotechnical Investigation prepared by Geocon Inland Empire Inc. (2006).***

| 4. HYDROLOGY AND WATER QUALITY: | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than significant Impact | No Impact |
|---|---|---|---|---|
| a. Violate water quality standards/waste discharge requirements | ☐ | ☐ | ☐ | ☒ |
| b. Deplete groundwater supplies | ☐ | ☐ | ☐ | ☒ |
| c. Alter existing drainage pattern | ☐ | ☐ | ☒ | ☐ |
| d. Increase flooding hazard | ☐ | ☐ | ☐ | ☒ |
| e. Degrade surface or ground water quality | ☐ | ☐ | ☐ | ☒ |
| f. Within 100-year flood hazard area | ☐ | ☐ | ☐ | ☒ |
| g. Increase exposure to flooding | ☐ | ☐ | ☐ | ☒ |
| h. Exceed capacity of storm water drainage system | ☐ | ☐ | ☐ | ☒ |

**Discussion:**
Development of the project site will increase the area of impermeable surface paving which will result in an increase in surface runoff. Prior to issuing grading permits, the Public Works Department will evaluate existing and proposed drainage conditions for the project. Compliance with city ordinances and regulations pertaining to on-site drainage patterns will be verified at the time of grading plan check. Furthermore, to ensure the project site addresses potential water quality issues, the applicant is required to submit a final WQMP to the Public Works Department prior to the issuance of grading permits. A preliminary hydrology study and water quality management plan was prepared by Armstrong & Brooks Consulting Engineers, May 20, 2014 and May 5, 2014, respectively. The studies analyzed tributary flows and those created by the development as including run-off from HOA maintained slopes and on-site water quality basins & swales. In addition to the on-site water quality features an offsite detention basin will be constructed in place of an existing permitted percolation pond located on the property adjacent to the north.

Regional and local development standards require that a site specific Water Quality Management Plan (WQMP) be prepared to identify the methods and means of treating potential run-off pollutants generated by the proposed development. The existing topography and accompanying drainage patterns tend to favor implementation of three separate water quality basins for treatment of on-site flows prior to release downstream. The water quality basins ("Basins 1, 2 and 3) have been sized per the WQMP.

Off-site flow tributary to the project's southerly boundary is being captured and passed through the site via a proposed system of HOA maintained interceptor drains, down drains and storm drains. Implementation of the recommendations within the hydrology study and preliminary water quality management plan will result in a less than significant impact and, therefore, no further mitigation is required

| 5. AIR QUALITY: | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Conflict with air quality plan | ☐ | ☐ | ☐ | ☒ |
| b. Violate air quality standard | ☐ | ☐ | ☒ | ☐ |
| c. Net increase of any criteria pollutant | ☐ | ☐ | ☐ | ☒ |
| d. Expose sensitive receptors to pollutants | ☐ | ☐ | ☐ | ☒ |
| e. Create objectionable odors | ☐ | ☐ | ☐ | ☒ |

**Discussion:**
The project site lies within the southern portion of the South Coast Air Basin (Basin), which is a 6,600-square mile area that includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The agency that regulates air quality in this region is the Southern California Air Quality Management District (SCAQMD). At the state level, air quality is regulated by the California Air Resources Board (CARB) and at the federal level it is the U.S. Environmental Protection Agency (EPA).

The SCAQMD is responsible for attaining state and federal clean air standards in the Basin. The SCAQMD, in coordination with the Southern California Association of Governments, is also responsible for developing, updating, and implementing the Air Quality Management Plan (AQMP) for the Basin to reduce emissions of criteria pollutants to a level that is considered safe by the CARB and EPA.

In order to determine what the project's potential impact is to air quality, an air quality assessment was prepared for the project by OB-1 Air Analyses, April 2013. The study evaluated potential air quality impacts from construction and operational emissions resulting from implementation of the project. The following sections below are discussions pertaining to various potential air impacts associated with the project and how it is in compliance with the rules and regulations administered by the SCAQMD.

**Impact To Air Quality Plan**

The AQMP was prepared to accommodate growth, reduce the high levels of pollutants within areas under the jurisdiction of the SCAQMD, return clean air to the region, and minimize the impact of reduced air quality on the economy. Projects that are considered to be consistent with the AQMP would not interfere with attainment.

One way to assess project compliance with the AQMP assumptions is to ensure that the population density and land uses are consistent with the growth assumptions used in the air plans for the air basin. According to CARB transportation performance standards, the rate of growth in vehicle miles traveled (VMT) and trips should be held to the rate of population growth (SCAQMD 2006). Compliance with this performance standard is one way suggested by CARB of showing compliance with the growth assumptions used in the AQMP. If the total VMT generated by the proposed project at build-out is at or below that predicted by the AQMP, then the proposed project's mobile emissions is consistent with the AQMP. It is assumed that the existing and future pollutant emissions computed in the AQMP were based on land uses from area general plans.

**Construction Emissions**

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions and only last during the construction of the Project. Construction emissions result from onsite and offsite activities. Onsite emissions principally consist of exhaust emissions (NOx, SOx, CO, VOC, PM10, and PM2.5) from heavy-duty construction equipment, motor vehicle operation, and fugitive dust (mainly PM10) from disturbed soil. Additionally, paving operations and application of architectural coatings would release VOC emissions. Offsite emissions are caused by motor vehicle exhaust from delivery vehicles, worker traffic, and road dust (PM10 and PM2.5).

The project is required to comply with the measures established by SCAQMD Rule 403, such as applying soil stabilizers to all inactive areas of the project site, watering all disturbed soils and unpaved roads a minimum of two times per day, and keeping speeds of construction vehicles to 15 mph or less on all unpaved surfaces.

Construction emissions can also include vehicle exhaust released from construction equipment. These air pollutants include VOC (volatile organic compounds), NO2 (nitrogen oxides), CO (carbon monoxide), SO2 (sulfur oxides), PM10 (particulate matter smaller than 10 microns), and PM2.5 (particulate matter smaller than 2.5 microns). The SCAQMD currently recommends the following thresholds for construction emissions. Projects that result in impacts that are below the recommended thresholds are considered less than significant, and projects that exceed the recommended thresholds are considered significant.

The project's potential construction emissions were calculated using the CalEEmod Version 2.2 computer model developed in cooperation with SCAQMD for estimating emissions from a proposed project. Based on the result shown below and reflected in Table7 of the technical study, the project's potential construction impacts would exceed the established LST thresholds unless otherwise mitigated. Upon implementation of *Mitigation Measure 3* and as depicted in Table 9, the project would not exceed the recommended thresholds and therefore will result in a less than significant impact.

Table 7 – Estimated Unmitigated Construction Emissions

| Stage | Maximum Daily Emissions (lbs/day) | | | | | |
|---|---|---|---|---|---|---|
| | ROG | $NO_X$ | CO | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| Site Preparation | 5.88 | 59.99 | 45.68 | 0.04 | 21.53 | 13.00 |
| Grading | 7.56 | 84.56 | 54.66 | 0.06 | 11.75 | 7.27 |
| Building Construction | 5.25 | 34.49 | 23.09 | 0.03 | 2.86 | 2.40 |
| Paving | 2.66 | 26.16 | 15.90 | 0.02 | 1.60 | 1.38 |
| Architectural Coating | 41.21 | 2.81 | 2.36 | 0.00 | 0.31 | 0.26 |

Table 7 Cont'd – Estimated Unmitigated Construction Emissions

| Stage | Maximum Daily Emissions (lbs/day) | | | | | |
|---|---|---|---|---|---|---|
| | ROG | $NO_X$ | CO | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| **Project Maximum Daily** | **41.21** | **84.56** | **54.66** | **0.06** | **24.18** | **13.29** |
| SCAQMD Daily Threshold | 75 | 100 | 550 | 150 | 150 | 55 |
| **Exceeds Threshold?** | **No** | **No** | **No** | **No** | **No** | **No** |
| LST Threshold | -- | 270 | 1,700 | -- | 12 | 8 |
| **Exceeds Threshold?** | **--** | **No** | **No** | **--** | **Yes** | **Yes** |

Table 9 – Mitigated Construction Emissions

| Stage | Maximum Daily Emissions (lbs/d) | | | | | |
|---|---|---|---|---|---|---|
| | ROG | $NO_X$ | CO | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| Site Preparation | 5.88 | 59.99 | 45.68 | 0.04 | 11.51 | 6.94 |
| Grading | 7.56 | 84.48 | 54.62 | 0.06 | 7.18 | 5.15 |
| Building Construction | 5.23 | 34.46 | 23.00 | 0.03 | 2.85 | 2.40 |
| Paving | 2.66 | 26.14 | 15.88 | 0.02 | 1.60 | 1.37 |
| Architectural Coating | 41.21 | 2.81 | 2.35 | 0.00 | 0.31 | 0.26 |
| **Project Maximum Daily** | **41.21** | **84.48** | **54.62** | **0.06** | **10.51** | **6.94** |
| LST Threshold | -- | 270 | 1,700 | -- | 12 | 8 |
| **Exceeds Threshold?** | **--** | **No** | **No** | **--** | **No** | **No** |

## Operational Emissions

Operational emissions were also calculated using the CalEEMod model to take into account area, energy, and mobile sources. Because the majority of the emissions are attributable to on-road vehicles, the LST methodology is not appropriate and emissions were not compared with LSTs. As shown in Table 8, the emissions associated with the Proposed Project would be less than the daily significance thresholds and no significant impacts are anticipated.

Table 8 – Summary of Total Operational Emissions

| Category | Maximum Daily Emissions (lbs/day) | | | | | |
|---|---|---|---|---|---|---|
| | ROG | $NO_X$ | CO | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ |
| Area | 4.41 | 0.10 | 8.54 | 0.00 | 0.14 | 0.14 |
| Energy | 0.10 | 0.86 | 0.37 | 0.01 | 0.07 | 0.07 |
| Mobile | 13.78 | 14.71 | 51.98 | 0.10 | 7.28 | 2.02 |
| **Project Total** | **18.29** | **15.67** | **60.89** | **0.11** | **7.49** | **2.23** |
| SCAQMD Daily Threshold | 55 | 55 | 550 | 150 | 150 | 55 |
| **Exceed Thresholds?** | **No** | **No** | **No** | **No** | **No** | **No** |

## Localized Significance Thresholds (LSTs)

The SCAB is in nonattainment for ozone, PM10, and PM2.5, which means that the background levels of those pollutants are at times higher than the ambient air quality standards. The air quality standards were set to protect the health of sensitive individuals (i.e., elderly, children, and the sick). Therefore, when the concentration of those pollutants exceed the standard, it is likely that some of the sensitive individuals of the population experience adverse health effects. The localized significance analysis demonstrated that with the implementation of *Mitigation Measure 3* during construction activities, no localized significance threshold was expected to be exceeded; therefore, the emissions of particulate matter, NO2, and CO would not result in a significant cumulative health impact.

**CO "Hot Spots"**
CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to the Ambient Air Quality Standards and is typically demonstrated through an analysis of localized CO concentrations. Areas of vehicle congestion have the potential to create "pockets" of CO called "hot spots." Hot spots are usually created in locations where vehicles are subject to congestion, reduced speeds, and queuing. These are most typically at intersections, but can also be along congested major arterials and freeways. Typically, for vehicles to produce a hot spot, the roadway/intersection level of service (LOS) must be degraded to "D" or worse. Based on the traffic analysis prepared by Linscott Law and Greenspan, May 16, 2014, no intersection or roadway segment is forecasted to result in a level of service LOS E or worse. Therefore, the project's impact with respect to CO concentrations would be less than significant and no mitigation is required.

**Objectionable Odors**
Odors from heavy equipment exhaust are anticipated to be emitted into the air during the construction phase of the project. However, construction equipment would be operating at various locations throughout the project site and construction would only be temporary. Also, since the type of development is residential, no objectionable odors are anticipated during the operation of the residential development. Therefore, impacts associated with odors during the construction and operation of the project site would be less than significant and no mitigation is required.

**Cumulative Considerable Net Increase**
The proposed project would be considered to be cumulatively considerable if new sources of emissions exceed SCAQMD project-specific emissions thresholds. As discussed in the previous sections regarding the project's potential air quality impacts, emissions from the construction and operation of the project are anticipated to be below SCAQMD's recommended thresholds for criteria pollutants. Therefore, implementation of the project would result in a less than significant cumulative impact and no mitigation is required.

***Mitigation Measure:***

3. ***During site preparation and grading activities, the applicant or its contractor shall control airborne dust and PM10/PM2.5 by watering all active areas at least three times per day, as dictated by local soil and wind conditions. If visible emissions of fugitive dust persist beyond a distance of 200 feet from the boundary of the construction site, all feasible measures shall be implemented to eliminate potential nuisance conditions at off-site receptors.***

| **6. TRANSPORTATION/TRAFFIC:** | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system | ☐ | ☐ | ☒ | ☐ |
| b. Conflict with an applicable congestion management program | ☐ | ☐ | ☐ | ☒ |
| c. Change in air traffic patterns | ☐ | ☐ | ☐ | ☒ |
| d. Traffic hazards from design features | ☐ | ☐ | ☐ | ☒ |
| e. Emergency access | ☐ | ☐ | ☐ | ☒ |
| f. Conflict with alternative transportation policies (adopted policies, plans or programs for public transit, bicycle or pedestrian facilities) | ☐ | ☐ | ☐ | ☒ |

**Discussion:**
A traffic impact analysis prepared by Lincott Law and Greenspan, May 16, 2014 was done for the project. The study evaluated existing traffic conditions in the vicinity of the project, traffic conditions with the proposed project, and on-site and off-site improvements. The 103 residential units are projected to generate approximately 981 average daily trips, of which 78 trips will occur during the A.M. peak hours, and 103 trips during the P.M. peak hours. The study further analyzed seven key intersections and one roadway segment.

The seven key intersections are as follows:

1. California Avenue at Old Temescal Road
2. Compton Avenue at Old Temescal Road
3. Compton Avenue at Ontario Avenue
4. I-15 Southbound Ramps at Ontario Avenue
5. I-15 Northbound Ramps at Ontario Avenue
6. California Avenue at Ontario Avenue
7. Rimpau Avenue at Old Temescal Road

The roadway segment consisting of Laurel Canyon Way, east of I-15 freeway was selected based on the arterial network within the study area and discussions with the City Traffic Engineer.

The analysis concluded that none of the seven (7) key study intersections currently operate at unacceptable levels of service during the AM and/or PM peak hour when compared to the LOS standards defined in this report. All of the key study intersections currently operate at acceptable levels of service during the PM peak hour. Based on the LOS standards the roadway segment also operates at an acceptable level of service. The analysis also concluded that upon construction and through the year 2018, the seven (7) key study intersections and roadway segment will also operate at acceptable levels of service. However, analysis at build out in the year 2035, two (2) of the seven (7) key study intersections are forecast to operate at unacceptable levels of service during the AM and/or PM peak hours, therefore mitigation is warranted at two of the key intersections (Compton Avenue at Old Temescal Road and Rimpau Avenue at Old Temescal Road) *Mitigation Measures 4 and 5*. As shown in column (5) of Table 9-1, the implementation of recommended mitigation measures at the impacted intersections, mitigates the impacts and the impacted intersections area forecast to operate at an acceptable LOS. The remaining five (5) key study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours.

TABLE 9-1

YEAR 2035 CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

| Key Intersection | Minimum Acceptable LOS | Time Period | (1) Existing Traffic Conditions | | (2) Year 2035 Without Project Traffic Conditions | | (3) Year 2035 With Project Traffic Conditions | | (4) Significant Impact | (5) Year 2035 With Project With Mitigation | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Delay (s/v) | LOS | Delay (s/v) | LOS | Delay (s/v) | LOS | Yes/No | Delay (s/v) | LOS |
| 1. California Avenue at Old Temescal Road | D | AM | 18.1 | C | 13.4 | B | 14.0 | B | No | -- | -- |
| | | PM | 18.0 | C | 17.7 | C | 18.8 | C | No | -- | -- |
| 2. Compton Avenue at Old Temescal Road | D | AM | 15.0 | C | 33.4 | D | **43.5** | **E** | **Yes** | 15.3 | C |
| | | PM | 7.8 | A | 11.1 | B | 12.5 | B | No | 10.9 | B |
| 3. Compton Avenue at Ontario Avenue | D | AM | 28.2 | C | 31.2 | C | 32.2 | C | No | -- | -- |
| | | PM | 20.7 | C | 28.5 | C | 31.2 | C | No | -- | -- |
| 4. I-15 SB Ramps at Ontario Avenue | E | AM | 53.5 | D | 40.4 | D | 40.6 | D | No | -- | -- |
| | | PM | 29.0 | C | 20.2 | C | 20.6 | C | No | -- | -- |
| 5. I-15 NB Ramps at Ontario Avenue | E | AM | 32.1 | C | 33.3 | C | 33.8 | C | No | -- | -- |
| | | PM | 38.5 | D | 72.7 | E | 73.4 | E | No | -- | -- |
| 6. California Avenue at Ontario Avenue | D | AM | 42.5 | D | 42.2 | D | 42.3 | D | No | -- | -- |
| | | PM | 48.0 | D | 54.5 | D | 54.7 | D | No | -- | -- |
| 7. Rimpau Avenue at Old Temescal Road | D | AM | 13.5 | B | 13.7 | B | 13.8 | B | No | 14.7 | B |
| | | PM | 23.3 | C | **49.2** | **E** | **50.7** | **F** | Yes | 14.5 | B |

Old Temescal Road provides direct access to the project site. Laurel Canyon Way begins at the curved section of the roadway at the eastern terminus of Old Temescal Road. Old Temescal Road is a two-lane undivided roadway designated as a collector street having an overall right-of-way width of 68 feet west of Interstate 15 and a local street having an overall right-of-way width of 60 feet east of Interstate 15. The project will warrant the construction of missing public improvements adjacent to the project site within the project site boundaries to ensure sufficient vehicular circulation. Internal access is facilitated via private residential streets having an overall right-of-way width of 60 feet.

Primary access is achieved via Laurel Canyon Way at "A" Street. The primary access has been designed per the City's design standards for gated entries. A secondary point of access is provided via a local street (Shadow Valley Drive) located south of the project site and provides a connection to the terminus of "B" Street. The secondary access is being constructed in conjunction with the development to the south located in the unincorporated area of Riverside County. Residential traffic is restricted at Shadow Valley and ingress and egress is limited to emergency vehicles only. As previously discussed, the applicant is required to construct the necessary right-of-way improvements on Old Temescal Road/ Laurel Canyon Way

adjacent to the project site, which is enforced by city ordinance and is a condition of approval for the project and the ultimate construction of the project's internal streets.

Old Temescal Road and Laurel Canyon Way are rural in nature and are not designed per the City's local street standard (Figure 14-1 of the Traffic Analysis). This is a result of the original subdivision occurring in the unincorporated area of Riverside County prior to annexation into the City of Corona. The narrowed roadway currently does not prohibit parking; however, in response to concerns raised by the residents fronting Laurel Canyon Way, and in an effort to address potential impacts associated with line of sight and the curvilinear design of the roadway, the proposal warrants traffic calming measures. As such, the roadway will be re-striped to provide for a 10-foot and a 12-foot travel lane as well as eliminate parking on the north side of Laurel Canyon Way, beginning east of the I-15 overpass and continuing east approximately 500 feet east of Bel Air Street. Although Laurel Canyon Way, east of Interstate 15 is not designed per the city's current street standard, the roadway currently operates at a LOS A with a daily volume of approximately 854 daily trips. Upon development of the project site at build out in 2018, the roadway segment will operate at a LOS B and will accommodate approximately 1,931 daily trips. Local residential streets are capable of accommodating 2,500 average daily trips while maintaining an acceptable level of service and approximately 2,000 average daily trips at a LOS C. The project will not result in traffic hazards or impact emergency access.

Lastly, Per CMC Chapter 16.23, the developer is required to pay development impact fees to mitigate any impacts on the city's circulation system. These impact fees help finance adequate infrastructure and other public improvements that are necessary as a result of new industrial developments in the city. Therefore, this is not considered an impact.

***Mitigation Measures:***

4. ***Prior to the issuance of the first Certificate of Occupancy, the northbound shared left/through/right turn lane of Compton Avenue at Old Temescal Road shall be widened and or restriped to provide an exclusive left-turn lane and a shared through-right turn lane.***
5. ***Prior to the issuance of the first Certificate of Occupancy, the intersection of Rimpau Avenue at Old Temescal Road shall be improved to include a two-phased traffic signal. In addition the northbound shared left-through lane shall be restriped to provide an exclusive left-turn lane and the southbound shared left-through lane shall be restriped to provide an exclusive left-turn lane.***

| 7. BIOLOGICAL RESOURCES: | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Endangered or threatened species/habitat | ☐ | ☐ | ☐ | ☒ |
| b. Riparian habitat or sensitive natural community | ☐ | ☐ | ☒ | ☐ |
| c. Adversely affects federally protected wetlands | ☐ | ☐ | ☒ | ☐ |
| d. Interferes with wildlife corridors or migratory species | ☐ | ☐ | ☐ | ☒ |
| e. Conflicts with local biological resource policies or ordinances | ☐ | ☐ | ☐ | ☒ |
| f. Conflicts with any habitat conservation plan | ☐ | ☐ | ☐ | ☒ |

**Discussion:**
LSA Associates prepared a biological assessment (January 2014) for the project and discussed the project's consistency with the MSHCP criteria. Furthermore, a Determination of Biologically Equivalent or Superior Preservation analysis has also been prepared by LSA, January 2014. The assessment analyzed both on-site conditions associated with the 61.6 acres project site but as well as approximately eight acres located off-site within the unincorporated area of Riverside County. Development of the eight acres is being processed under a separate permit (Parcel Map 14797); however, portions of the off-site area are being established for permanent off-site mitigation as a result of the project's impacts to biological resources.

The assessment included habitat suitability assessments (HSAs) for Narrow Endemic Plant Species [San Diego ambrosia (Ambrosia pumila), Brand's phacelia (Phacelia stellaris), and San Miguel savory (Satureja chandleri)]. The assessment also included potential habitat for the burrowing owl (Athene cunicularia hypugea). Potential burrows, were present throughout the site and were not mapped individually during this survey. The biological analysis determined that no suitable habitat exists for the San Diego ambrosia, Brand's Phacelia and San Miguel savory. Finally, no burrowing owls were observed during focused field surveys in the study area. However, as a cautionary measure, a preconstruction survey shall be conducted 30 days prior to any clearing and/or grading on the project site *Mitigation Measure 6*. If passerine birds are found to be nesting, a 250-foot buffer is required around the nesting site, in which the vegetation cannot be disturbed *Mitigation Measure 7*. In the event that the nest is for a raptor, the buffer shall be expanded to 500-feet. If multiple nests are found, grading and grubbing of the

project site shall be postponed. Lastly, the applicant shall enlist the services of a qualified biologist to closely monitor the project site and nests until it is determined that the nests are no longer active *Mitigation Measure 8*. Additionally, the applicant is subject to the MSHCP fee for residential developments, which shall be paid upon the issuance of the first building permits. Therefore, mitigation measures are warranted to reduce these impacts to less than significant.

The assessment evaluated a total of seven potentially jurisdictional features, including a pond located south of the project site within the unincorporated area of Riverside County. Five of these features (Features 1, 2, 3, 5, and the pond) are considered potential jurisdictional waters subject to United States Army Corp of Engineers (USACE) and California Department of Fish and Wildlife (CDFW) jurisdiction, whereas two of these features (Features 4 and 6) are not considered potential jurisdictional waters subject to USACE and CDFW jurisdiction.

A Determination of Biologically Equivalent or Superior Preservation (DBESP) Analysis dated Januaury 2014, prepared by LSA concludes that the project would result in impacts riparian/riverine. The total riparian/riverine area within the study is 2.219 acres and includes 0.638 acre of streambed and 1.66 acres of riparian streambed. The effects to the riparian/riverine areas on TTM 36533 are considered permanent because, although the drainage channel will be realigned and remain as an on-site drainage channel, it will be lined with ungrouted riprap to accommodate storm water velocities. The effects to riparian/riverine on Parcel Map 14797/TTM 36532 are considered temporary because they will be recreated in the mitigation area located within the unincorporated are of Riverside County. Overall, the proposed project will have a total of 0.827 acre of temporary effects including 0.109 acre of streambed and 0.718 acre of riparian streambed, and 1.392 acres of permanent effects including 0.543 acre of streambed and 0.849 acre of riparian streambed. The proposed project will mitigate for these effects through on-site restoration/creation of riparian/ riverine habitat at a 1:1 ratio for a total of 2.219 acres of temporary and permanent effects to riparian/ riverine. The proposed mitigation/restoration area located within Parcel Map 14797/TTM 36532 encompasses approximately 3 acres. In addition, the drainage channel to be realigned within TTM 36533 will also be revegetated with riparian habitat and provide, at minimum, an additional 0.7 acre of riparian habitat. The proposed on-site mitigation area is expected to provide a net increase in riparian/riverine habitat. Figure 5 of the DBESP shows the proposed mitigation area. A habitat, mitigation and monitoring plan (HMMP) will be prepared. The HMMP will be implemented and maintained in perpetuity by the Riverside-Corona Resource Conservation District (RCRCD). To avoid direct effects to the least Bell's vireo during nesting season, riparian vegetation will be removed outside of the least Bell's vireo and general bird avian nesting season (February 15 through August 30). It should be noted that the site was cleared and grubbed in advance of the preparation of this report and the applicant and biological consultant voluntarily entered into pre-construction meetings with the wildlife agencies. As a result of the pre-construction grubbing impacts to approximately 0.8 acre of riparian/riverine areas on TTM 36533 and for compliance with Sections 1600 et seq. of the California Fish and Wildlife Code, the proposed project will purchase credits for "habitat rehabilitation" from the RCRCD at a 1:1 ratio, as well as purchase credits for approximately 1.4 acres of permanent effects at a 2:1 ratio from the RCRCD for "habitat enhancement" or "buffer," or from the Santa Ana Watershed. Lastly, the DBESP was circulated to the wildlife agencies on in January of 2014. Concurrence and approval of the DBESP was received from the wildlife agencies on February 4, 2014. As such, mitigation is warranted to reduce potential impacts to biological resources *Mitigation Measures 10 to 14*.

The MSHCP consists of Area Plans divided into Subunits and further into Criteria Cells with specific conservation objectives identified for each. Conservation objectives include target conservation acreages, along with a description of the Planning Species, Biological Issues and Considerations, and Criteria for each Subunit and Criteria Cell. The proposed project lies within the Temescal Canyon Area Plan. The project does not lie within an MSHCP Criteria Area. The Conservation Summary Report Generator indicates that 0.05 acre of the project site is within Criteria Cell 2018. However, the Western Riverside County Regional Conservation Authority (RCA) in a letter to City of Corona, dated December 29, 2006, JPR #06-12-19-01, the RCA acknowledged that the portion of the project located immediately west of Criteria Cell 2018 is not within this cell and no Joint Project Review (JPR) is required. Use of the project site as proposed will not conflict with MSHCP conservation objectives for the area. In order to avoid edge effects to habitat adjacent to the proposed project, the project applicant will comply with guidelines provided in MSHCP Section 6.1.4 (Guidelines Pertaining to the Urban/Wildlands Interface). These guidelines will be incorporated into project plans in order to maintain consistency with the MSHCP.

Scalebroom ("scale broom") is a shrub native to California and Arizona. It grows in sandy and gravelly soils in washes and similar alluvial environments. This species is adapted to withstand and recover from the extreme conditions caused by flooding in its native environment. Its adaptations include deep roots to anchor the plant in case of heavy scouring of the sediment substrate, and a large underground stem (or "rootstock") that stores energy and enables resprouting if the above-ground stem is broken off or if the plant is buried as a result of flooding. Because of the energy stored in the rootstock, scalebroom is able to exert tremendous pressure at the stem tip. This adaptation allows scalebroom to survive under heavy sediment, and may also enable it to raise or break through man-made structures under some circumstances. Therefore, prior to the issuance of any grading permit or construction of public improvements, the Public Works Department requires that the developer have a qualified botanist, plant taxonomist, or field biologist (specializing in native plants) survey the site for the presence of the Scalebroom shrub. If the shrub is present on the site, the applicant is required to eradicate the weed by means identified by the specialist, such as excavating the shrub including the root ball and the application of herbicides. Compliance with the Public Works Department's grading permit requirements and the recommendations for removal of the shrub, if applicable, will reduce potential impacts to a less than significant level. Therefore, no additional mitigation pertaining to Scalebroom is required of the applicant.

*Mitigation Measures:*

6. *A pre-construction survey for avian nests within seven (7) days of vegetation clearance or grading of the project site, if grading permits are to be issued during the nesting season March 1st through September 1st.*
7. *If passerine birds are found to be nesting, a 250-foot buffer is required around the nesting site, in which the vegetation cannot be disturbed. In the event that the nest is for a raptor, the buffer shall be expanded to 500-feet. If multiple nests are found, grading and grubbing of the project site shall be postponed.*
8. *A qualified biologist shall closely monitor the project site and nests until it is determined that the nests are no longer active.*
9. *Prior to the issuance of a grading permit applicable Section 404 permit from the U.S Army Corps of Engineers and a Streambed Alteration Permit pursuant to Fish and Wildlife Code 1602, and Section 401 Water Quality Certification from the Regional Water Quality Control Board shall be obtained.*
10. *A Water Quality Management Plan and SWPPP shall be prepared and implement BMPs (Best Management Practices) that will prevent habitat degradation caused by runoff within the adjacent conservation area and downstream areas. Furthermore, the BMP's shall also be implemented to prevent expected and potential pollutants from vehicles and paved surfaces are organic compounds, metals, and oil/grease; from pet waste are bacteria/virus pathogens; and from landscaping are sediment, nutrients, oxygen-demanding substances, and herbicides/pesticides.*
11. *Any lighting used within proximity of the conservation area will be shielded and directed away from the conservation area.*
12. *Landscape plans prepared for the project shall not include invasive species identified in MSHCP Table 6-2.*
13. *The proposed project shall incorporate barriers, as necessary, to minimize unauthorized public access, domestic animal predation, illegal trespass, and dumping in the MSHCP Conservation Area. Such barriers may include native landscaping, rocks/boulders, fencing, walls, signage, and/or other appropriate mechanisms.*
14. *Manufactured slopes associated with proposed site development shall not extend into the MSHCP Conservation Area.*

**8. MINERAL RESOURCES:**

| | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Loss of mineral resource or recovery site | ☐ | ☐ | ☐ | ☒ |

**Discussion:**
Per the Phase I Environmental Site Assessment prepared by Targhee Inc., March 29, 2013 the project site was historically limited to agriculture .Per Figure 4.5-7 of the General Plan Technical Background Report, the project site does not contain mineral resources. Therefore the project does not impact mineral resources and no mitigation is warranted.

**9. HAZARDS AND HAZARDOUS MATERIALS:**

| | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Transport, use or disposal of hazardous materials | ☐ | ☐ | ☐ | ☒ |
| b. Risk of accidental release of hazardous materials | ☐ | ☐ | ☐ | ☒ |
| c. Hazardous materials/emissions within ¼ mile of existing or proposed school | ☐ | ☐ | ☐ | ☒ |
| d. Located on hazardous materials site | ☐ | ☐ | ☐ | ☒ |
| e. Conflict with Airport land use plan | ☐ | ☐ | ☐ | ☒ |
| f. Impair emergency response plans | ☐ | ☐ | ☐ | ☒ |
| g. Increase risk of wildland fires | ☐ | ☐ | ☐ | ☒ |

**Discussion:**
Per the Phase I Environmental Site Assessment prepared by Targhee Inc., March 29, 2013 there is no evidence that the project site contains hazardous materials. The Phase I did identify the project site as being utilized for agricultural purposes between 1980 and 1990. During this time, smudge pots were no longer in use and most persistent herbicides such as DDT and DDE were banned. Therefore, there is no further evidence of any potential hazardous substances, underground storage

tanks, or hazardous materials containers located on the project site and the risk of accidental explosion or release of hazardous substances is highly unlikely and poses no impact to the project site or its surroundings. Furthermore, per Figure 4.5-7 and Table 5.4-1 & 5.4-2 of the General Plan Technological Background Report, the project site does not contain hazardous materials nor is it identified as a hazardous materials site. Additionally, the site is not located in the Alquist-Priolo earthquake hazard zone.

| **10. NOISE:** | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Exceed noise level standards | ☐ | ☐ | ☐ | ☒ |
| b. Exposure to excessive noise levels/vibrations | ☐ | ☐ | ☐ | ☒ |
| c. Permanent increase in ambient noise levels | ☐ | ☐ | ☐ | ☒ |
| d. Temporary increase in ambient noise levels | ☐ | ☐ | ☐ | ☒ |
| e. Conflict with Airport Land Use Plan noise contours | ☐ | ☐ | ☐ | ☒ |

**Discussion:**
Long-term noise impacts will be minimal given that the proposed use is for residential purposes. Short-term impacts, however, are associated with future grading and project construction, but are reduced to a less than significant level by the city's Municipal Code. Per CMC Chapter 17.84, construction activities are prohibited between the hours of 8:00 p.m. to 7:00 a.m. Monday through Saturday, and 6:00 p.m. to 10:00 a.m. on Sundays and Federal holidays. This will prevent nuisance noise impacts during sensitive time periods of early morning and nighttime for businesses within the vicinity of the project site. This is enforced by City ordinance, Corona Municipal Chapter 17.84; therefore, no additional mitigation is warranted.

As previously discussed, the applicant is utilizing blasting in order to break and rip the large granite formations on the project site. The noise associated with the blasting is not to exceed 129.00 dB as prescribed by the City of Corona's blasting permit. The applicant's blasting study has demonstrated that the aforementioned noise level will not be exceeded, furthermore, per the City's blasting guidelines; all residences with 1,500 feet will be notified prior to any blasting activity. As such, noise associated with the blasting activity results in a less than significant impact and no mitigation is warranted.

| **11. PUBLIC SERVICES:** | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Fire protection | ☐ | ☐ | ☐ | ☒ |
| b. Police protection | ☐ | ☐ | ☐ | ☒ |
| c. Schools | ☐ | ☐ | ☐ | ☒ |
| d. Parks & recreation facilities | ☐ | ☐ | ☐ | ☒ |
| e. Other public facilities or services | ☐ | ☐ | ☐ | ☒ |

**Discussion:**
The proposed project and any resulting residential development will lead to the generation of additional students to be accommodated by the Corona Norco Unified School District. The applicant is required to pay statutory school fees at the time of issuance of building permits. The City is specifically preempted by SB 50 from requiring mitigation beyond the statutory school fees on this project. The City is also precluded from denying approval of this project pursuant to the California Environmental Quality Act or the Subdivision Map Act because of adequacy of school facilities.

Since new residential development over time will potentially impact existing city services, such as streets, police and fire services, parks, and library services, project applicants are required to pay the adopted development impact fees that are in effect at the time of issuance of building permits, and construct necessary facilities. This is enforced by city ordinance, CMC Chapter 16.23; therefore, no additional mitigation is warranted.

| 12. UTILITIES: | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Exceed wastewater treatment requirements | ☐ | ☐ | ☐ | ☒ |
| b. Involve construction/expansion of water or wastewater treatment facilities | ☐ | ☐ | ☐ | ☒ |
| c. Involve construction/expansion of storm drains | ☐ | ☐ | ☐ | ☒ |
| d. Sufficient water supplies/compliance with Urban Water Management Plan. | ☐ | ☐ | ☐ | ☒ |
| e. Adequate wastewater treatment capacity | ☐ | ☐ | ☐ | ☒ |
| f. Adequate landfill capacity | ☐ | ☐ | ☐ | ☒ |
| g. Comply with solid waste regulations | ☐ | ☐ | ☐ | ☒ |

**Discussion:**
The City of Corona Department of Water & Power (CDWP) will provide domestic water supply for the proposed residential development. The CDWP currently provides municipal water service to approximately 146,700 people through 40,000 service connections over a 39 square mile area. The CDWP's Urban Water Management Plan (UWMP, dated 2005) sets forth expected supply and demand within the service area. The UWMP indicates that CDWP has sufficient water to meet its customer's needs inclusive of the proposed development through the year 2030, taking into consideration water conservation efforts and the development of additional groundwater supplies.

Southern California Edison and Southern California Gas will provide power and natural gas services to the project site. At the time of the project grading, the gas and power lines, if needed will be extended to the project site by the developer, as per other residential development throughout the city. The City's contracted waste hauler Waste Management will provide waste collection and disposal services. The amount of commercial gas, power and waste generated by the development is not expected to impact these services. AT&T will provide telephone services to the project site. The developer's coordination with AT&T will ensure timely service to the new site. Therefore, no further mitigation measures are required of the applicant.

| 13 AESTHETICS: | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Scenic vista or highway | ☐ | ☐ | ☐ | ☒ |
| b. Degrade visual character of site & surroundings | ☐ | ☐ | ☐ | ☒ |
| c. Light or glare | ☐ | ☐ | ☐ | ☒ |
| d. Scenic resources (forest land, historic buildings within state scenic highway | ☐ | ☐ | ☐ | ☒ |

**Discussion:**
Per Figure 4.4.2 of the General Plan Technological Background Report, Laurel Canyon Road is not considered a scenic roadway. The City's General Plan does identify State Route 91 as a State-eligible scenic corridor from Interstate 15 west to State Route 55; however, the project site is located southeast of the State Route 91 and the Interstate 15 interchange, therefore, the proposed development will not aesthetically impact the State-eligible scenic corridor. Additionally, future residential development associated with the project site will not negatively impact views from this roadway because residential development is the primary land use along Laurel Canyon Road in the vicinity of the project site. Therefore, the development proposal is consistent with the existing developments in the vicinity and will not aesthetically impact surrounding streets or properties.

| 14. CULTURAL RESOURCES: | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Historical resource | ☐ | ☐ | ☐ | ☒ |
| b. Archaeological resource | ☐ | ☐ | ☐ | ☒ |

| | | | | |
|---|---|---|---|---|
| c. Paleontological resource or unique geologic feature | ☐ | ☐ | ☐ | ☒ |
| d. Disturb human remains | ☐ | ☐ | ☐ | ☒ |

**Discussion:**
Based on the project site's previous agricultural use, an archeological/paleontological survey was not performed. Furthermore, the project site is not known to contain any historical resources, or human remains. However, to ensure the preservation of any potential cultural, archeological or Paleontological resources, mitigation is warranted to ensure the project will have a less than significant effect on the environment with respect to cultural resources (Mitigation Measures 15-21).

15. ***If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission must be contacted within 24 hours. The Native American Heritage Commission must then immediately identify the "most likely descendant(s)" of receiving notification of the discovery. The most likely descendant(s) shall then make recommendations within 48 hours, and engage in consultations concerning the treatment of the remains as provided in Public Resources Code 5097.98.***
16. ***The landowner shall relinquish ownership of all cultural resources, including sacred items, burial goods and all archaeological artifacts that are found on the project area to the appropriate Tribe for proper treatment and disposition.***
17. ***All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible.***
18. ***If inadvertent discoveries of subsurface archaeological/cultural resources are discovered during grading, the Developer shall retain a qualified archaeologist to assess the significance of such resources. Pursuant to Calif. Pub. Res. Code § 21083.2(b) avoidance is the preferred method of preservation for archaeological resources. The archaeologist shall be responsible for determining the significance of the cultural resource and mitigation for such resources. The archeologist shall make the determination based on the provisions of the California Environmental Quality Act with respect to archaeological resources and shall take into account the religious beliefs, customs, and practices of the Tribe(s). If large fossil specimens are encountered during additional grading, the applicant shall immediately cease operation and retain a qualified and trained paleontologist.***
19. ***The paleontologist shall salvage all fossils in the area and provide additional field staff in accordance with modern paleontological techniques.***
20. ***All fossils collected during the project will be prepared to a reasonable point of identification. Excess sediment or matrix will be removed from the specimens to reduce the bulk and cost of storage. Itemized catalogs of all material collected and identified will be provided to the museum repository along with the specimens.***
21. ***A report prepared by the archeologist documenting the results of the monitoring and salvage activities and the significance of the fossils shall be prepared.***

| **15. AGRICULTURE RESOURCES:** | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Williamson Act contract | ☐ | ☐ | ☐ | ☒ |
| b. Conversion of farmland to nonagricultural use | ☐ | ☐ | ☐ | ☒ |

**Discussion:**
The project site is undeveloped and although there is evidence that the project site was utilized in some capacity for agricultural purposes, these enterprises ceased in 1990. It is not designated as an Agricultural Preserve under the Williamson Act and is zoned for residential purposes. As such, the applicant's development proposal for the project site will not result in adverse impacts to agricultural operations in the city. Therefore, no mitigation is required of the applicant in terms of agricultural resources.

| 15. GREENHOUSE GASES: | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| a. Generate greenhouse gases | ☐ | ☐ | ☐ | ☒ |
| b. Conflict with a plan, policy or regulation | ☐ | ☐ | ☐ | ☒ |

**Discussion:**
In September 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing greenhouse gas (GHG) emissions in California. GHGs as defined under AB 32 include carbon dioxide ($CO_2$), methane, nitrous oxide ($N_2O$), hydroflourocarbons, perfluorocarbons, and sulfur hexafluoride ($SF_6$). Under AB 32, the California Air Resource Board (CARB) is responsible for adopting regulations to reduce GHG emissions state-wide. CARB is also responsible for determining what the state-wide greenhouse gas emissions level was in 1990, and approve a statewide greenhouse gas emissions limit that is equivalent to that level, to be achieved by 2020. CARB has approved a 2020 state-wide emissions limit of 427 metric tons of $CO_2$ equivalent ($MtCO_2e$). $MtCO_2e$ is the standard measurement for Carbon equivalent emissions.

Emissions of the aforementioned gases are attributable to human activities associated with industrial/manufacturing, utilities, transportation, residential, and agricultural sectors. Per the Southern California Air Quality Management District (SCAQMD), if a project generates GHG emissions below 3,000 mtCO2e (tonnes of carbon dioxide equivalent), it could be concluded that the project's GHG contribution is not "cumulatively considerable" and is therefore less than significant under CEQA. If the project generates GHG emissions above the threshold, the analysis must identify mitigation measures to reduce GHG emissions.

Based on the project's air quality assessment prepared by OB-1 Air Analyses, April, 2013, development of the project would result in GHG emissions generated from multiple sources.

As shown in Table 10 of the report the operational and construction GHG emissions from the project do not exceed the City of Corona's GHG significance threshold. Therefore, the GHG emissions from the project will not have a significant impact on the environment and would not conflict with the City of Corona's Climate Action Plan for the purpose of reducing emissions of GHG. As such, no mitigation is warranted.

**Table 1 – Greenhouse Gas Emissions**

| Emission Source | GHG Emissions (tonnes) | | | |
|---|---|---|---|---|
| | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2e$ |
| Construction | 436.1 | 0.1084 | 0.0000 | 438.3 |
| Area | 19.3 | 0.0031 | 0.0003 | 19.5 |
| Energy | 404.0 | 0.0141 | 0.0056 | 405.9 |
| Mobile | 1,438.7 | 0.0436 | 0.0000 | 1,439.7 |
| Waste | 24.1 | 1.4215 | 0.0000 | 53.9 |
| Water | 39.8 | 0.0000 | 0.0000 | 39.8 |
| ***TOTALS*** | ***2,362.0*** | ***1.5907*** | ***0.0059*** | ***2,397.1*** |
| | | | *SCAQMD Significance Threshold* | ***3,000*** |
| | | | *Exceed?* | *N* |

| 16. MANDATORY FINDING OF SIGNIFICANCE: | | | | |
|---|---|---|---|---|
| a. Fish/ wildlife population or habitat or important historical sites | ☐ | ☐ | ☒ | ☐ |
| b. Cumulatively considerable impacts | ☐ | ☐ | ☐ | ☒ |
| c. Substantial adverse effects on humans | ☐ | ☐ | ☐ | ☒ |
| d. Short-term vs. long-term goals | ☐ | ☐ | ☐ | ☒ |

Discussion:
As previously detailed in Section 7 (Biological Resources) of this Initial Study, the project site contains ruderal plant communities and drainage features that originate onsite and generally flow to the north. With respect to the avian nesting habitat, ground disturbance and vegetation removal should be conducted outside the avian nesting season (February-August) to avoid impacts to the nesting birds. A pre-construction survey shall be completed within 30 days or less from vegetation disturbance activities (Mitigation Measure No. 6). If passerine birds are found to be nesting, a 250-foot buffer is required around the nesting site, in which the vegetation cannot be disturbed (Mitigation Measure No. 7). In the event that the nest is for a raptor, the buffer shall be expanded to 500-feet. If multiple nests are found, grading and grubbing of the project site shall be postponed. Lastly, a qualified biologist shall closely monitor the project site and nests until it is determined that the nests are no longer active

**18. PREVIOUS ENVIRONMENTAL ANALYSIS:**

Earlier analysis may be used when one or more of the environmental effects have been adequately analyzed in an earlier EIR or Negative Declaration (Section 15063).

DOCUMENTS INCORPORATED BY REFERENCE:

1. City of Corona General Plan, March 17, 2004.
2. City of Corona General Plan Final Environmental Impact Report, March 17, 2004.
3. City of Corona Technical Background Report, March 17, 2004.
4. Phase I Environmental Site Assessment, dated March 29, 2013, prepared by Targhee Inc.
5. Biological Resource Assessment, January 2014, prepared by LSA.
6. Determination of Biological Equivalent or Superior Preservation (DBESP) Analysis, January 2014, prepared by LSA.
7. Traffic Impact Analysis, May 16, 2014, prepared by Linscott Law and Greenspan Engineers.
8. Supplemental Geotechinical Investigation, April 6, 2005, prepared by Geocon Inland Empire Inc.
9. Updated Supplemental Geotechinical Investigation, February 7, 2014, prepared by Geocon West Inc.
10. Preliminary Hydrology Study, May 20, 2014, Prepared by Armstrong & Brooks Consulting Engineers.
11. Preliminary Water Quality Management Plan, May 5, 2014, prepared by Armstrong & Brooks Consulting Engineers.
12. Fuel Modification Plan, March 28, 2014, prepared by Firesafe Planning Solutions.
13. Air Quality Analysis, April, 2013, prepared by OB-1 Air Analyses

# APPENDIX B

Submittals and Comments

# Determination of

# Biologically Equivalent or Superior Preservation Report

## Monteolivo Sewer Line Project

City of Corona

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**October 2019**

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# 1 EXECUTIVE SUMMARY

Mari Girgis, LLC presents this after-the-fact Determination of Biologically Equivalent or Superior Preservation (DBESP) which incorporates the findings from a literature review and general field assessment conducted by VCS Environmental (VCS). VCS prepared this report for the Monteolivo Sewer Line Project (Project) following Project impacts, as further discussed in Section 2.

Pursuant to the Multiple Species Habitat Conservation Plan (MSHCP) Section 6.1.2, Protection of Species Associated with Riparian/Riverine and Vernal Pools Areas, a total of 0.917 acres of areas considered MSHCP Riparian/Riverine features were impacted within the Project site. The Project permanently impacted 0.017 acres of MHSCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources. The Project also temporarily impacted 0.34 acres of MSHCP Riverine Resources. No MSHCP vernal pool resources were impacted.

As required under Operation of Law No. 1600-2014-0218-R6 (Appendix A), the Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total of 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through the purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District.

## 2 INTRODUCTION

### 2.1 Project Description

The Monteolivo Residential Development Project prepared an MSHCP Compliance Report in January 2014 to address impacts associated with grading for the construction of 103 single-family homes and associated on-site infrastructure. This report is being prepared to address impacts associated with the off-site Monteolivo Sewer Line Project located directly north of the residential development. As further described below, impacts to MSHCP resources were not anticipated for the sewer line Project, but did occur and, therefore, this is being submitted as an after-the-fact DBESP.

The Monteolivo Residential Development Project required two off-site improvements. The first was an off-site 8" sewer line to be constructed in an access road between the Monteolivo site and the public sewer in Sherbourne Avenue. This line was not expected to impact MSHCP riparian or riverine resources. However, heavy rains caused significant erosion and a landslide buried the access road. Consequently, the sewer line to be constructed was relocated in the field 20-feet easterly, in order to protect the sewer improvements and access road. The adjacent Riverside Canal and an unnamed drainage to the Riverside Canal also had to be slope-stabilized as a result of the erosion and landslide. This included the replacement of the failed easterly bank in the Riverside Canal with un-grouted rip-rap and widening of the unnamed drainage.

Additionally, in order to finish an on-site storm drain, replacement of an existing culvert, installation of a headwall, and installation of approximately 135 linear feet of riprap for energy dissipation occurred. These improvements occurred directly north of the residential development project site; within the unnamed drainage. These improvements were also not contemplated in the 2014 MSHCP Compliance Report.

### 2.2 Project Area

The Project site is located approximately 0.2 miles east of interstate 15 and one mile south of the State Route 91. The Project site is regionally accessible from Ontario Avenue and State Street to the south. A regional and vicinity map are attached as Figures 1 and 2. The Project site is bounded by the impacted Monteolivo Residential Development Project to the south, an existing residential community to the west, and agricultural/open space to the east and north.

The topography throughout the Project site is generally flat. Elevations on the Project site range from approximately 700 feet above mean sea level (MSL) to 720 feet above MSL. The Project site is located within Section 32, Township 3 South and Range 6 West of the United States Geological Survey (USGS) Topographic Map, 7.5 Minute Series, Corona South Quadrangle, and is located on Assessor's Parcel Numbers 107-080-026, 107-080-034 (partial) and 107-080-036 (partial).

The Project Site is located in the Western Riverside MSHCP Temescal Canyon Area Plan and Gavilan Habitat Management Unit. The majority of the Project site and all impacts to MSHCP riparian/riverine features are not located within an MSHCP Area Plan Subunit, Criteria Cell, or Criteria Cell Group and are not located within any of the identified existing or proposed Cores and Linkages. A small portion of the Project site is located within Criteria Cell 1923, as further discussed in Section 7.2. The Project is not located within any conserved lands or public/quasi-public lands.

The Project site is located within the MSHCP survey area for burrowing owl (*Athene cunicularia*) and narrow endemic plant species San Diego ambrosia (*Ambrosia pumila*), Brand's phacelia (*Phacelia stellaris*), and San Miguel savory (*Clinopodium chandleri*). The Project site is not within a survey area for amphibians, mammals, or criteria area species.

The Project is located in the Santa Ana River watershed. The current drainage pattern includes an unnamed drainage that flows from south to north into the existing Riverside Canal, which eventually outlets into Temescal Creek (Reach 2). This eventually flow into the Santa Ana River, more than 4 miles north of the Project site.

## 3 RIPARIAN/RIVERINE MITIGATION (SECTION 6.1.2)

### 3.1 Methods

Section 6.1.2 of the MSHCP states that "riparian/riverine resources are lands which contain habitat dominated by trees, shrubs, persistent emergent [wetland plant species], or emergent mosses and lichens, which occur close to or which depend upon moisture from a nearby freshwater source; or areas with freshwater after flow during all or a portion of the year" and "Vernal pools are seasonal wetlands that occur in depression areas that have wetland indicators of all three parameters (soils, vegetation and hydrology) during the wetter portion of the growing season but normally lack wetland indicators of hydrology and/or vegetation during the drier portion of the growing season". To determine the areas where "Riparian/Riverine Areas and Vernal Pools" were present, the delineators reviewed previous biological, cultural, and construction reports on the adjacent Monteolivo Residential Development Project site; and reviewed historical aerial imagery.

A site visit to document the current condition of the Project site was conducted by VCS biologist Wade Caffrey on August 28, 2019 and current photographs are in Appendix C.

The boundaries of the pre- and post-construction riparian/riverine resources were determined primarily through the use of present and historical aerial imagery (Google 2019). The physical features of the channel banks and the dripline of any adjacent riparian vegetation extending beyond the bank edges were used to delineate the boundaries of the riparian/riverine resources. A map was compiled showing the impacted MSHCP Riparian/Riverine resources (Figure 3).

Please note, the extent of impacts to MSHCP Riparian/Riverine features are considered best estimates.

3.2 Results/Impacts

As shown in Table 1, permanent impacts occurred to approximately 0.017 acres of MSHCP riverine resources and 0.56 acres of riparian resources. In addition, temporary impacts to 0.34 acres of riverine resources also occurred (Figure 3). Please note, the widening of the unnamed drainage created an increase in MSHCP jurisdictional riverine waters by 0.24 acres, not reflected in the table below.

**Table 1**
**Impacts to Riparian/Riverine Resources Within the Project Site**

| Resource | Permanent Impact (acres) | Temporary Impact (acres) |
|---|---|---|
| MSHCP Riverine | 0.017 | 0.34* |
| MSHCP Riparian | 0.56 | 0.0 |
| **MSHCP TOTAL** | **0.577** | **0.34** |

*Does not include the 0.24 acres of created MSHCP riverine resources

A sewage treatment pond present on the Project site was also altered but was determined to not be a jurisdictional water of the U.S. or State due to its use as an isolated waste treatment facility. The sewage treatment pond would also not be considered an MSHCP riparian/riverine feature because it did not contain a freshwater source. A portion on the pond was converted into a water quality basin and the remainder still exists as a remnant pond, but no longer treats sewage.

No vernal pools, seasonal depressions or fairy shrimp habitat were observed through aerial review or the post-construction site visit in 2019. The Project site does not contain vegetative, hydrologic, or soil characteristics associated with vernal pool and fairy shrimp habitats. The United States Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey lists 1 soil type (Arbuckle Gravelly Loam, 2-9% slopes, dry) and 1 land type (Rough Broken Land) for the Project site; both of which are considered well-draining and therefore not suitable for vernal pools, seasonal depressions, and other fairy shrimp habitat. The field observations, combined with the NRCS identifying a well-drained soil profile on the Project site, determined the lack of vernal pools and seasonal depressions on the Project site.

In regard to fairy shrimp, three species are covered by the MSHCP including the Riverside fairy shrimp (*Streptocephalus woottoni*), Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*),

and vernal pool fairy shrimp (*Branchinecta lynchi*). According to the MSHCP, vernal pool fairy shrimp habitat is limited to vernal pools and alkali vernal pools, and Santa Rosa Plateau fairy shrimp are limited to vernal pools formed on basalt flows. No portion of the Project site is described as having an alkali complex or basalt flows. In addition, no form of vernal pools are considered to be present on the Project site and therefore Santa Rosa Plateau and vernal pool fairy shrimp are not either.

The Riverside fairy shrimp however is known to inhabit more than just vernal pools, including depressions and road ruts. Aside from the sewage treatment pond, no other depressions or road ruts were observed or inundated on aerial imagery or during the post-construction site visit in 2019. The aforementioned remnant sewage treatment pond would not be considered suitable habitat for Riverside fairy shrimp because up until Project impacts the pond contained sewage not believed to be suitable for fairy shrimp.

### 3.3 Mitigation and Equivalency

#### *3.3.1 Direct Effects*

Pursuant to the CDFW Operation of Law, the Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District. The implementation of this mitigation is expected to be biologically superior to that of the impacted areas because it will result in an increase of quality habitat and will be funded through a mitigation bank which will ensure the enhancement area to be protected in perpetuity.

#### *3.3.2 Indirect Effects*

During construction, standard BMP's such as silt fencing and sandbags/straw wattles were implemented where appropriate to prevent impacts to downstream waters. No known indirect effects occurred to MSHCP jurisdictional features and therefore no mitigation is proposed.

## 4 RIPARIAN BIRDS (SECTION 6.1.2)

The MSHCP lists five bird species for protection based off association with riparian/riverine and vernal pool habitats. These species include bald eagle (*Haliaeetus leucocephalus*), least Bell's vireo (*Vireo bellii pusillus*), peregrine falcon (*Falco peregrinus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and western yellow-billed cuckoo (*Coccyzus americanus occidentalis).*

## 4.1 Methods

No general or focused surveys for riparian birds occurred prior to Project implementation.

A review of relevant available literature on riparian habitat and birds within the Project site and vicinity was conducted. Riparian birds that have the potential to occur within the immediate region of the Project site were identified. Several agencies, including the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW), publish lists of particular taxa (species and subspecies) and the associated level of protection or concern associated with each. VCS reviewed and consulted literature and databases focused on the Project site, and included the following sources listed below:

- The California Natural Diversity Database (CNDDB), a CDFW species account database that inventories status and locations of special status species in California, was used to identify any riparian birds that may exist within a two-mile radius of the Project site (CDFW 2019). CNDDB records are generally used as a starting point when determining what special status species, if any, may occur in a particular area. However, these records may be old, lack data not yet entered, and do not represent all the special status species that could be in that particular area.

- A map of USFWS critical habitat to determine species with critical habitat mapped in the general vicinity of the Project (USFWS 2019).

- Pertinent maps, scientific literature, websites, and regional flora and fauna field guides

## 4.2 Results/Impacts

The California Natural Diversity Data Base records show recent occurrences (2006, 2010, and 2014) of least Bell’s vireo from within the project limits. Least Bell's vireo were observed adjacent to the impact areas after Project activities were complete, however, no known impacts to least Bell's vireo occurred.

No additional MSHCP covered riparian birds were observed within the Project site following Project impacts.

## 4.3 Mitigation and Equivalency

No known direct or indirect impacts to least Bell’s vireo or other MSHCP covered riparian bird species occurred and therefore no mitigation is proposed.

## 5 NARROW ENDEMIC PLANT SPECIES MITIGATION (SECTION 6.1.3)

### 5.1 Methods

No focused narrow endemic plant surveys were conducted prior to Project impacts. Habitat suitability for narrow endemic plant species was reviewed using the definitions listed in table 6-1 of the MSHCP.

### 5.2 Results/Impacts

No suitable habitat for the narrow endemic plant survey species is present on the Project site, as further detailed in Table 2 below.

**Table 2: Narrow Endemic and Plant Survey Species Habitat Suitability**

| Species | MSHCP Habitat | Habitat Suitability |
|---|---|---|
| San Diego ambrosia *(Ambrosia pumila)* | Occurs on open floodplain terraces on Gerretson gravelly fine sandy loams, or in the watershed margins of vernal pools or alkali playas on Las Posas loam in close proximity to willow silty alkaline soils. Occurs in sparse annual vegetation | Unsuitable. No Garretson gravelly fine sandy loams, vernal pools, or alkali playas on Las Posas loam. |
| Brand's phacelia *(Phacelia stellaris)* | Occurs in coastal scrub habitats on sandy washes or benches in alluvial floodplains. The species is generally dependent on periodic flooding and sediment transport. The MSHCP account for this species states that "within western Riverside county, Brand's phacelia is restricted to sandy benches along the Santa Ana River. | Unsuitable. Typical habitat conditions are not present. |
| San Miguel Savory *(Satureja chandleri)* | Occurs on rocky, gabbroic, or metavolcanic substrates in chaparral or oak woodlands. | Unsuitable. Non-rocky, gabbroic, or metavolcanic substrates |

### 5.3 Mitigation and Equivalency

No known direct or indirect impacts to narrow endemic plant species occurred and therefore no mitigation is proposed.

## 6 ADDITIONAL SURVEY NEEDS AND PROCEDURES (SECTION 6.3.2)

### 6.1 Criteria Area Species Survey

Surveys for Criteria Area species are not required for this Project under MSHCP Section 6.3.2.

### 6.2 Burrowing Owl

As shown on Figure 4, the Project site falls within the MSHCP burrowing owl survey area.

#### *6.2.1 Methods*

No focused or pre-construction burrowing owl surveys were conducted prior to Project impacts.

#### *6.2.2 Results/Impacts*

No known direct or indirect impacts to narrow endemic plant species occurred.

#### *6.2.3 Mitigation and Equivalency*

No known direct or indirect impacts to burrowing owl occurred.

### 6.3 Criteria Area Species Survey – Mammals

Surveys for Criteria Area mammal species are not required for this Project under MSHCP Section 6.3.2.

### 6.4 Criteria Area Species Survey – Amphibians

Surveys for Criteria Area amphibian species are not required for this Project under MSHCP Section 6.3.2.

## 7 ADDITIONAL CONSIDERATIONS

### 7.1 Delhi Sands Flower-Loving Fly

Delhi soil types are not mapped within the Project site, and therefore, no surveys are required for the Delhi Sands flower-loving fly.

### 7.2 Criteria Cell

A small portion of the Project site lies within Criteria Cell 1923 (Figure 4). No impacts to MSHCP resources occurred within this portion of the Project site. In addition, this portion of the Project site has been previously affected by development and is not located within or nearby the portions of the criteria cell dedicated for conservation. Therefore, pursuant to Section 6.1.4 *Guidelines Pertaining to the Urban Wildlands Interface,* the Project did not

create edge effects on any conserved habitat, reserve lands, or public quasi/public conserved lands.

To prevent any direct impacts to the Criteria Cell outside of the Project site, standard BMP's were used during construction including the use of silt fencing and sandbags/straw wattles where appropriate.

### 7.3 Wildlife Movement

The Project is not located within an MSHCP Area Plan Subunit, Criteria Cell, or Criteria Cell Group and is not located within any of the identified existing or proposed Cores and Linkages; therefore, the site is not considered to function as a regional wildlife movement area. It is possible that the Project site functions in local wildlife movement, however, due to the existing and on-going development to the west and south, it is unlikely that the site plays a critical role in local wildlife movement.

### 7.4 Hydrology

The Project is located in the Santa Ana River watershed. The current drainage pattern includes an unnamed drainage that flows from south to north into the existing Riverside Canal, which flows east and outlets into Temescal Creek (Reach 2). This eventually flows into the Santa Ana River, more than 4 miles north of the Project site. Project impacts did not alter the general drainage pattern of the unnamed drainage or the Riverside canal.

The sewage treatment basin was an isolated system created in the 1980's for the purpose of retaining and decomposing organic matter from the sewer discharge of adjacent properties. The City of Corona, along with the Regional Water Quality Control Board, asked the Monteolivo Residential Development Project to connect the neighboring community to their proposed sewer line to eliminate the problematic sewage treatment pond. The sewage treatment pond was divided in two, and a portion of the basin was improved as a water quality basin to detain runoff from residential areas in the upper watershed of Monteolivo Residential Project and groundwater discharge. The water quality basin will receive water from storm drain and irrigation runoff from the Monteolivo Residential Project once it is built out.

*Flood Storage*

The unnamed drainage was widened and therefore has a greater amount of flood storage than compared to pre-project conditions, making the post-project conditions biologically superior. The flood storage of the Riverside Canal was not altered due to Project impacts.

*Sediment and Toxic Trapping*

The post-construction water quality basin, remnant pond, unnamed drainage, and Riverside Canal will continue to trap sediments from the project site and the upper watershed in the same manner as the pre-construction site conditions. In addition, the constructed water quality

basin is designed to trap and settle toxins in the water to allow algae, fungi, and soil bacteria to decompose inorganic and organic chemicals. These features make it biologically superior to the pre-construction sewage treatment pond.

## 8 Mitigation

As discussed above, the Monteolivo Sewer Line Project plans to purchase mitigation for impacts to MSHCP riparian/riverine resources. The Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total of 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through the purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District.

## 9 REFERENCES


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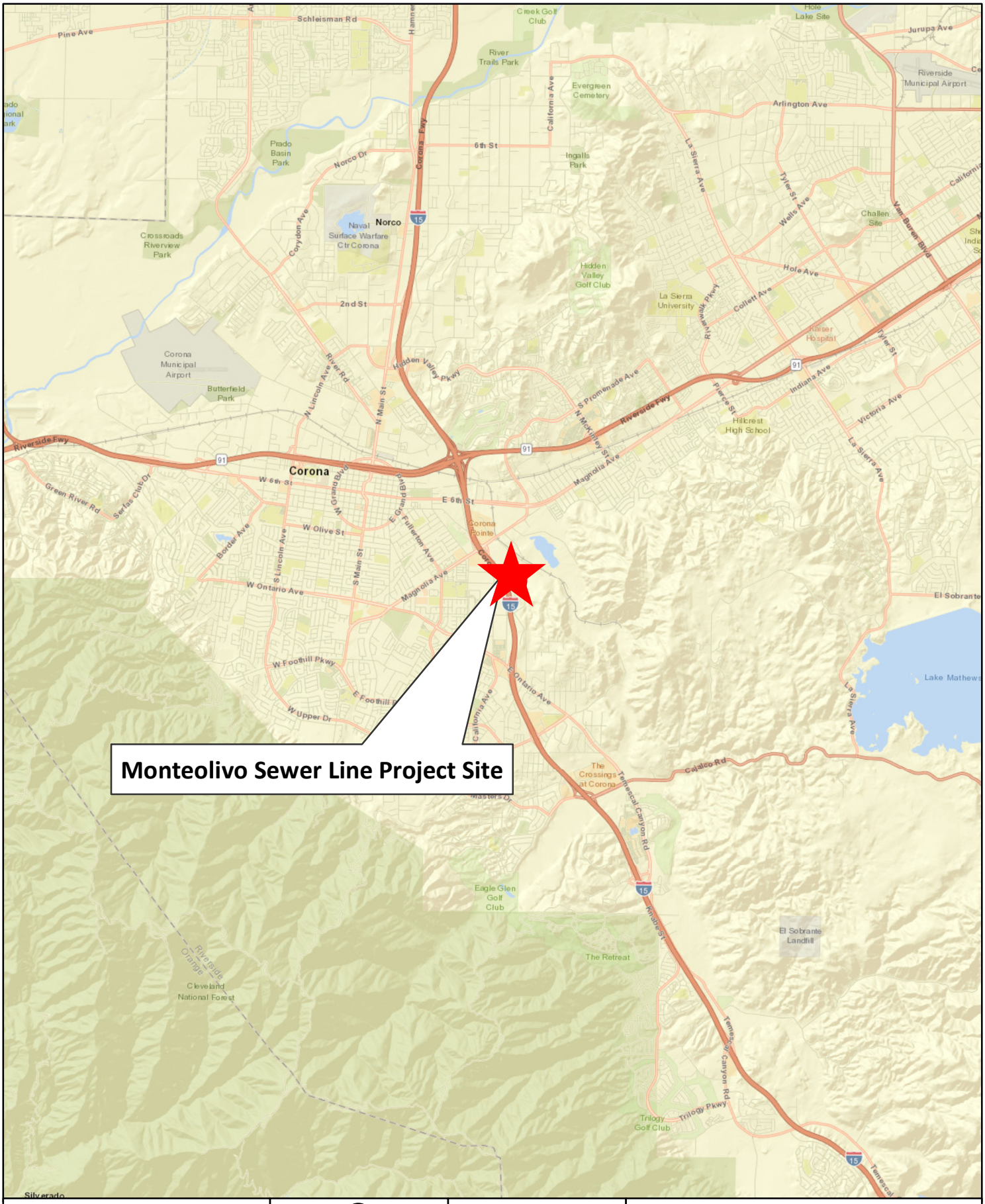
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# Figures




Prepared By:
VCS Environmental

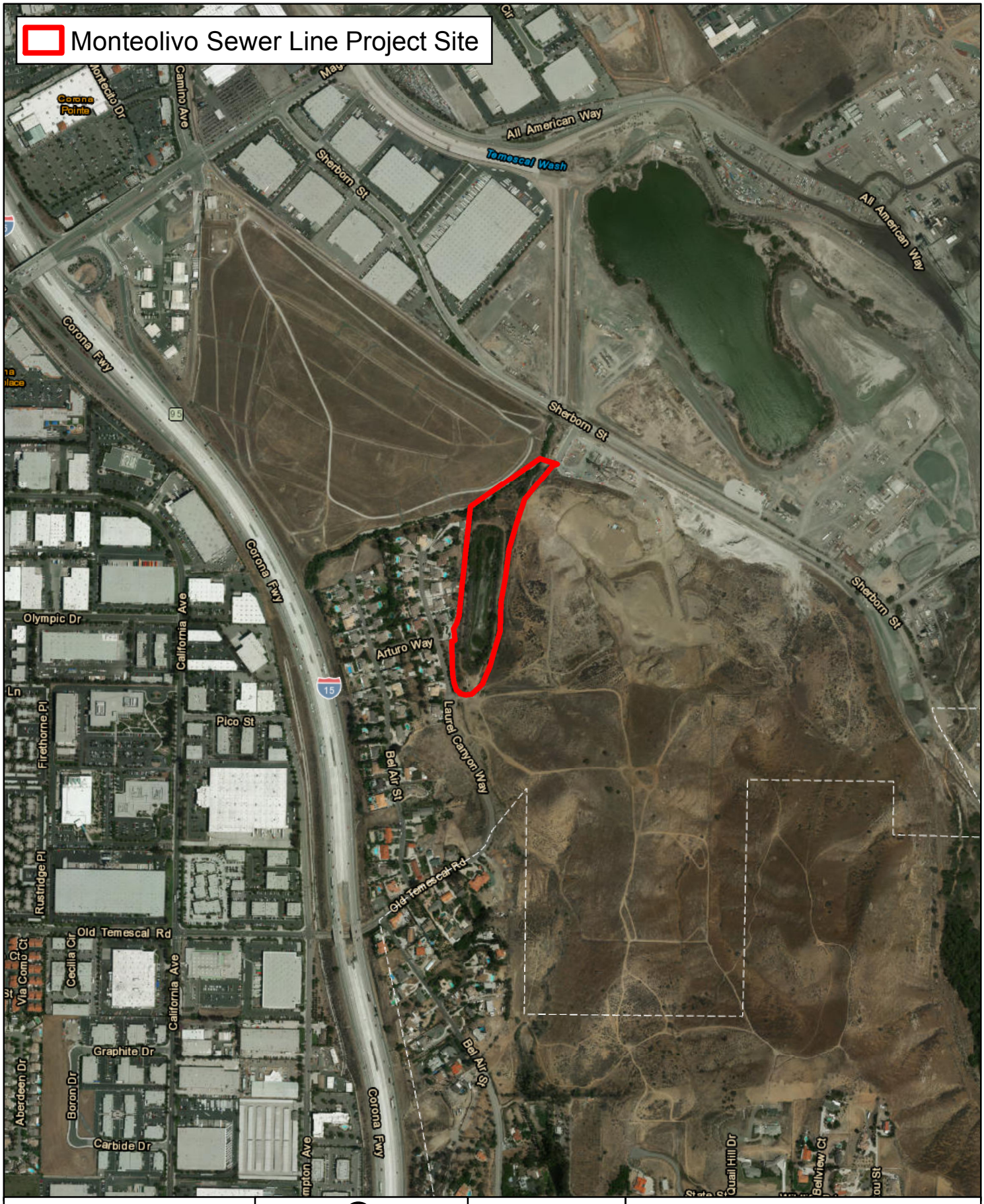
Map Created: March 2019
Data Sources: ESRI

0 0.5 1 Miles
1 in = 2 miles

**Figure 1**

**Mari Girgis, LLC**
**Monteolivo Sewer Line Project**

Regional Map




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources:
ESRI

0 500 1,000 Feet
1 in = 800 feet

**Figure 2**

**Mari Girgis, LLC**
**Monteolivo Sewer Line Proejct**

Vicinity Map




Prepared By:
VCS Environmental

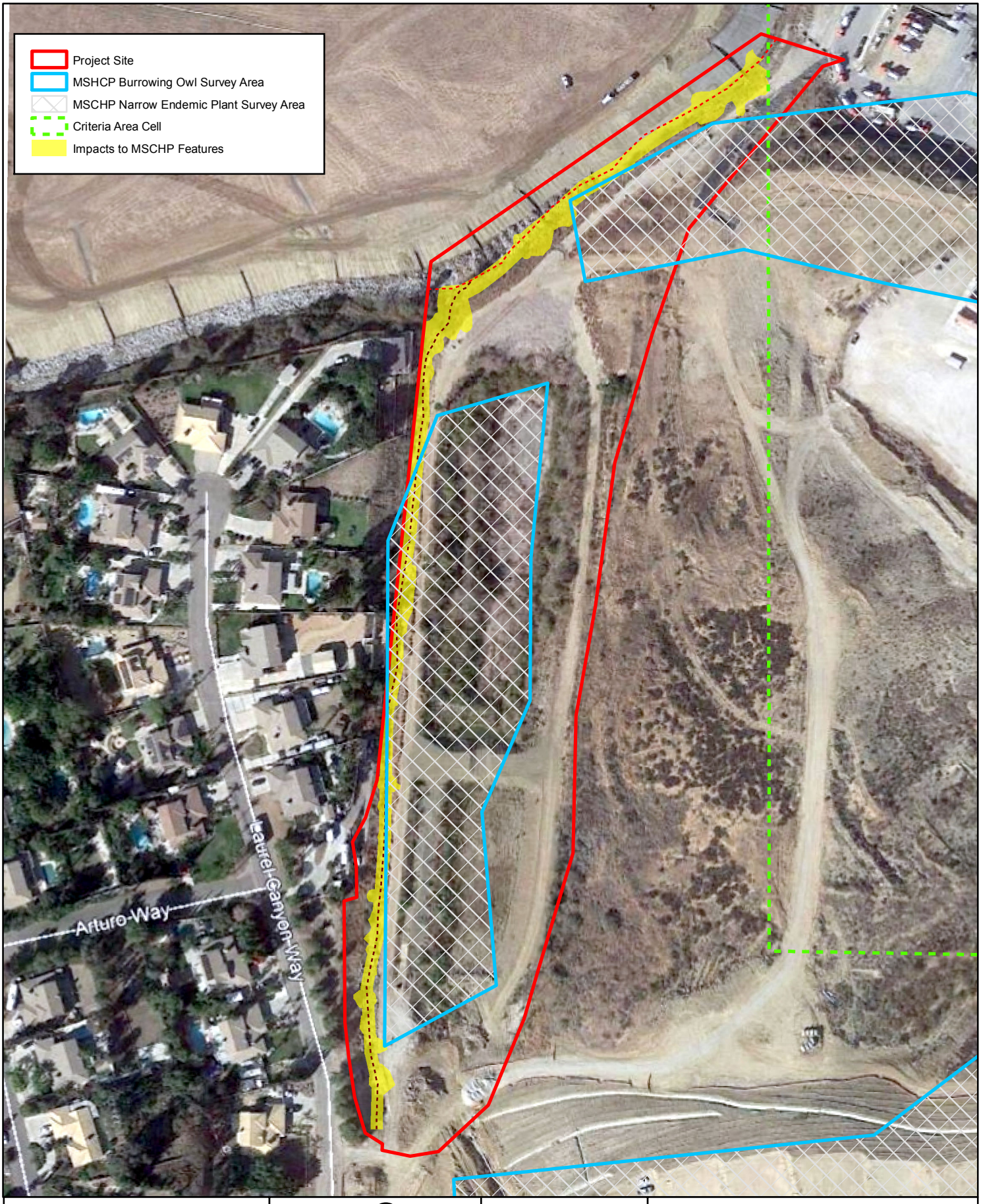
Map Created: October 2019
Data Sources:
Google Earth, LSA, VCS

0 100 200 ft
1 in = 200 feet

*Not including the created 0.24 acres of riverine features

Figure 3

Mari Girgis, LLC
Monteolivo Sewer Line Project
**Impacts to MSHCP Riparian/Riverine Features**




Prepared By:
VCS Environmental

Map Created: October 2019
Data Sources:
MSHCP

0 100 200 ft
1 in = 200 feet

**Figure 4**

Mari Girgis, LLC
Monteolivo Sewer Line Project

**MSHCP Survey Areas**

# Appendix A
# CDFW Operation of Law

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
3602 Inland Empire Blvd.,Suite C-220
Ontario, CA 91764
(909) 484-0167
www.wildlife.ca.gov

*EDMUND G. BROWN, Jr., Governor*
*CHARLTON H. BONHAM, Director*

April 16, 2015

Tom Mungari
Nova Homes, Inc.
245 Fischer Avenue, Unit A-8A
Costa Mesa, CA 92626

Subject: Notification of Lake or Streambed Alteration No. 1600-2014-0218-R6
Monteolivio Project

Dear Mr. Mungari:

The California Department of Fish and Wildlife (Department) had until January 18, 2015 to submit a draft Lake or Streambed Alteration Agreement (Agreement) to you or inform you that an Agreement is not required. The Department did not meet that date. As a result, by law, you may now complete the project described in your notification without an Agreement.

Please note that pursuant to Fish and Game Code section 1602(a)(4)(D), if you proceed with this project, it must be the same as described and conducted in the same manner as specified in the notification and any modifications to that notification received by the Department in writing prior to January 18, 2015. This includes completing the project within the proposed term and seasonal work period and implementing all avoidance and mitigation measures to protect fish and wildlife resources specified in the notification. If the term proposed in your notification has expired, you will need to re-notify the Department before you may begin your project. Beginning or completing a project that differs in any way from the one described in the notification may constitute a violation of Fish and Game Code section 1602.

*Your notification proposes work within an unnamed wash, tributary to Temescal Canyon Wash. The project site is bisected by Laurel Canyon Way and is located 0.2 mile east of Interstate 15, one mile south of State Route 91, in the City of Corona, County of Riverside, California. The proposed project includes the construction of 103 residential lots with a minimum lot size of 12,000 square feet and associated infrastructure, the realignment of the onsite drainage channel, and the construction of a mitigation basin. Your project will permanently impact 1.35 acres and temporarily impact 1.52 acres of habitat subject to CDFW jurisdiction. Best Management Practices (BMPs) and avoidance measures for this project include: following the Water Quality Management Plan and Storm Water Prevention Pollution Plan; avoiding vegetation disturbing activities during nesting bird season; following construction noise and lighting BMPs; and incorporating barriers to minimize unauthorized public access. CDFW recommends the Designated Biologist(s) survey the project site, and within a recommended 500*

*buffer surrounding the project site, for both diurnal and nocturnal nesting birds, prior to commencing project activities (including construction and/or site preparation) regardless of season. You have proposed to mitigate project impacts by: creating and restoring 2.46 acres of habitat onsite, consisting of at least 1.92 acres of riparian habitat and 0.08 acre of wetlands; providing sufficient funds to the Riverside Corona Resource Conservation District for the restoration of 0.76 acre of streambed; and by providing sufficient funds to a conservation entity for ongoing habitat restoration of 1.52 acres. The mitigation basin and drainage channel and will be dedicated to conservation in perpetuity through a conservation easement held by the Riverside-Corona Resource Conservation District or other CDFW-approved entity, with the exception of a 20-foot area on either end of all culverts within these areas. Onsite restoration, maintenance, and reporting will be conducted in accordance with the Habitat Mitigation and Monitoring Plan. Your proposed work period will end no later than October 19, 2019.*

Also note that while you are entitled to complete the project without an Agreement, you are still responsible for complying with other applicable local, state, and federal laws. These include, but are not limited to, the state and federal Endangered Species Acts and Fish and Game Code sections 5650 (water pollution) and 5901 (fish passage).

Finally, if you decide to proceed with your project without an Agreement, you must have a copy of this letter and your notification with all attachments available at all times at the work site. If you have any questions regarding this matter, please contact Claire Ingel at (909) 484-3979 or Claire.ingel@wildlife.ca.gov

Sincerely,

Jeff Brandt
Senior Environmental Scientist

cc: Claire Ingel, Environmental Scientist

ec: Denise Woodard, LSA Associates, Inc.

# Appendix B
# CDFW 1602 Application

| *FOR DEPARTMENT USE ONLY* | | | | |
|---|---|---|---|---|
| *Date Received* | *Amount Received* | *Amount Due* | *Date Complete* | *Notification No.* |
| | *$* | *$* | | |
| *Assigned to:* | | | | |

# NOTIFICATION OF LAKE OR STREAMBED ALTERATION

**Complete EACH field, unless otherwise indicated, following the instructions and submit ALL required enclosures, attachments, and fee(s) to the CDFW regional or field office that serves the area where the project will occur. Attach additional pages to notification, if necessary.**

## 1. APPLICANT PROPOSING PROJECT

| | |
|---|---|
| Name | Emad Bolous |
| Business/Agency | Mari Girgis, LLC |
| Mailing Address | 4030 Birch Street, Suite 100 |
| City, State, Zip | Newport Beach, CA 92660 |
| Phone Number | 949-833-8813 |
| Email | ebolous@aol.com |

## 2. CONTACT PERSON (*Complete only if different from applicant.*)

| | |
|---|---|
| Name | Wade Caffrey |
| Business/Agency | VCS Environmental |
| Mailing Address | 30900 Rancho Viejo Road |
| City, State, Zip | San Juan Capistrano, CA 92675 |
| Phone Number | 949-489-2700 ext. 213 |
| Email | wcaffrey@vcsenvironmental.com |

While an applicant is legally responsible for complying with Fish and Game Code section 1602 et seq., an applicant may designate and authorize an agent (e.g., lawyer, consultant, or other individual) to act as a Designated Representative. The Designated Representative is authorized to sign the notification and any agreement on behalf of the Applicant.

**Do you authorize the Contact Person above to represent you as your Authorized Designated Representative?**

| | |
|---|---|
| ☑ Yes, I authorize. | ☐ No, I do not authorize. |

## 3. PROPERTY OWNER (*Complete only if different from applicant*)

| | |
|---|---|
| Name | Belaire HOA |
| Mailing Address | P.O. Box 77134 |
| City, State, Zip | Corona, CA 92877 |
| Phone Number | |
| Email | |

**4. PROJECT NAME AND AGREEMENT TERM**

| | | | | |
|---|---|---|---|---|
| A. Project Name | Monteolivo Sewer Line Project | | | |
| B. Agreement Term Requested | ☑ Regular (*5 years or less*)<br>☐ Long-term (*greater than 5 years)* | | | |
| C. Project Term | Beginning (*year*) | 2016 | Ending (*year*) | 2021 |

D. Seasonal Work Period

| Season(s)* | Start Date (*month/day*) | End Date (*month/day*) | E. Number of Work Days |
|---|---|---|---|
| 1 | 01/01 | 12/31 | 365 |
| 2 | 01/01 | 12/31 | 365 |
| 3 | 01/01 | 12/31 | 365 |
| 4 | 01/01 | 12/31 | 365 |
| 5 | 01/01 | 12/31 | 365 |

** Continue on additional page(s) if necessary*

**5. AGREEMENT TYPE**

Check the applicable box. If boxes B – F are checked, complete the specified attachment.

| | | |
|---|---|---|
| A. | ☑ Standard *(Most construction projects, excluding the categories listed below)* | |
| B. | ☐ Gravel/Sand/Rock Extraction (*Attachment A*) | *Mine I.D. Number:* _____ |
| C. | ☐ Timber Harvesting (*Attachment B*) | *THP Number:* _____ |
| D. | ☐ Water Diversion/Extraction/Impoundment (*Attachment C*) | *SWRCB Number:* _____ |
| E. | ☐ Routine Maintenance (*Attachment D*) | |
| F. | ☐ Cannabis Cultivation (*Attachment E*) | |
| G. | ☐ CDFW Grant Programs | *Agreement Number:* _____ |
| H. | ☐ Master | |
| I. | ☐ Master Timber Operations | |

## 6. FEES

See the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. ***Note: CDFW may not process this notification until the correct fee has been received.***

| | A. Project Name | B. Project Cost | C. Project Fee |
|---|---|---|---|
| 1 | Monteolivo Project | $325,000 | $4,460.50 |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| | | D. Base Fee *(if applicable)* | |
| | | **E. TOTAL FEE*** | $4,460.50 |

** Check, money order, and Visa or MasterCard (select Environmental Fees from Menu) payments are accepted.*

## 7. PRIOR NOTIFICATION AND ORDERS

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, CDFW for the project described in this notification?

☑ Yes (*Provide the information below*) ☐ No

| Applicant | Notification Number | Date |
|---|---|---|
| Nova Homes, Inc. | 1600-2014-0218-R6 | 04/16/2015 |

B. Is this notification being submitted in response to a court or administrative order or notice, or a notice of violation (NOV) issued by CDFW?

☑ Yes ☐ No (*Enclose a copy of the order, notice, or NOV. If the applicant was directed to notify CDFW verbally rather than in writing, identify the person who directed the applicant to submit this notification, the agency he or she represents, and describe the circumstances relating to the order.*)

| Name of person who directed notification | Agency |
|---|---|
| Claire Ingel | CDFW |

Describe circumstances relating to order

An off-site property adjacent to the existing Monteolivo Residential Development property was used to construct a sewer line for the development and surrounding communities, as well as decomission an existing sewage treatment pond per the Project's Conditions of Approval. Permits from the wildlife agencies were not acquired for the off-site property prior to impacts to jurisdictional features.

☐ *Continued on additional page(s)*

## 8. PROJECT LOCATION

A. Address or description of project location.
(*Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway.*)

The Project is located approximately 0.2 miles east of interstate 15 and one mile south of the State Route 91. The northwest portion of the proposed project is bisected by Laurel Canyon Way. The Project site is regionally accessible from Ontario Avenue and State Street to the south. A regional and vicinity map are attached as Figures 1 and 2.

☐ *Continued on additional page(s)*

| | |
|---|---|
| B. River, stream, or lake affected by the project. | Riverside Canal and unnamed drainage to Riverside Canal |
| C. What water body is the river, stream, or lake tributary to? | Temescal Wash |
| D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts? | ☐ Yes ☑ No ☐ Unknown |
| E. County | Riverside County |

| F. USGS 7.5 Minute Quad Map Name | G. Township | H. Range | I. Section | J. ¼ Section |
|---|---|---|---|---|
| Corona South, California | 3 South | 6 West | 32 | |
| | | | | |
| | | | | |

☐ *Continued on additional page(s)*

K. Meridian (check one) ☐ Humboldt ☐ Mt. Diablo ☑ San Bernardino

L. Assessor's Parcel Number(s)

| | |
|---|---|
| 107-080-026 | 107-080-036 (partial) |
| 107-080-034 (partial) | |

☐ *Continued on additional page(s)*

M. Geographic coordinates (*Provide the latitude and longitude coordinates for the property where the project(s) will take place. CDFW utilizes decimal degrees and WGS 84 datum. Access Google Maps Help if you need assistance in finding your coordinates.)*

| | | |
|---|---|---|
| Latitude/Longitude | *Latitude:* 33.8583 | *Longitude:* -117.5331 |
| | *Latitude:* 33.8616 | *Longitude:* -117.5329 |
| | *Latitude:* 33.8625 | *Longitude:* -117.5312 |
| | *Latitude:* 33.8610 | *Longitude:* -117.5321 |
| | *Latitude:* 33.8584 | *Longitude:* -117.5325 |

## 9. PROJECT CATEGORY

| WORK TYPE | NEW CONSTRUCTION | REPLACE EXISTING STRUCTURE | REPAIR-MAINTAIN-OPERATE EXISTING STRUCTURE |
|---|---|---|---|
| Bank stabilization – bioengineering/recontouring | ☑ | ☐ | ☐ |
| Bank stabilization – rip-rap/retaining wall/gabion | ☑ | ☑ | ☐ |
| Boat dock/pier | ☐ | ☐ | ☐ |
| Boat ramp | ☐ | ☐ | ☐ |
| Bridge | ☐ | ☐ | ☐ |
| Channel clearing/vegetation management | ☐ | ☐ | ☐ |
| Culvert | ☐ | ☑ | ☐ |
| Debris basin | ☐ | ☐ | ☐ |
| Dam | ☐ | ☐ | ☐ |
| Filling of wetland, river, stream, or lake | ☑ | ☐ | ☐ |
| Geotechnical survey | ☐ | ☐ | ☐ |
| Habitat enhancement – revegetation/mitigation | ☐ | ☐ | ☐ |
| Levee | ☐ | ☐ | ☐ |
| Low water crossing | ☐ | ☐ | ☐ |
| Road/trail | ☐ | ☐ | ☐ |
| Sediment removal: pond, stream, or marina | ☐ | ☐ | ☐ |
| flood control | ☐ | ☐ | ☐ |
| Storm drain outfall structure | ☐ | ☑ | ☐ |
| Temporary stream crossing | ☐ | ☐ | ☐ |
| Utility crossing: horizontal directional drilling | ☐ | ☐ | ☐ |
| jack/bore | ☐ | ☐ | ☐ |
| open trench | ☐ | ☐ | ☐ |
| Water diversion without facility | ☐ | ☐ | ☐ |
| Water diversion with facility | ☐ | ☐ | ☐ |
| Other *(specify)*: | ☐ | ☐ | ☐ |

**10. PROJECT DESCRIPTION**

A. Describe the project in detail. Include photographs of the project location and immediate surrounding area.

- Written description of all project activities with detailed step-by-step description of project implementation.
- Include any structures (e.g., rip-rap, culverts) that will be placed or modified in or near the stream, river, or lake, and any channel clearing.
- Specify volume, and dimensions of all materials and features (e.g., rip rap fields) that will be used or installed.
- If water will be diverted or drafted, specify the purpose or use and include Attachment C.
- Enclose diagrams, drawings, design plans, construction specifications, and maps that provide all of the following: site specific construction details; dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, stockpile areas, areas of temporary disturbance, and where the equipment/machinery will access the project area.
  - A helpful resource to assist in the development of quality PDF maps in Google Earth. See Using Google Earth to Map your Property (PDF).

This application is being submitted as an after-the-fact SAA Notification for the Monteolivo Sewer Line Project (Project).

The Monteolivo Residential Development Project obtained a CDFW Operation of Law dated April 16, 2015 (SAA #1600-2014-0218-R6) for impacts associated with grading for the construction of 103 single-family homes and associated on-site infrastructure.

The Project required two off-site improvements. The first was an off-site 8" sewer line to be constructed in an access road between the Monteolivo site and the public sewer in Sherbourne Avenue. This line was not expected to impact waters of the State. However, heavy rains caused significant erosion and a landslide buried the access road. Consequently, the sewer line to be constructed was relocated in the field 20-feet easterly. In order to protect the sewer improvements and access road, the adjacent Riverside Canal and an unnamed drainage to the Riverside Canal had to be slope-stabilized. This included the replacement of the failed easterly bank in the Riverside Canal with un-grouted rip-rap and widening of the unnamed drainage.

The second improvement was not contemplated in the original 1600 application. In order to finish an on-site storm drain, replacement of an existing culvert, installation of a headwall, and installation of approximately 135 linear feet of riprap for energy dissipation occurred. These improvements occurred directly north of the residential development project site; within the off-site portion of the unnamed drainage.

Post-construction site photographs are attached as Appendix A.

☐ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

Construction equipment, including but not limited to dozers, excavators, and dump trucks were required for this work.

☐ *Continued on additional page(s)*

| | |
|---|---|
| C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B). | ☐ Yes ☑ No (*Skip to box 11*) |
| D. Will the project require work in the wetted portion of the channel? | ☐ Yes (*Enclose a plan to divert water around work site*)<br>☑ No |

## 11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

Permanent Impacts:
-0.017 acres of permanent impacts occurred to streambed waters of the State for placement of rip rap in the unnamed drainage.
-0.56 acres of permanent impacts occurred to riparian waters of the State for removal of riparian vegetation within the Riverside Canal and unnamed drainage.
Temporary Impacts:
-0.34 acres of temporary impacts occurred to streambed waters of the state for widening of the unnamed drainage and replacement of rip rap in the Riverside Canal

Note: The total acreage of streambed waters of the State within the unnamed drainage increased by 0.24 acres post-construction due to widening of the drainage. Impacts can be seen on Figure 3.

☐ *Continued on additional page(s)*

B. Will the project affect any vegetation? ☑ Yes (*Complete the tables below*) ☐ No *(Include aerial photo with date supporting this determination)*

| Vegetation Type | Temporary Impact | Permanent Impact |
|---|---|---|
| Disturbed | Linear feet: _____ Total area: 0.34 | Linear feet: _____ Total area: 0.02 |
| Riparian | Linear feet: _____ Total area: _____ | Linear feet: _____ Total area: 0.56 |

| Tree Species | Number of Trees to be Removed | Trunk Diameter (range) |
|---|---|---|
| Freemont cottonwood (Populus fremontii) | 2 | N/A |
| Goodding's willow (Salix goodingii) | 12 | N/A |
| arroyo willow (Salix lasiolepis) | 12 | N/A |
| blue elderberry (Sambucus nigra ssp. cerulea) | 12 | N/A |

*numbers approximate based on aerial review

☐ *Continued on additional page(s)*

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

☑ Yes *(List each species and/or describe the habitat below)* ☐ No ☐ Unknown

Least Bell's vireo (FE, SE) were observed adjacent to waters of the State impact areas after Project activities were complete. No known impacts to Least Bell's vireo occurred.

☐ *Continued on additional page(s)*

D. Identify the source(s) of information that supports a "yes" or "no" answer above in Box 11.C.

-CNDDB
-Observed adjacent to impact areas.

☐ *Continued on additional page(s)*

E. Has a biological study been completed for the project site?

☐ Yes (*Enclose the biological study*) ☑ No

*Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.*

F. Has one or more technical studies (e.g., engineering, hydrologic, geological, or geomorphological) been completed for the project or project site?

☑ Yes *(Enclose the study(ies))* ☐ No *Hydrology report included as Appendix B

*Note: One or more technical studies may be required to evaluate potential project impacts to a lake or streambed.*

G. Have fish or wildlife resources or waters of the state been mapped or delineated on the project site?

☑ Yes (*Enclose the mapped results*) ☐ No

*Note: Check "yes" if fish and wildlife resources or waters of the state on the project site have been mapped or delineated. "'Wildlife' means and includes all wild animals, birds, plants, fish, amphibians, reptiles and related ecological communities, including the habitat upon which the wildlife depends." (Fish & G. Code, § 89.5.) If "yes" is checked, submit the mapping or delineation. If the mapping or delineation is in digital format (e.g., GIS shape files or KMZ), you must submit the information in this format for CDFW to deem your notification complete. If "no" is checked, or the resolution of the mapping or delineation is insufficient, CDFW may request mapping or delineation (in digital or non-digital format), or higher resolution mapping or delineation for CDFW to deem the notification complete.*

**12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES**

A. Describe the techniques that will be used to prevent sediment, hazardous, or other deleterious materials from entering watercourses during and after construction.

Techniques used during construction to prevent sediment and pollutants from entering the watercourse included the use silt fencing, sandbags/straw wattles where appropriate and designating equipment staging locations outside of the drainage. Post construction, the drainages were slope-stabilized (which included the installation/replacement of rip rap) to prevent erosion.

☐ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

Vegetation removal only occurred in areas necessary to complete Project activities.

☐ *Continued on additional page(s)*

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

(1) The Project proposes to mitigate for permanent impacts to 0.017 acres of streambed waters of the State though purchase of mitigation at a 2:1 ratio for a total of 0.034 acres of credits.
(2) The Project proposes to mitigate for permanent impacts to 0.56 acres of riparian waters of the State through purchase of mitigation at a 2:1 ratio for a total of 1.12 acres of credits.
(3) The Project proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits.

*All credits purchased would be ephemeral enhancement through the Riverside-Corona Resource Conservation District*

☐ *Continued on additional page(s)*

## 13. PERMITS

List any local, State, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

A. USACE 404 NWP ☑ Applied ☐ Issued

B. RWQCB 401 WQC ☑ Applied ☐ Issued

C. MSHCP DBESP & Consistency Analysis - drafted for submittal ☐ Applied ☐ Issued

D. Unknown whether ☐ local, ☐ State, or ☐ federal permit is needed for the project. (*Check each box that applies*)

☐ *Continued on additional page(s)*

## 14. ENVIRONMENTAL REVIEW

| | | | |
|---|---|---|---|
| A. Has a CEQA lead agency been determined? | ☑ Yes (*Complete boxes B, C, D, E, and F*) ☐ No (*Skip to box 14.G*) | | |
| B. CEQA Lead Agency | City of Corona | | |
| C. Contact Person | Sandra Yang | D. Phone Number | 951-736-2262 |

E. Has a draft or final document been prepared for the project pursuant to CEQA and/or NEPA?

☐ Yes (*Check the box below for each CEQA or NEPA document that has been prepared and enclose a copy of each.*)

☑ No (*Check the box below for each CEQA or NEPA document listed below that will be or is being prepared.*)

| | | |
|---|---|---|
| ☐ Notice of Exemption | ☑ Mitigated Negative Declaration | ☐ NEPA document (*type*): |
| ☑ Initial Study | ☐ Environmental Impact Report | |
| ☐ Negative Declaration | ☐ Notice of Determination *(Enclose)* | |
| ☐ THP/ NTMP | ☐ Mitigation, Monitoring, & Reporting Plan | |

F. State Clearinghouse Number (*if applicable*)

G. If the project described in this notification is not the "whole project" or action pursuant to CEQA, briefly describe the entire project (Cal. Code Regs., tit. 14 § 15378).

☐ *Continued on additional page(s)*

H. Has a CEQA filing fee been paid pursuant to Fish and Game Code section 711.4?

☐ Yes (*Enclose proof of payment*) ☑ No (*Briefly explain below the reason a CEQA filing fee has not been paid)*

*Note: The CEQA filing fee is in addition to the notification fee. If a CEQA filing fee is required, the Lake or Streambed Alteration Agreement may not be finalized until paid.*

An addendum to the IS/MND is being prepared and a NOD + fees will be paid.

**15. SITE INSPECTION**

Check one box only.

☐ In the event CDFW determines that a site inspection is necessary, I hereby authorize a CDFW representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant CDFW such entry.

☑ I request CDFW to first contact (*insert name*) Wade Caffrey - VCS Environmental at (*insert phone number or email address*) wcaffrey@vcsenvironmental.com to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay CDFW's determination as to whether a Lake or Streambed Alteration Agreement is required and/or CDFW's issuance of a draft agreement pursuant to this notification.

**16. DIGITAL FORMAT**

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

☑ Yes (Please enclose the information via digital media with the completed notification form.)

☐ No

**17. SIGNATURE**

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, CDFW may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless CDFW has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

Emad Bolous
Signature of Applicant or Applicant's Authorized Representative

5/21/19
Date

Emad Bolous
Print Name




Prepared By:
VCS Environmental

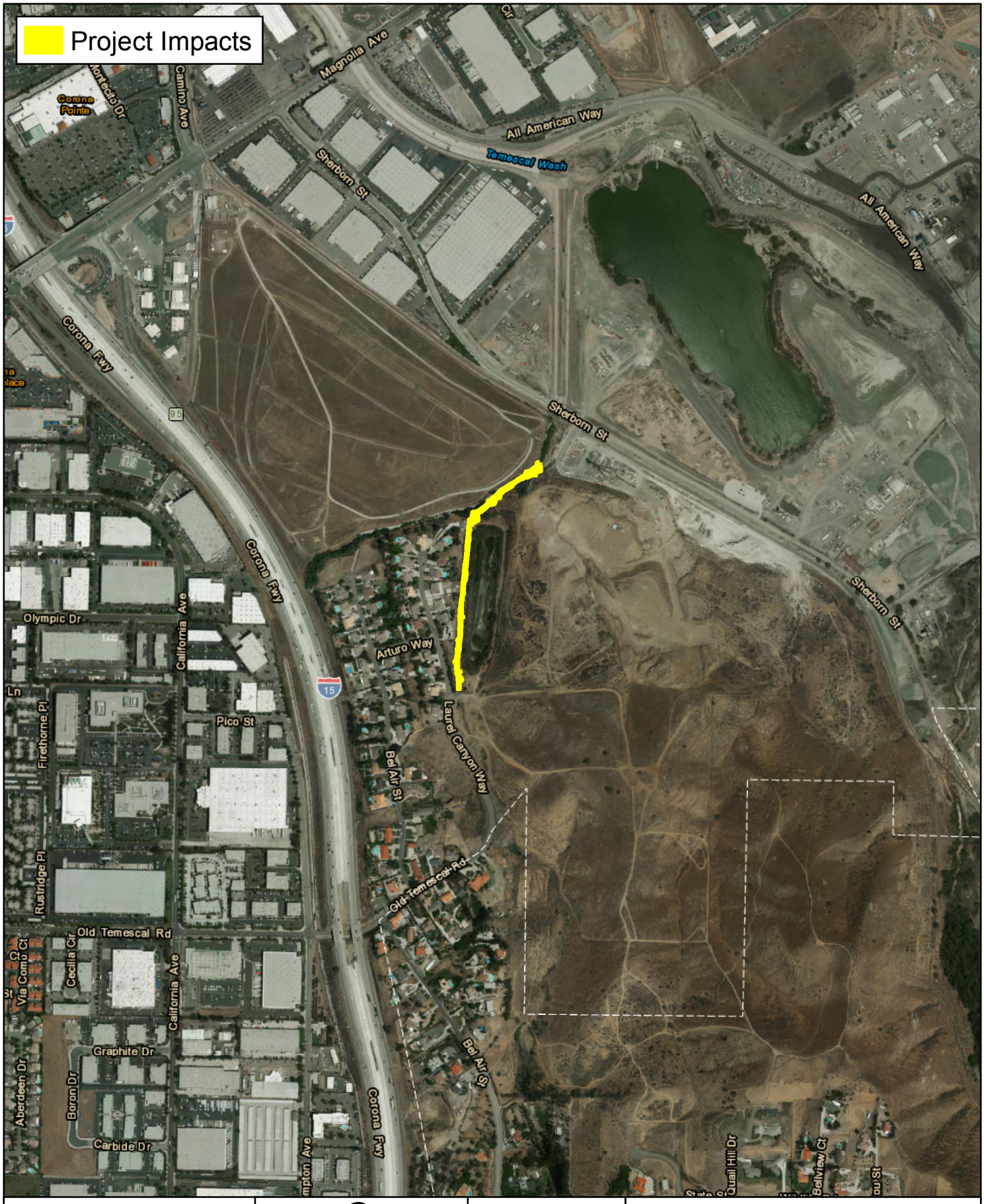
Map Created: March 2019
Data Sources: ESRI

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1 in = 2 miles

**Figure 1**

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Regional Map




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources:
ESRI

0 500 1,000 Feet
1 in = 800 feet

**Figure 2**

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Vicinity Map




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources:
Google Earth, LSA, VCS

0 100 200 ft
1 in = 200 feet

*Not including the created 0.24 acres of streambed WoS

Figure 3

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Jurisdictional Waters of the State



Photograph 1: *View of improvements to the unnamed drainage. Photograph taken May 3, 2017*



Photograph 2: *View of new culvert that includes two, five-foot diameter concrete culverts and a 20-foot wide headwall. Photograph taken May 3, 2017.*



Photograph 3: *View of habitat conditions at the confluence of the drainage and the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 4: *View of general habitat conditions along the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 5: *View of general habitat conditions along the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 6: *View of grouted rip-rap on the northerly bank of the Riverside Canal and un-grouted rock rip-rap that was placed on the southerly bank as part of the sewer line project. Photograph taken May 3, 2017.*

# Appendix C
# Photopages



Photo 1. View to the southwest, concrete outlet into the unnamed draiange



Photo 2. View to the north of the unnamed drainage (left) and access road (right).



Photo 3. View to the northwest of the Riverside Canal.



Photo 4. View to the east of the water quality pond.

# Determination of

# Biologically Equivalent or Superior Preservation Report

## Monteolivo Sewer Line Project

City of Corona

**Mari Girgis, LLC**

*Emad Bolous*

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**VCS Environmental**

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**March 2020**

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B. RWQCB Notice of Violation No. 332014-25
C. USACE Non-Notifying NWP #12
D. Photopages

# 1 EXECUTIVE SUMMARY

Mari Girgis, LLC presents this after-the-fact Determination of Biologically Equivalent or Superior Preservation (DBESP) which incorporates the findings from a literature review and general field assessment conducted by VCS Environmental (VCS). VCS prepared this report for the Monteolivo Sewer Line Project (Project) following Project impacts, as further discussed in Section 2.

Pursuant to the Multiple Species Habitat Conservation Plan (MSHCP) Section 6.1.2, Protection of Species Associated with Riparian/Riverine and Vernal Pools Areas, a total of 0.917 acres of areas considered MSHCP Riparian/Riverine features were impacted within the Project site. The Project permanently impacted 0.017 acres of MHSCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources. The Project also temporarily impacted 0.34 acres of MSHCP Riverine Resources. No MSHCP vernal pool resources were impacted.

As required under Operation of Law No. 1600-2019-0139-R6 (Appendix A), the Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total of 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through the purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District.

## 2 INTRODUCTION

### 2.1 Project Description

The Monteolivo Residential Development Project prepared an MSHCP Compliance Report in January 2014 to address impacts associated with grading for the construction of 103 single-family homes and associated on-site infrastructure. This DBESP report is being prepared to address impacts associated with the off-site Monteolivo Sewer Line Project located directly north of the residential development. As further described below, impacts to MSHCP resources were not anticipated for the sewer line Project, but did occur and, therefore, this is being submitted as an after-the-fact DBESP. Please note, an after-the-fact Operation of Law was issued by the California Department of Fish and Wildlife on September 25, 2019 (Appendix A), a Notice of Violation was issued from the Regional Water Quality Control Board on August 15, 2019 (Appendix B) and a Non-Notifying Nationwide Permit #12 was submitted to the U.S. Army Corps of Engineers on March 9, 2020 (Appendix C).

The Monteolivo Residential Development Project required two off-site improvements. The first was an off-site 8" sewer line to be constructed in an access road between the Monteolivo site and the public sewer in Sherbourne Avenue. This line was not expected to impact MSHCP riparian or riverine resources. However, heavy rains caused significant erosion and a landslide buried the access road. Consequently, the sewer line to be constructed was relocated in the field 20-feet easterly, in order to protect the sewer improvements and access road. The adjacent Riverside Canal and an unnamed drainage to the Riverside Canal also had to be slope-stabilized as a result of the erosion and landslide. This included the replacement of the failed easterly bank in the Riverside Canal with un-grouted rip-rap and widening of the unnamed drainage.

Additionally, in order to finish an on-site storm drain, replacement of an existing culvert, installation of a headwall, and installation of approximately 135 linear feet of riprap for energy dissipation occurred. These improvements occurred directly north of the residential development project site; within the unnamed drainage. These improvements were also not contemplated in the 2014 MSHCP Compliance Report.

### 2.2 Project Area

The Project site is located approximately 0.2 miles east of interstate 15 and one mile south of the State Route 91. The Project site is regionally accessible from Ontario Avenue and State Street to the south. A regional and vicinity map are attached as Figures 1 and 2. The Project site is bounded by the impacted Monteolivo Residential Development Project to the south, an existing residential community to the west, and agricultural/open space to the east and north.

The topography throughout the Project site is generally flat. Elevations on the Project site range from approximately 700 feet above mean sea level (MSL) to 720 feet above MSL. The Project

site is located within Section 32, Township 3 South and Range 6 West of the United States Geological Survey (USGS) Topographic Map, 7.5 Minute Series, Corona South Quadrangle, and is located on Assessor's Parcel Numbers 107-080-026, 107-080-034 (partial) and 107-080-036 (partial).

The Project Site is located in the Western Riverside MSHCP Temescal Canyon Area Plan and Gavilan Habitat Management Unit. The majority of the Project site and all impacts to MSHCP riparian/riverine features are not located within an MSHCP Area Plan Subunit, Criteria Cell, or Criteria Cell Group and are not located within any of the identified existing or proposed Cores and Linkages. A small portion of the Project site is located within Criteria Cell 1923, as further discussed in Section 7.2. The Project is not located within any conserved lands or public/quasi-public lands.

The Project site is located within the MSHCP survey area for burrowing owl (*Athene cunicularia*) and narrow endemic plant species San Diego ambrosia (*Ambrosia pumila*), Brand's phacelia (*Phacelia stellaris*), and San Miguel savory (*Clinopodium chandleri*). The Project site is not within a survey area for amphibians, mammals, or criteria area species.

The Project is located in the Santa Ana River watershed. The current drainage pattern includes an unnamed drainage that flows from south to north into the existing Riverside Canal, which eventually outlets into Temescal Creek (Reach 2). This eventually flow into the Santa Ana River, more than 4 miles north of the Project site.

## 3 RIPARIAN/RIVERINE MITIGATION (SECTION 6.1.2)

### 3.1 Methods

Section 6.1.2 of the MSHCP states that "riparian/riverine resources are lands which contain habitat dominated by trees, shrubs, persistent emergent [wetland plant species], or emergent mosses and lichens, which occur close to or which depend upon moisture from a nearby freshwater source; or areas with freshwater after flow during all or a portion of the year" and "Vernal pools are seasonal wetlands that occur in depression areas that have wetland indicators of all three parameters (soils, vegetation and hydrology) during the wetter portion of the growing season but normally lack wetland indicators of hydrology and/or vegetation during the drier portion of the growing season". To determine the areas where "Riparian/Riverine Areas and Vernal Pools" were present, the delineators reviewed previous biological, cultural, and construction reports on the adjacent Monteolivo Residential Development Project site; and reviewed historical aerial imagery.

A site visit to document the current condition of the Project site was conducted by VCS biologist Wade Caffrey on August 28, 2019 and current photographs are in Appendix D.

The boundaries of the pre- and post-construction riparian/riverine resources were determined primarily through the use of present and historical aerial imagery (Google 2019). The physical

features of the channel banks and the dripline of any adjacent riparian vegetation extending beyond the bank edges were used to delineate the boundaries of the riparian/riverine resources. A map was compiled showing the impacted MSHCP Riparian/Riverine resources (Figure 3).

Please note, the extent of impacts to MSHCP Riparian/Riverine features are considered best estimates.

3.2 Results/Impacts

As shown in Table 1, permanent impacts occurred to approximately 0.017 acres of MSHCP riverine resources and 0.56 acres of riparian resources. In addition, temporary impacts to 0.34 acres of riverine resources also occurred (Figure 3). Please note, the widening of the unnamed drainage created an increase in MSHCP jurisdictional riverine waters by 0.24 acres, not reflected in the table below.

**Table 1**
**Impacts to Riparian/Riverine Resources Within the Project Site**

| Resource | Permanent Impact (acres) | Temporary Impact (acres) |
|---|---|---|
| MSHCP Riverine | 0.017 | 0.34* |
| MSHCP Riparian | 0.56 | 0.0 |
| **MSHCP TOTAL** | **0.577** | **0.34** |

*Does not include the 0.24 acres of created MSHCP riverine resources

A sewage treatment pond present on the Project site was also altered but was determined to not be a jurisdictional water of the U.S. or State due to its use as an isolated waste treatment facility. The sewage treatment pond would also not be considered an MSHCP riparian/riverine feature because it did not contain a freshwater source. A portion on the pond was converted into a water quality basin and the remainder still exists as a remnant pond, but no longer treats sewage.

No vernal pools, seasonal depressions or fairy shrimp habitat were observed through aerial review or the post-construction site visit in 2019. The Project site does not contain vegetative, hydrologic, or soil characteristics associated with vernal pool and fairy shrimp habitats. The United States Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey lists 1 soil type (Arbuckle Gravelly Loam, 2-9% slopes, dry) and 1 land type (Rough Broken Land) for the Project site; both of which are considered well-draining and therefore not suitable for vernal pools, seasonal depressions, and other fairy shrimp habitat. The field

observations, combined with the NRCS identifying a well-drained soil profile on the Project site, determined the lack of vernal pools and seasonal depressions on the Project site.

In regard to fairy shrimp, three species are covered by the MSHCP including the Riverside fairy shrimp (*Streptocephalus woottoni*), Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*), and vernal pool fairy shrimp (*Branchinecta lynchi*). According to the MSHCP, vernal pool fairy shrimp habitat is limited to vernal pools and alkali vernal pools, and Santa Rosa Plateau fairy shrimp are limited to vernal pools formed on basalt flows. No portion of the Project site is described as having an alkali complex or basalt flows. In addition, no form of vernal pools are considered to be present on the Project site and therefore Santa Rosa Plateau and vernal pool fairy shrimp are not either.

The Riverside fairy shrimp however is known to inhabit more than just vernal pools, including depressions and road ruts. Aside from the sewage treatment pond, no other depressions or road ruts were observed or inundated on aerial imagery or during the post-construction site visit in 2019. The aforementioned remnant sewage treatment pond would not be considered suitable habitat for Riverside fairy shrimp because up until Project impacts the pond contained sewage not believed to be suitable for fairy shrimp.

### 3.3 Mitigation and Equivalency

#### *3.3.1 Direct Effects*

Pursuant to the CDFW Operation of Law, the Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District. The implementation of this mitigation is expected to be biologically superior to that of the impacted areas because it will result in an increase of quality habitat and will be funded through a mitigation bank which will ensure the enhancement area to be protected in perpetuity.

#### *3.3.2 Indirect Effects*

During construction, standard BMP's such as silt fencing and sandbags/straw wattles were implemented where appropriate to prevent impacts to downstream waters. No known indirect effects occurred to MSHCP jurisdictional features and therefore no mitigation is proposed.

## 4 RIPARIAN BIRDS (SECTION 6.1.2)

The MSHCP lists five bird species for protection based off association with riparian/riverine and vernal pool habitats. These species include bald eagle (*Haliaeetus leucocephalus*), least Bell's

vireo (*Vireo bellii pusillus*), peregrine falcon (*Falco peregrinus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and western yellow-billed cuckoo (*Coccyzus americanus occidentalis).*

## 4.1 Methods

No general or focused surveys for riparian birds occurred prior to Project implementation.

A review of relevant available literature on riparian habitat and birds within the Project site and vicinity was conducted. Riparian birds that have the potential to occur within the immediate region of the Project site were identified. Several agencies, including the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW), publish lists of particular taxa (species and subspecies) and the associated level of protection or concern associated with each. VCS reviewed and consulted literature and databases focused on the Project site, and included the following sources listed below:

- The California Natural Diversity Database (CNDDB), a CDFW species account database that inventories status and locations of special status species in California, was used to identify any riparian birds that may exist within a two-mile radius of the Project site (CDFW 2019). CNDDB records are generally used as a starting point when determining what special status species, if any, may occur in a particular area. However, these records may be old, lack data not yet entered, and do not represent all the special status species that could be in that particular area.

- A map of USFWS critical habitat to determine species with critical habitat mapped in the general vicinity of the Project (USFWS 2019).

- Pertinent maps, scientific literature, websites, and regional flora and fauna field guides

## 4.2 Results/Impacts

The California Natural Diversity Data Base records show recent occurrences (2006, 2010, and 2014) of least Bell’s vireo from within the project limits. Least Bell's vireo were observed adjacent to the impact areas after Project activities were complete, however, no known impacts to least Bell's vireo occurred.

No additional MSHCP covered riparian birds were observed within the Project site following Project impacts.

## 4.3 Mitigation and Equivalency

No known direct or indirect impacts to least Bell’s vireo or other MSHCP covered riparian bird species occurred and therefore no mitigation is proposed.

## 5 NARROW ENDEMIC PLANT SPECIES MITIGATION (SECTION 6.1.3)

### 5.1 Methods

No focused narrow endemic plant surveys were conducted prior to Project impacts. Habitat suitability for narrow endemic plant species was reviewed using the definitions listed in table 6-1 of the MSHCP.

### 5.2 Results/Impacts

No suitable habitat for the narrow endemic plant survey species is present on the Project site, as further detailed in Table 2 below.

**Table 2: Narrow Endemic and Plant Survey Species Habitat Suitability**

| Species | MSHCP Habitat | Habitat Suitability |
|---|---|---|
| San Diego ambrosia *(Ambrosia pumila)* | Occurs on open floodplain terraces on Gerretson gravelly fine sandy loams, or in the watershed margins of vernal pools or alkali playas on Las Posas loam in close proximity to willow silty alkaline soils. Occurs in sparse annual vegetation | Unsuitable. No Garretson gravelly fine sandy loams, vernal pools, or alkali playas on Las Posas loam. |
| Brand's phacelia *(Phacelia stellaris)* | Occurs in coastal scrub habitats on sandy washes or benches in alluvial floodplains. The species is generally dependent on periodic flooding and sediment transport. The MSHCP account for this species states that "within western Riverside county, Brand's phacelia is restricted to sandy benches along the Santa Ana River. | Unsuitable. Typical habitat conditions are not present. |
| San Miguel Savory *(Satureja chandleri)* | Occurs on rocky, gabbroic, or metavolcanic substrates in chaparral or oak woodlands. | Unsuitable. Non-rocky, gabbroic, or metavolcanic substrates |

### 5.3 Mitigation and Equivalency

No known direct or indirect impacts to narrow endemic plant species occurred and therefore no mitigation is proposed.

## 6 ADDITIONAL SURVEY NEEDS AND PROCEDURES (SECTION 6.3.2)

### 6.1 Criteria Area Species Survey

Surveys for Criteria Area species are not required for this Project under MSHCP Section 6.3.2.

### 6.2 Burrowing Owl

As shown on Figure 4, the Project site falls within the MSHCP burrowing owl survey area.

#### *6.2.1 Methods*

No focused or pre-construction burrowing owl surveys were conducted prior to Project impacts.

#### *6.2.2 Results/Impacts*

No known direct or indirect impacts to narrow endemic plant species occurred.

#### *6.2.3 Mitigation and Equivalency*

No known direct or indirect impacts to burrowing owl occurred.

### 6.3 Criteria Area Species Survey – Mammals

Surveys for Criteria Area mammal species are not required for this Project under MSHCP Section 6.3.2.

### 6.4 Criteria Area Species Survey – Amphibians

Surveys for Criteria Area amphibian species are not required for this Project under MSHCP Section 6.3.2.

## 7 ADDITIONAL CONSIDERATIONS

### 7.1 Delhi Sands Flower-Loving Fly

Delhi soil types are not mapped within the Project site, and therefore, no surveys are required for the Delhi Sands flower-loving fly.

### 7.2 Criteria Cell

A small portion of the Project site lies within Criteria Cell 1923 (Figure 4). No impacts to MSHCP resources occurred within this portion of the Project site. In addition, this portion of the Project site has been previously affected by development and is not located within or nearby the portions of the criteria cell dedicated for conservation. Therefore, pursuant to Section 6.1.4 *Guidelines Pertaining to the Urban Wildlands Interface,* the Project did not

create edge effects on any conserved habitat, reserve lands, or public quasi/public conserved lands.

To prevent any direct impacts to the Criteria Cell outside of the Project site, standard BMP's were used during construction including the use of silt fencing and sandbags/straw wattles where appropriate.

### 7.3 Wildlife Movement

The Project is not located within an MSHCP Area Plan Subunit, Criteria Cell, or Criteria Cell Group and is not located within any of the identified existing or proposed Cores and Linkages; therefore, the site is not considered to function as a regional wildlife movement area. It is possible that the Project site functions in local wildlife movement, however, due to the existing and on-going development to the west and south, it is unlikely that the site plays a critical role in local wildlife movement.

### 7.4 Hydrology

The Project is located in the Santa Ana River watershed. The current drainage pattern includes an unnamed drainage that flows from south to north into the existing Riverside Canal, which flows east and outlets into Temescal Creek (Reach 2). This eventually flows into the Santa Ana River, more than 4 miles north of the Project site. Project impacts did not alter the general drainage pattern of the unnamed drainage or the Riverside canal.

The sewage treatment basin was an isolated system created in the 1980's for the purpose of retaining and decomposing organic matter from the sewer discharge of adjacent properties. The City of Corona, along with the Regional Water Quality Control Board, asked the Monteolivo Residential Development Project to connect the neighboring community to their proposed sewer line to eliminate the problematic sewage treatment pond. The sewage treatment pond was divided in two, and a portion of the basin was improved as a water quality basin to detain runoff from residential areas in the upper watershed of Monteolivo Residential Project and groundwater discharge. The water quality basin will receive water from storm drain and irrigation runoff from the Monteolivo Residential Project once it is built out.

*Flood Storage*

The unnamed drainage was widened and therefore has a greater amount of flood storage than compared to pre-project conditions, making the post-project conditions biologically superior. The flood storage of the Riverside Canal was not altered due to Project impacts.

*Sediment and Toxic Trapping*

The post-construction water quality basin, remnant pond, unnamed drainage, and Riverside Canal will continue to trap sediments from the project site and the upper watershed in the same manner as the pre-construction site conditions. In addition, the constructed water quality

basin is designed to trap and settle toxins in the water to allow algae, fungi, and soil bacteria to decompose inorganic and organic chemicals. These features make it biologically superior to the pre-construction sewage treatment pond.

## 8 Mitigation

As discussed above, the Monteolivo Sewer Line Project plans to purchase mitigation for impacts to MSHCP riparian/riverine resources. The Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total of 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through the purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District.

## 9 REFERENCES


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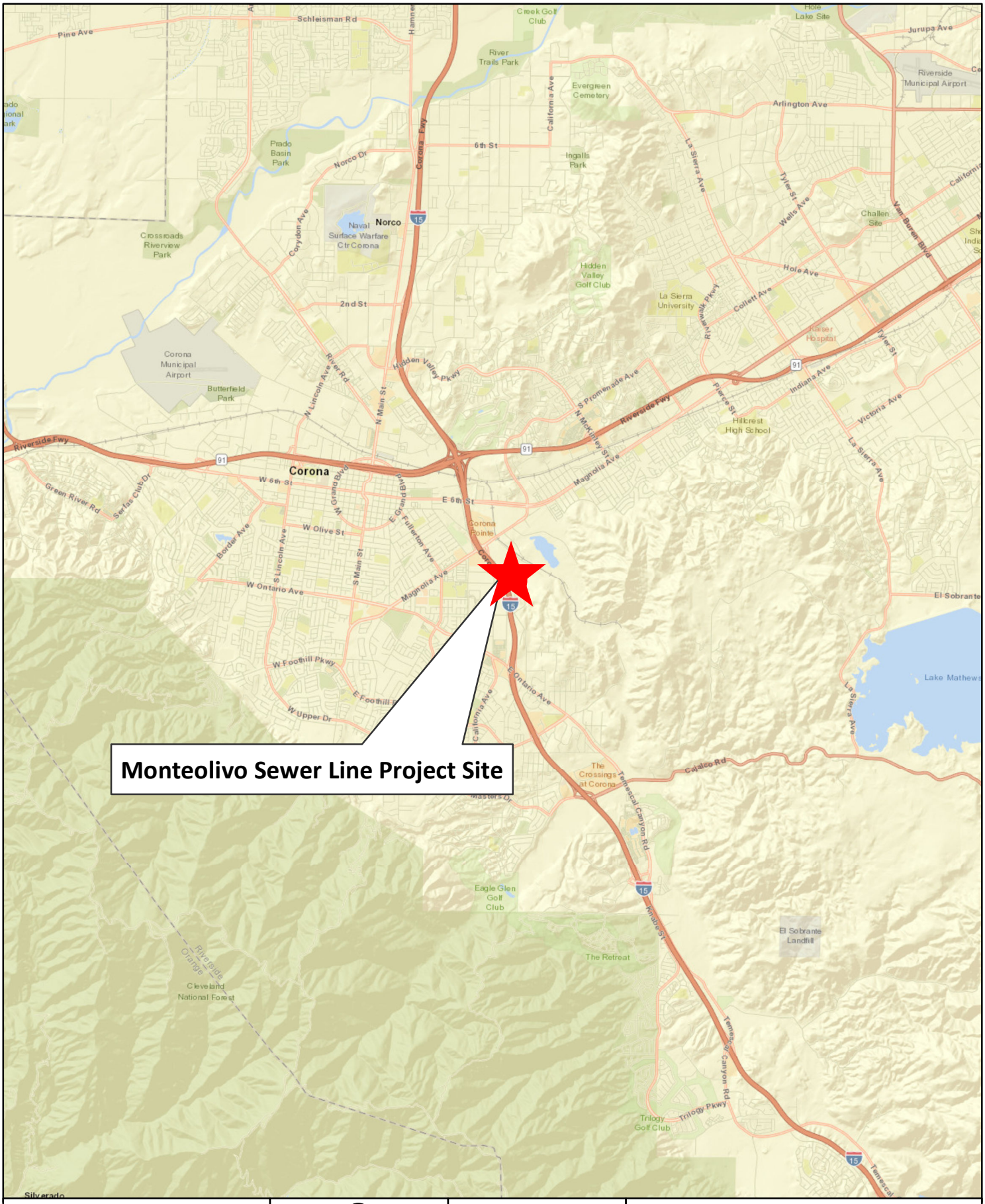
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# Figures




Prepared By:
VCS Environmental

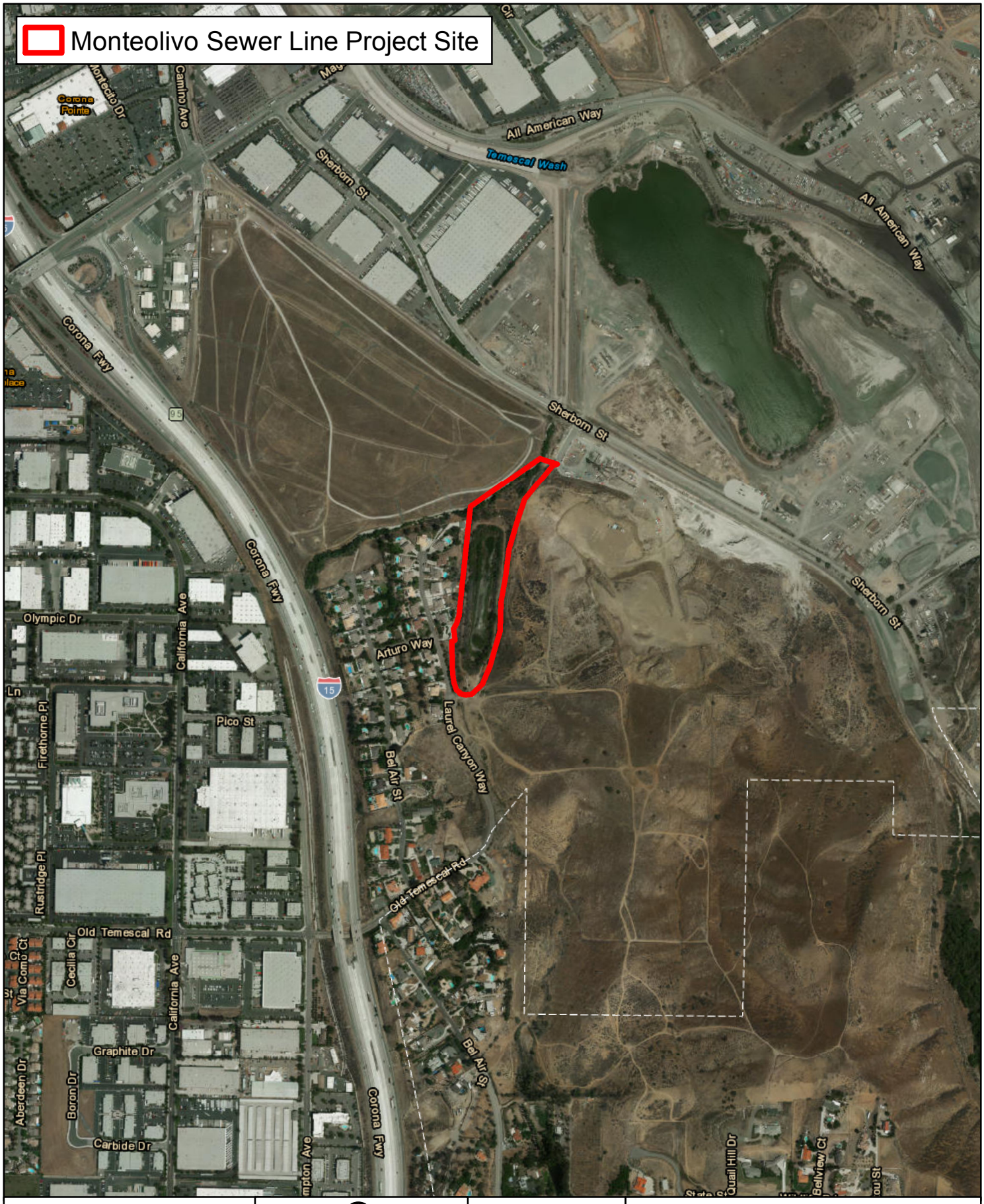
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0 0.5 1 Miles
1 in = 2 miles

**Figure 1**

**Mari Girgis, LLC**
**Monteolivo Sewer Line Project**

Regional Map




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources:
ESRI

0 500 1,000 Feet
1 in = 800 feet

**Figure 2**

**Mari Girgis, LLC**
**Monteolivo Sewer Line Proejct**

Vicinity Map




Prepared By:
VCS Environmental

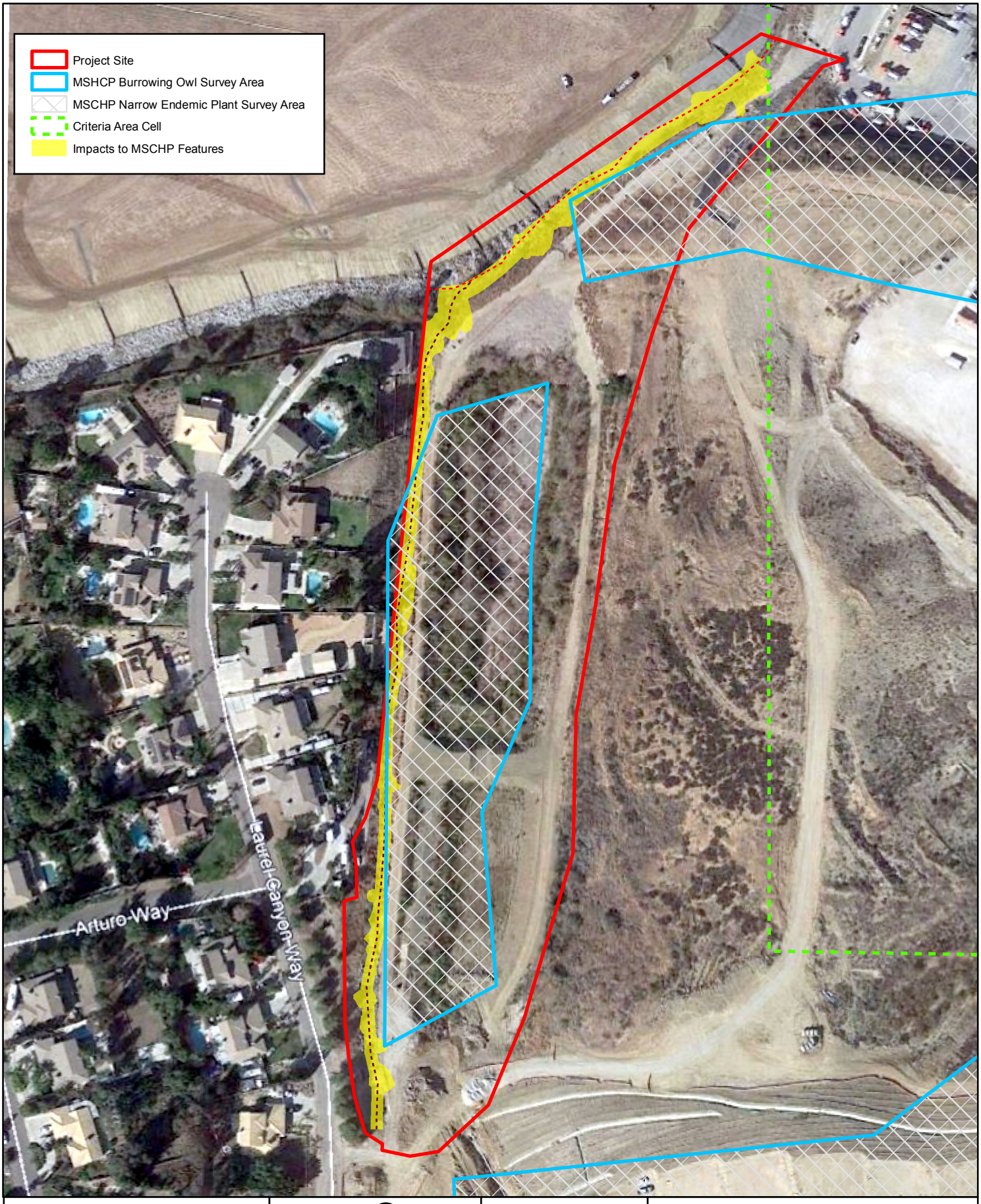
Map Created: October 2019
Data Sources:
Google Earth, LSA, VCS

0 100 200 ft
1 in = 200 feet

*Not including the created 0.24 acres of riverine features

Figure 3

Mari Girgis, LLC
Monteolivo Sewer Line Project
**Impacts to MSHCP Riparian/Riverine Features**




Prepared By:
VCS Environmental

Map Created: October 2019
Data Sources:
MSHCP

0 100 200 ft
1 in = 200 feet

**Figure 4**

Mari Girgis, LLC
Monteolivo Sewer Line Project

**MSHCP Survey Areas**

**Appendix A**
CDFW Operation of Law
and Application

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
3602 Inland Empire Blvd.,Suite C-220
Ontario, CA 91764
(909) 484-0167
www.wildlife.ca.gov

*EDMUND G. BROWN, Jr., Governor*
*CHARLTON H. BONHAM, Director*

April 16, 2015

Tom Mungari
Nova Homes, Inc.
245 Fischer Avenue, Unit A-8A
Costa Mesa, CA 92626

Subject: Notification of Lake or Streambed Alteration No. 1600-2014-0218-R6
Monteolivio Project

Dear Mr. Mungari:

The California Department of Fish and Wildlife (Department) had until January 18, 2015 to submit a draft Lake or Streambed Alteration Agreement (Agreement) to you or inform you that an Agreement is not required. The Department did not meet that date. As a result, by law, you may now complete the project described in your notification without an Agreement.

Please note that pursuant to Fish and Game Code section 1602(a)(4)(D), if you proceed with this project, it must be the same as described and conducted in the same manner as specified in the notification and any modifications to that notification received by the Department in writing prior to January 18, 2015. This includes completing the project within the proposed term and seasonal work period and implementing all avoidance and mitigation measures to protect fish and wildlife resources specified in the notification. If the term proposed in your notification has expired, you will need to re-notify the Department before you may begin your project. Beginning or completing a project that differs in any way from the one described in the notification may constitute a violation of Fish and Game Code section 1602.

*Your notification proposes work within an unnamed wash, tributary to Temescal Canyon Wash. The project site is bisected by Laurel Canyon Way and is located 0.2 mile east of Interstate 15, one mile south of State Route 91, in the City of Corona, County of Riverside, California. The proposed project includes the construction of 103 residential lots with a minimum lot size of 12,000 square feet and associated infrastructure, the realignment of the onsite drainage channel, and the construction of a mitigation basin. Your project will permanently impact 1.35 acres and temporarily impact 1.52 acres of habitat subject to CDFW jurisdiction. Best Management Practices (BMPs) and avoidance measures for this project include: following the Water Quality Management Plan and Storm Water Prevention Pollution Plan; avoiding vegetation disturbing activities during nesting bird season; following construction noise and lighting BMPs; and incorporating barriers to minimize unauthorized public access. CDFW recommends the Designated Biologist(s) survey the project site, and within a recommended 500*

*buffer surrounding the project site, for both diurnal and nocturnal nesting birds, prior to commencing project activities (including construction and/or site preparation) regardless of season. You have proposed to mitigate project impacts by: creating and restoring 2.46 acres of habitat onsite, consisting of at least 1.92 acres of riparian habitat and 0.08 acre of wetlands; providing sufficient funds to the Riverside Corona Resource Conservation District for the restoration of 0.76 acre of streambed; and by providing sufficient funds to a conservation entity for ongoing habitat restoration of 1.52 acres. The mitigation basin and drainage channel and will be dedicated to conservation in perpetuity through a conservation easement held by the Riverside-Corona Resource Conservation District or other CDFW-approved entity, with the exception of a 20-foot area on either end of all culverts within these areas. Onsite restoration, maintenance, and reporting will be conducted in accordance with the Habitat Mitigation and Monitoring Plan. Your proposed work period will end no later than October 19, 2019.*

Also note that while you are entitled to complete the project without an Agreement, you are still responsible for complying with other applicable local, state, and federal laws. These include, but are not limited to, the state and federal Endangered Species Acts and Fish and Game Code sections 5650 (water pollution) and 5901 (fish passage).

Finally, if you decide to proceed with your project without an Agreement, you must have a copy of this letter and your notification with all attachments available at all times at the work site. If you have any questions regarding this matter, please contact Claire Ingel at (909) 484-3979 or Claire.ingel@wildlife.ca.gov

Sincerely,

Jeff Brandt
Senior Environmental Scientist

cc: Claire Ingel, Environmental Scientist

ec: Denise Woodard, LSA Associates, Inc.

| *FOR DEPARTMENT USE ONLY* | | | | |
|---|---|---|---|---|
| *Date Received* | *Amount Received* | *Amount Due* | *Date Complete* | *Notification No.* |
| | *$* | *$* | | |
| *Assigned to:* | | | | |

# NOTIFICATION OF LAKE OR STREAMBED ALTERATION

**Complete EACH field, unless otherwise indicated, following the instructions and submit ALL required enclosures, attachments, and fee(s) to the CDFW regional or field office that serves the area where the project will occur. Attach additional pages to notification, if necessary.**

## 1. APPLICANT PROPOSING PROJECT

| | |
|---|---|
| Name | Emad Bolous |
| Business/Agency | Mari Girgis, LLC |
| Mailing Address | 4030 Birch Street, Suite 100 |
| City, State, Zip | Newport Beach, CA 92660 |
| Phone Number | 949-833-8813 |
| Email | ebolous@aol.com |

## 2. CONTACT PERSON (*Complete only if different from applicant.*)

| | |
|---|---|
| Name | Wade Caffrey |
| Business/Agency | VCS Environmental |
| Mailing Address | 30900 Rancho Viejo Road |
| City, State, Zip | San Juan Capistrano, CA 92675 |
| Phone Number | 949-489-2700 ext. 213 |
| Email | wcaffrey@vcsenvironmental.com |

While an applicant is legally responsible for complying with Fish and Game Code section 1602 et seq., an applicant may designate and authorize an agent (e.g., lawyer, consultant, or other individual) to act as a Designated Representative. The Designated Representative is authorized to sign the notification and any agreement on behalf of the Applicant.

**Do you authorize the Contact Person above to represent you as your Authorized Designated Representative?**

| | |
|---|---|
| ☑ Yes, I authorize. | ☐ No, I do not authorize. |

## 3. PROPERTY OWNER (*Complete only if different from applicant*)

| | |
|---|---|
| Name | Belaire HOA |
| Mailing Address | P.O. Box 77134 |
| City, State, Zip | Corona, CA 92877 |
| Phone Number | |
| Email | |

**4. PROJECT NAME AND AGREEMENT TERM**

| | | | | |
|---|---|---|---|---|
| A. Project Name | Monteolivo Sewer Line Project | | | |
| B. Agreement Term Requested | ☑ Regular (*5 years or less*)<br>☐ Long-term (*greater than 5 years)* | | | |
| C. Project Term | Beginning (*year*) | 2016 | Ending (*year*) | 2021 |

D. Seasonal Work Period

| Season(s)* | Start Date (*month/day*) | End Date (*month/day*) | E. Number of Work Days |
|---|---|---|---|
| 1 | 01/01 | 12/31 | 365 |
| 2 | 01/01 | 12/31 | 365 |
| 3 | 01/01 | 12/31 | 365 |
| 4 | 01/01 | 12/31 | 365 |
| 5 | 01/01 | 12/31 | 365 |

** Continue on additional page(s) if necessary*

**5. AGREEMENT TYPE**

Check the applicable box. If boxes B – F are checked, complete the specified attachment.

| | | |
|---|---|---|
| A. | ☑ Standard *(Most construction projects, excluding the categories listed below)* | |
| B. | ☐ Gravel/Sand/Rock Extraction (*Attachment A*) | *Mine I.D. Number:* _____ |
| C. | ☐ Timber Harvesting (*Attachment B*) | *THP Number:* _____ |
| D. | ☐ Water Diversion/Extraction/Impoundment (*Attachment C*) | *SWRCB Number:* _____ |
| E. | ☐ Routine Maintenance (*Attachment D*) | |
| F. | ☐ Cannabis Cultivation (*Attachment E*) | |
| G. | ☐ CDFW Grant Programs | *Agreement Number:* _____ |
| H. | ☐ Master | |
| I. | ☐ Master Timber Operations | |

## 6. FEES

See the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. ***Note: CDFW may not process this notification until the correct fee has been received.***

| | A. Project Name | B. Project Cost | C. Project Fee |
|---|---|---|---|
| 1 | Monteolivo Project | $325,000 | $4,460.50 |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| | | D. Base Fee *(if applicable)* | |
| | | **E. TOTAL FEE*** | $4,460.50 |

** Check, money order, and Visa or MasterCard (select Environmental Fees from Menu) payments are accepted.*

## 7. PRIOR NOTIFICATION AND ORDERS

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, CDFW for the project described in this notification?

☑ Yes (*Provide the information below*) ☐ No

| Applicant | Notification Number | Date |
|---|---|---|
| Nova Homes, Inc. | 1600-2014-0218-R6 | 04/16/2015 |

B. Is this notification being submitted in response to a court or administrative order or notice, or a notice of violation (NOV) issued by CDFW?

☑ Yes ☐ No (*Enclose a copy of the order, notice, or NOV. If the applicant was directed to notify CDFW verbally rather than in writing, identify the person who directed the applicant to submit this notification, the agency he or she represents, and describe the circumstances relating to the order.*)

| Name of person who directed notification | Agency |
|---|---|
| Claire Ingel | CDFW |

Describe circumstances relating to order

An off-site property adjacent to the existing Monteolivo Residential Development property was used to construct a sewer line for the development and surrounding communities, as well as decomission an existing sewage treatment pond per the Project's Conditions of Approval. Permits from the wildlife agencies were not acquired for the off-site property prior to impacts to jurisdictional features.

☐ *Continued on additional page(s)*

## 8. PROJECT LOCATION

A. Address or description of project location.
(*Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway.*)

The Project is located approximately 0.2 miles east of interstate 15 and one mile south of the State Route 91. The northwest portion of the proposed project is bisected by Laurel Canyon Way. The Project site is regionally accessible from Ontario Avenue and State Street to the south. A regional and vicinity map are attached as Figures 1 and 2.

☐ *Continued on additional page(s)*

| | |
|---|---|
| B. River, stream, or lake affected by the project. | Riverside Canal and unnamed drainage to Riverside Canal |
| C. What water body is the river, stream, or lake tributary to? | Temescal Wash |
| D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts? | ☐ Yes ☑ No ☐ Unknown |
| E. County | Riverside County |

| F. USGS 7.5 Minute Quad Map Name | G. Township | H. Range | I. Section | J. ¼ Section |
|---|---|---|---|---|
| Corona South, California | 3 South | 6 West | 32 | |
| | | | | |
| | | | | |

☐ *Continued on additional page(s)*

K. Meridian (check one) ☐ Humboldt ☐ Mt. Diablo ☑ San Bernardino

L. Assessor's Parcel Number(s)

| | |
|---|---|
| 107-080-026 | 107-080-036 (partial) |
| 107-080-034 (partial) | |

☐ *Continued on additional page(s)*

M. Geographic coordinates (*Provide the latitude and longitude coordinates for the property where the project(s) will take place. CDFW utilizes decimal degrees and WGS 84 datum. Access Google Maps Help if you need assistance in finding your coordinates.)*

| | | |
|---|---|---|
| Latitude/Longitude | *Latitude:* 33.8583 | *Longitude:* -117.5331 |
| | *Latitude:* 33.8616 | *Longitude:* -117.5329 |
| | *Latitude:* 33.8625 | *Longitude:* -117.5312 |
| | *Latitude:* 33.8610 | *Longitude:* -117.5321 |
| | *Latitude:* 33.8584 | *Longitude:* -117.5325 |

## 9. PROJECT CATEGORY

| WORK TYPE | NEW CONSTRUCTION | REPLACE EXISTING STRUCTURE | REPAIR-MAINTAIN-OPERATE EXISTING STRUCTURE |
|---|---|---|---|
| Bank stabilization – bioengineering/recontouring | ☑ | ☐ | ☐ |
| Bank stabilization – rip-rap/retaining wall/gabion | ☑ | ☑ | ☐ |
| Boat dock/pier | ☐ | ☐ | ☐ |
| Boat ramp | ☐ | ☐ | ☐ |
| Bridge | ☐ | ☐ | ☐ |
| Channel clearing/vegetation management | ☐ | ☐ | ☐ |
| Culvert | ☐ | ☑ | ☐ |
| Debris basin | ☐ | ☐ | ☐ |
| Dam | ☐ | ☐ | ☐ |
| Filling of wetland, river, stream, or lake | ☑ | ☐ | ☐ |
| Geotechnical survey | ☐ | ☐ | ☐ |
| Habitat enhancement – revegetation/mitigation | ☐ | ☐ | ☐ |
| Levee | ☐ | ☐ | ☐ |
| Low water crossing | ☐ | ☐ | ☐ |
| Road/trail | ☐ | ☐ | ☐ |
| Sediment removal: pond, stream, or marina | ☐ | ☐ | ☐ |
| flood control | ☐ | ☐ | ☐ |
| Storm drain outfall structure | ☐ | ☑ | ☐ |
| Temporary stream crossing | ☐ | ☐ | ☐ |
| Utility crossing: horizontal directional drilling | ☐ | ☐ | ☐ |
| jack/bore | ☐ | ☐ | ☐ |
| open trench | ☐ | ☐ | ☐ |
| Water diversion without facility | ☐ | ☐ | ☐ |
| Water diversion with facility | ☐ | ☐ | ☐ |
| Other *(specify)*: | ☐ | ☐ | ☐ |

**10. PROJECT DESCRIPTION**

A. Describe the project in detail. Include photographs of the project location and immediate surrounding area.

- Written description of all project activities with detailed step-by-step description of project implementation.
- Include any structures (e.g., rip-rap, culverts) that will be placed or modified in or near the stream, river, or lake, and any channel clearing.
- Specify volume, and dimensions of all materials and features (e.g., rip rap fields) that will be used or installed.
- If water will be diverted or drafted, specify the purpose or use and include Attachment C.
- Enclose diagrams, drawings, design plans, construction specifications, and maps that provide all of the following: site specific construction details; dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, stockpile areas, areas of temporary disturbance, and where the equipment/machinery will access the project area.
  - A helpful resource to assist in the development of quality PDF maps in Google Earth. See Using Google Earth to Map your Property (PDF).

This application is being submitted as an after-the-fact SAA Notification for the Monteolivo Sewer Line Project (Project).

The Monteolivo Residential Development Project obtained a CDFW Operation of Law dated April 16, 2015 (SAA #1600-2014-0218-R6) for impacts associated with grading for the construction of 103 single-family homes and associated on-site infrastructure.

The Project required two off-site improvements. The first was an off-site 8Žsewer line to be constructed in an access road between the Monteolivo site and the public sewer in Sherbourne Avenue. This line was not expected to impact waters of the State. However, heavy rains caused significant erosion and a landslide buried the access road. Consequently, the sewer line to be constructed was relocated in the field 20-feet easterly. In order to protect the sewer improvements and access road, the adjacent Riverside Canal and an unnamed drainage to the Riverside Canal had to be slope-stabilized. This included the replacement of the failed easterly bank in the Riverside Canal with un-grouted rip-rap and widening of the unnamed drainage.

The second improvement was not contemplated in the original 1600 application. In order to finish an on-site storm drain, replacement of an existing culvert, installation of a headwall, and installation of approximately 135 linear feet of riprap for energy dissipation occurred. These improvements occurred directly north of the residential development project site; within the off-site portion of the unnamed drainage.

Post-construction site photographs are attached as Appendix A.

☐ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

Construction equipment, including but not limited to dozers, excavators, and dump trucks were required for this work.

☐ *Continued on additional page(s)*

| | |
|---|---|
| C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B). | ☐ Yes ☑ No (*Skip to box 11*) |
| D. Will the project require work in the wetted portion of the channel? | ☐ Yes (*Enclose a plan to divert water around work site*)<br>☑ No |

## 11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

Permanent Impacts:
-0.017 acres of permanent impacts occurred to streambed waters of the State for placement of rip rap in the unnamed drainage.
-0.56 acres of permanent impacts occurred to riparian waters of the State for removal of riparian vegetation within the Riverside Canal and unnamed drainage.
Temporary Impacts:
-0.34 acres of temporary impacts occurred to streambed waters of the state for widening of the unnamed drainage and replacement of rip rap in the Riverside Canal

Note: The total acreage of streambed waters of the State within the unnamed drainage increased by 0.24 acres post-construction due to widening of the drainage. Impacts can be seen on Figure 3.

☐ *Continued on additional page(s)*

B. Will the project affect any vegetation? ☑ Yes (*Complete the tables below*) ☐ No *(Include aerial photo with date supporting this determination)*

| Vegetation Type | Temporary Impact | Permanent Impact |
|---|---|---|
| Disturbed | Linear feet: _____ Total area: 0.34 | Linear feet: _____ Total area: 0.02 |
| Riparian | Linear feet: _____ Total area: _____ | Linear feet: _____ Total area: 0.56 |

| Tree Species | Number of Trees to be Removed | Trunk Diameter (range) |
|---|---|---|
| Freemont cottonwood (Populus fremontii) | 2 | N/A |
| Goodding's willow (Salix goodingii) | 12 | N/A |
| arroyo willow (Salix lasiolepis) | 12 | N/A |
| blue elderberry (Sambucus nigra ssp. cerulea) | 12 | N/A |

*numbers approximate based on aerial review

☐ *Continued on additional page(s)*

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

☑ Yes *(List each species and/or describe the habitat below)* ☐ No ☐ Unknown

Least Bell's vireo (FE, SE) were observed adjacent to waters of the State impact areas after Project activities were complete. No known impacts to Least Bell's vireo occurred.

☐ *Continued on additional page(s)*

D. Identify the source(s) of information that supports a "yes" or "no" answer above in Box 11.C.

-CNDDB
-Observed adjacent to impact areas.

☐ *Continued on additional page(s)*

E. Has a biological study been completed for the project site?

☐ Yes (*Enclose the biological study*) ☑ No

*Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.*

F. Has one or more technical studies (e.g., engineering, hydrologic, geological, or geomorphological) been completed for the project or project site?

☑ Yes *(Enclose the study(ies))* ☐ No *Hydrology report included as Appendix B

*Note: One or more technical studies may be required to evaluate potential project impacts to a lake or streambed.*

G. Have fish or wildlife resources or waters of the state been mapped or delineated on the project site?

☑ Yes (*Enclose the mapped results*) ☐ No

*Note: Check "yes" if fish and wildlife resources or waters of the state on the project site have been mapped or delineated. "'Wildlife' means and includes all wild animals, birds, plants, fish, amphibians, reptiles and related ecological communities, including the habitat upon which the wildlife depends." (Fish & G. Code, § 89.5.) If "yes" is checked, submit the mapping or delineation. If the mapping or delineation is in digital format (e.g., GIS shape files or KMZ), you must submit the information in this format for CDFW to deem your notification complete. If "no" is checked, or the resolution of the mapping or delineation is insufficient, CDFW may request mapping or delineation (in digital or non-digital format), or higher resolution mapping or delineation for CDFW to deem the notification complete.*

**12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES**

A. Describe the techniques that will be used to prevent sediment, hazardous, or other deleterious materials from entering watercourses during and after construction.

Techniques used during construction to prevent sediment and pollutants from entering the watercourse included the use silt fencing, sandbags/straw wattles where appropriate and designating equipment staging locations outside of the drainage. Post construction, the drainages were slope-stabilized (which included the installation/replacement of rip rap) to prevent erosion.

☐ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

Vegetation removal only occurred in areas necessary to complete Project activities.

☐ *Continued on additional page(s)*

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

(1) The Project proposes to mitigate for permanent impacts to 0.017 acres of streambed waters of the State though purchase of mitigation at a 2:1 ratio for a total of 0.034 acres of credits.
(2) The Project proposes to mitigate for permanent impacts to 0.56 acres of riparian waters of the State through purchase of mitigation at a 2:1 ratio for a total of 1.12 acres of credits.
(3) The Project proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits.

*All credits purchased would be ephemeral enhancement through the Riverside-Corona Resource Conservation District*

☐ *Continued on additional page(s)*

## 13. PERMITS

List any local, State, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

| | | | |
|---|---|---|---|
| A. | USACE 404 NWP | ☑ Applied | ☐ Issued |
| B. | RWQCB 401 WQC | ☑ Applied | ☐ Issued |
| C. | MSHCP DBESP & Consistency Analysis - drafted for submittal | ☐ Applied | ☐ Issued |

D. Unknown whether ☐ local, ☐ State, or ☐ federal permit is needed for the project. (*Check each box that applies*)

☐ *Continued on additional page(s)*

## 14. ENVIRONMENTAL REVIEW

| | | | |
|---|---|---|---|
| A. Has a CEQA lead agency been determined? | ☑ Yes (*Complete boxes B, C, D, E, and F*) ☐ No (*Skip to box 14.G*) | | |
| B. CEQA Lead Agency | City of Corona | | |
| C. Contact Person | Sandra Yang | D. Phone Number | 951-736-2262 |

E. Has a draft or final document been prepared for the project pursuant to CEQA and/or NEPA?

☐ Yes (*Check the box below for each CEQA or NEPA document that has been prepared and enclose a copy of each.*)

☑ No (*Check the box below for each CEQA or NEPA document listed below that will be or is being prepared.*)

| | | |
|---|---|---|
| ☐ Notice of Exemption | ☑ Mitigated Negative Declaration | ☐ NEPA document (*type*): |
| ☑ Initial Study | ☐ Environmental Impact Report | |
| ☐ Negative Declaration | ☐ Notice of Determination *(Enclose)* | |
| ☐ THP/ NTMP | ☐ Mitigation, Monitoring, & Reporting Plan | |

F. State Clearinghouse Number (*if applicable*)

G. If the project described in this notification is not the "whole project" or action pursuant to CEQA, briefly describe the entire project (Cal. Code Regs., tit. 14 § 15378).

☐ *Continued on additional page(s)*

H. Has a CEQA filing fee been paid pursuant to Fish and Game Code section 711.4?

☐ Yes (*Enclose proof of payment*) ☑ No (*Briefly explain below the reason a CEQA filing fee has not been paid)*

*Note: The CEQA filing fee is in addition to the notification fee. If a CEQA filing fee is required, the Lake or Streambed Alteration Agreement may not be finalized until paid.*

An addendum to the IS/MND is being prepared and a NOD + fees will be paid.

**15. SITE INSPECTION**

Check one box only.

☐ In the event CDFW determines that a site inspection is necessary, I hereby authorize a CDFW representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant CDFW such entry.

☑ I request CDFW to first contact (*insert name*) Wade Caffrey - VCS Environmental at (*insert phone number or email address*) wcaffrey@vcsenvironmental.com to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay CDFW's determination as to whether a Lake or Streambed Alteration Agreement is required and/or CDFW's issuance of a draft agreement pursuant to this notification.

**16. DIGITAL FORMAT**

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

☑ Yes (Please enclose the information via digital media with the completed notification form.)

☐ No

**17. SIGNATURE**

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, CDFW may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless CDFW has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

Emad Bolous
Signature of Applicant or Applicant's Authorized Representative

5/21/19
Date

Emad Bolous
Print Name




Prepared By:

VCS Environmental

Map Created: March 2019

Data Sources: ESRI

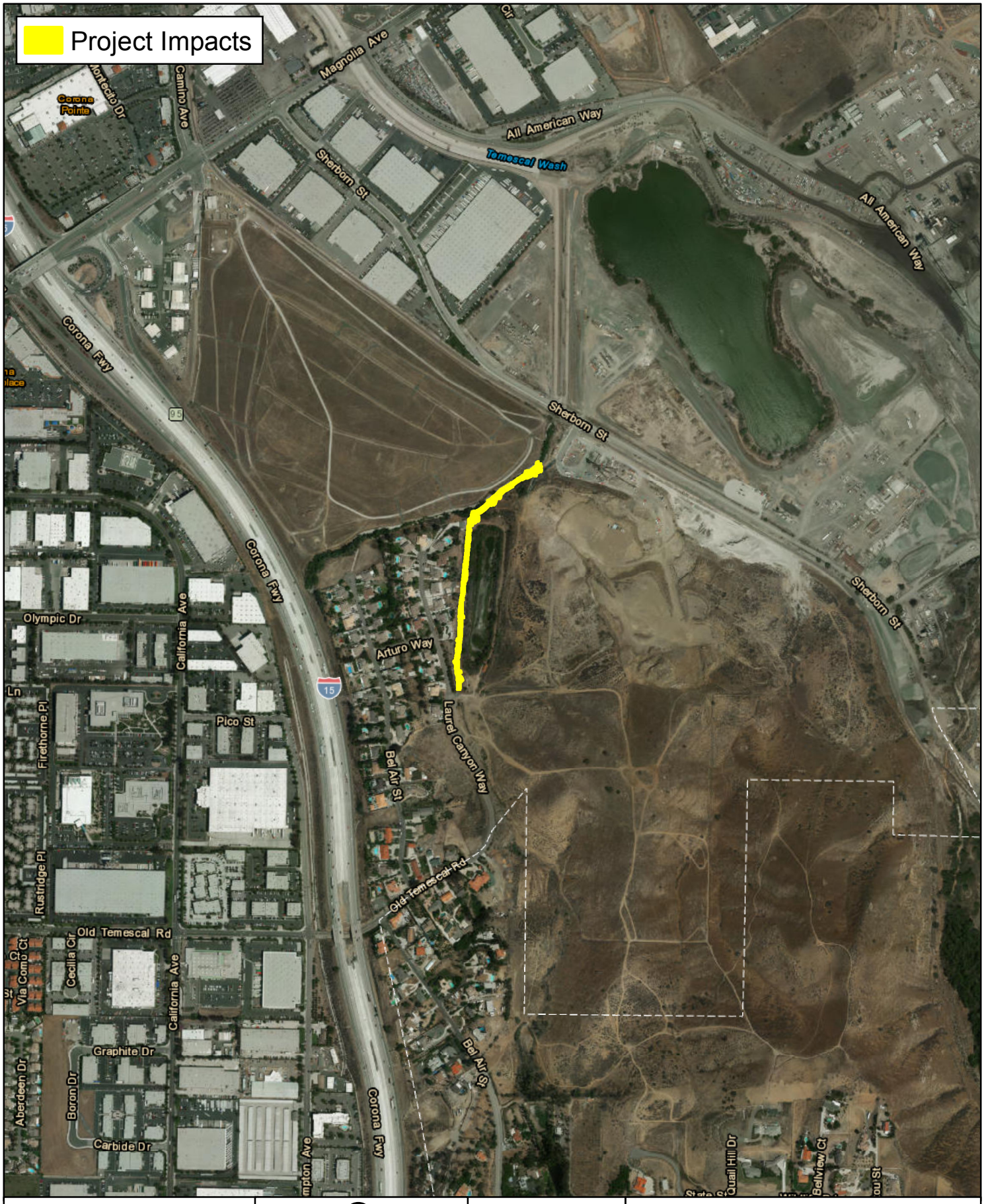
0 0.5 1 Miles

1 in = 2 miles

**Figure 1**

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Regional Map




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources:
ESRI

0 500 1,000 Feet
1 in = 800 feet

**Figure 2**

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Vicinity Map




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources:
Google Earth, LSA, VCS

0 100 200 ft
1 in = 200 feet

*Not including the created 0.24 acres of streambed WoS

Figure 3

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Jurisdictional Waters of the State



Photograph 1: *View of improvements to the unnamed drainage. Photograph taken May 3, 2017*



Photograph 2: *View of new culvert that includes two, five-foot diameter concrete culverts and a 20-foot wide headwall. Photograph taken May 3, 2017.*



Photograph 3: *View of habitat conditions at the confluence of the drainage and the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 4: *View of general habitat conditions along the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 5: *View of general habitat conditions along the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 6: *View of grouted rip-rap on the northerly bank of the Riverside Canal and un-grouted rock rip-rap that was placed on the southerly bank as part of the sewer line project. Photograph taken May 3, 2017.*

**Appendix B**
RWQCB Notice of
Violation No. 332014-25

CALIFORNIA
Water Boards

GAVIN NEWSOM
GOVERNOR

JARED BLUMENFELD
SECRETARY FOR
ENVIRONMENTAL PROTECTION

# Santa Ana Regional Water Quality Control Board

August 15, 2019

**Certified Mail**
**Return Receipt Requested**

Mr. Tom Mungari
Nova Homes, Inc.
245 Fischer Drive, Unit A-8A
Costa Mesa, CA 92626

tom@novahomesinc.us

**NOTICE OF VIOLATIONS: VIOLATIONS OF CALIFORNIA WATER CODE SECTION 13376 AND CLEAN WATER ACT SECTIONS 301 AND 401 - THE MONTEOLIVO PROJECT, CITY OF CORONA, RIVERSIDE COUNTY (USACE FILE NO. NOT AVAILABLE) (SARWQCB WDID # 332014-25)**

Dear Mr. Mungari:

On March 4, 2015, the Santa Ana Regional Water Quality Control Board (Santa Ana Water Board) issued you, on behalf of Nova Homes, Inc. (Discharger), a Clean Water Act Section 401 Water Quality Standards Certification (Certification) for the above referenced project. The project, as proposed in the application for Certification, included permanent fill to a tributary to Temescal Creek, for a total of 0.34 acre of permanent impacts to Non-Wetland Waters of the United States (WOTUS). In addition, the Certification authorized temporary impacts to 0.08 acre of Wetland WOTUS and 0.32 acre of Non-Wetland WOTUS.

The discharge of fill was associated with the construction of a single-family home residential development. In issuing the Certification, the Santa Ana Water Board indicated that discharges of fill to waters of the State (WOTS) were also authorized under State Water Resources Control Board Order No. 2003-0017-DWQ, "Statewide General Waste Discharge Requirements for Dredged or Fill Discharges that Have Received State Water Quality Certification" (Order No. 2003-0017-DWQ). Order No. 2003-0017-DWQ requires compliance with all conditions in the Certification.

On May 23, 2019, the Santa Ana Water Board received a request (Request) from VCS Environmental, on behalf of the Discharger, to amend the March 4, 2015 Certification for the project. The Discharger requested that unauthorized additional temporary and

permanent discharges of fill to jurisdictional WOTUS and WOTS be certified under an amended Certification. These unauthorized discharges occurred during the construction of the residential development.

The additional discharges of fill were not authorized by the March 4, 2015 Certification or other Certifications. The discharges of unauthorized fill are a violation of California Water Code section 13376 and Clean Water Act sections 301 and 401.The additional discharge of fill to WOTUS and WOTS are associated with the construction of an off-site 8-inch sewer line, replacement of a culvert, and construction of a headwall and 135 linear feet of a riprap energy dissipating structure. The additional un-certified impacts are detailed in Tables 1 and 2 below.

Table 1. Impacts to WOTUS

| | Temporary | Permanent |
|---|---|---|
| Non-Wetland | 0.15 acre | 0.02 acre |
| Wetland | -- | -- |
| Total | 0.15 acre | 0.02 acre |

Table 2. Impacts to WOTS (excluding WOTUS)

| | Temporary | Permanent |
|---|---|---|
| Streambed | 0.34 acre | 0.017 acre |
| Riparian | -- | 0.56 acre |
| Total | 0.34 acre | 0.58 acre |

In the Request, the Discharger proposed to mitigate the additional impacts through the purchase of ephemeral enhancement mitigation credits from the Riverside-Corona Resource Conservation District at a 1:1 ratio for temporary impacts and 2:1 ratio for permanent impacts to WOTS (not including WOTUS) for a total of 1.49 acres of credits. It is noted that based on the ratios and impacts provided in the Request the proposed mitigation, based on the ratio provided, should be 1.69 acres of credits for all impacts. An Application Fee of $1,638.00 was also submitted with the Request.

The Santa Ana Water Board finds that the purchase of 1.69 acres of enhancement mitigation credits from a Santa Ana Water Board-approved mitigation bank or in-lieu fee program, in addition to recontouring the areas of temporary impact to pre-construction contours, would be acceptable to offset the additional impacts detailed in the Request. However, a copy of the receipt for the purchase of 1.69 acres of enhancement credits from a Santa Ana Water Board-approved mitigation bank or in-lieu fee program must be provided to the Santa Ana Water Board.

In addition, the Santa Ana Water Board requests that the full amount of the Project Fee be paid to the State Water Resources Control Board. The Application Fee of one thousand six hundred thirty-eight dollars ($1,638.00) was received with the application materials. However, a Project Fee must also be paid. The Project Fee, based on

1.09 acres of discharge to all WOTS (including WOTUS), is fourteen thousand one hundred fifty-five dollars ($14,155.00). The full Project Fee must be submitted to the Santa Ana Water Board for processing.

Past approvals from the Santa Ana Water Board are not in effect until the payment of associated fees and purchase of mitigation credits. Performance of any further work described in the Certification, prior to payment of the fees and purchase of mitigation credits, is unlawful and may result in imposition of penalties via Water Code section 13385 and other statutes, as applicable.

The Santa Ana Water Board will issue an amended Certification for the Monteolivo Project with the following conditions that are listed below. In addition, the conditions of this Notice of Violations will be met if the following are completed by September 20, 2019:

1. Provide proof of Mitigation Credit purchases to Santa Ana Water Board staff;

2. Submit a check for fourteen thousand one hundred fifty-five dollars ($14,155.00) made out to the State Water Resources Control Board. Send the check to this Santa Ana Water Board office with reference to SARWQCB WDID # 332014-25; and

4. All mitigation requirements and conditions of the original certification are completed.

If the above conditions are not met, there may be further enforcement actions taken.

If you have any questions regarding this matter, please contact Jason Bill at (951) 782-3295 (Jason.Bill@waterboards.ca.gov) or Dave Woelfel at (951) 782-7960 (David.Woefel@waterboards.ca.gov).

Sincerely,

Jayne Joy
Assistant Executive Officer
Santa Ana Regional Water Quality Control Board

Enclosure: March 4, 2015 Certification for SARWQCB WDID # 332014-25

cc (w/o enclosure):

U.S. Army Corps of Engineers, Los Angeles Office – James Mace – James.E.Mace@usace.army.mil
U.S. Environmental Protection Agency, Region 9 – Wetlands Section –
Megan Fitzgerald – Fitzgerald.Megan@epa.gov
Melissa Scianni – Scianni.Melissa@epa.gov
California Department of Fish and Wildlife – Jeff Brandt – Jeff.Brandt@wildlife.ca.gov
State Water Resources Control Board, Office of Enforcement –
Daniel Kippen, Esq. – Dan.Kippen@waterboards.ca.gov
State Water Resources Control Board, Division of Water Quality – Water Quality Certification Unit – Stateboard401.Stateboard401@waterboards.ca.gov
VCS Environmental – Wade Caffrey – wcaffrey@vcsenvironmental.com

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Mr. Tom Mungari
Nova Homes, Inc.
245 Fischer Drive, Unit A-8A
Costa Mesa, CA 92626

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Santa Ana Regional Water Quality Control Board

March 4, 2015

Tom Mungari
Nova Homes, Inc.
245 Fischer Drive, Unit A-8A
Costa Mesa, CA 92626

tom@novahomesinc.us

**CLEAN WATER ACT SECTION 401 WATER QUALITY STANDARDS CERTIFICATION FOR THE MONTEOLIVO PROJECT, CITY OF CORONA, RIVERSIDE COUNTY (ACOE CORPS FILE NO. N/A) (SARWQCB PROJECT NO. 332014-25)**

Dear Mr. Mungari,

On October 20, 2014, we received an application for Clean Water Act Section 401 Water Quality Standards Certification ("Certification") from the City of Corona Public Works Department for a residential development project in the City of Corona, Riverside County. A letter detailing revisions from the original application to the proposed project and proposed mitigation was received on December 19, 2004. The project will consist of the construction of 106 single-family residential lots, associated roadways and infrastructure, occupying 61 acres of project land. Additionally, a mitigation/conservation area for the creation/restoration of riparian/streambed habitat will be created. On October 20, 2014, the applicant submitted a check for $1,201.00, with the Certification application materials. On March 2, 2015 another check for an additional $30,531.00, was received, which satisfies this project's fee requirement for consideration of a 401 Certification. This fee amount was determined using the Dredge and Fill Fee Calculator on the State Water Resources Control Board (SWRCB) web site, which is based on the most current iteration of California Code of Regulations, Division 3, Chapter 9, Article 1, section 2200 (a) (3). This letter responds to your request for certification that the proposed project, described in your application and summarized below, will comply with State water quality standards outlined in the Water Quality Control Plan for the Santa Ana River Basin (1995) (Basin Plan) and subsequent Basin Plan amendments:

Project Description: The proposed project includes the permanent realignment of an unnamed tributary of Temescal Creek Reach 2 that flows parallel to Laurel Canyon Way for the length of the project site. The realigned Temescal Creek tributary's channel bottom and banks will be lined with ungrouted riprap for a length of 951 feet. The channel will be trapezoidal in shape

with a five-foot wide bed and three to one side slopes. One road crossing with a culvert that leads into the development will be constructed over the realigned drainage. Additionally, a 3.68 acre Mitigation Basin will be constructed within the project site. A portion of the mitigation basin will be graded to restore 0.08 acres to jurisdictional wetlands.

The work will take place within an unsectioned area of the El Sobrante Land Grant, of the U.S. Geological Survey *Corona South* 7.5 minute topographic quadrangle maps (UTM Zone 11 450906.26 Easting 3746309.23 Northing).

Receiving water: Unnamed tributary of Temescal Creek Reach 2, Temescal Creek Reaches 1-2 and Upper Santa Ana River Reach 3, which have present or potential beneficial uses, including: agricultural supply (AGR), groundwater recharge (GWR), water contact recreation (REC1), non-contact water recreation (REC2), warm freshwater habitat (WARM), Rare, Threatened or Endangered Species (RARE), and wildlife habitat (WILD).

Fill area:

| | | |
|---|---|---|
| Temporary Impact to Wetland Waters of the US | 0.08 acre | linear feet N/A |
| Permanent Impact to Non-Wetland Waters of the US | 0.34 acre | 2,533 linear feet |
| Temporary Impact to Non-Wetland Waters of the US | 0.32 acre | 787 linear feet |

Dredge/Fill volume: N/A

Federal permit: U.S. Army Corps of Engineers Nationwide Permit No. 29

You have proposed to mitigate water quality impacts as described in your Certification application. The proposed mitigation is summarized below:

Onsite Water Quality Standards Mitigation Proposed:

- Standard water quality related best management practices (BMPs) will be employed during construction activities.
- Temporary impacts to both Wetland and Non-Wetland Waters of the United States will be mitigated by creating a 3.68 acre On-Site Mitigation Basin. Of the 3.68 acres, at least 0.08 acres will be restored to Wetland Waters.

Offsite Water Quality Standards Mitigation Proposed:

- The applicant will mitigate the project's impacts offsite through the acquisition of in-lieu fee program mitigation credits from the Riverside-Corona Resource Conservation District, for the restoration of 0.76 acres of non-wetlands/riparian habitat.
- The applicant will mitigate the project's impacts offsite through the acquisition of in-lieu fee program mitigation credits from the Santa Ana Watershed Association by enhancing 1.52 acres within the watershed.

Should the proposed project impact state- or federally-listed endangered species or their habitat, implementation of measures identified in consultation with U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife will ensure those impacts are mitigated to an acceptable level. Appropriate BMPs will be implemented to reduce construction-related impacts to Waters of the State.

This Water Quality Certification is subject to the acquisition of all local, regional, state, and federal permits and approvals as required by law. Failure to meet any conditions contained herein, or any conditions contained in any other permit or approval for this project issued by the State of California, or any subdivision thereof, may result in appropriate enforcement action, including imposition of administrative civil liability.

Pursuant to California Code of Regulations, Title 14, Chapter 3, Section 15096, as a responsible agency, the Regional Board is required to consider an EIR or Negative Declaration prepared by the lead agency in determining whether to approve a project. A responsible agency has responsibility for mitigating and avoiding only the direct and indirect environmental effects of those parts of the project which it decides to carry out, finance, or approve. Further, the responsible agency must make findings as required by Sections 15091 and, if necessary, 15093, for each and every significant impact of the project.

As required by Section 15096, the Regional Board has considered the Mitigated Negative Declaration (MND) prepared for the proposed project and filed with the Riverside County Clerk and Recorder by the City of Corona on September 3, 2014, and information provided subsequently in the applicant's application, in approving this Certification. More specifically, the Regional Board has considered those sections of the MND relating to water quality. Based on the mitigation proposed in the MND, and the conditions set forth in this Certification, impacts to water quality will be reduced to a less than significant level and beneficial uses will be protected. Thus, the Regional Board independently finds that changes or alterations have been required in, or incorporated into the project, which avoid or mitigate impacts to water quality to a less than significant level.

**This 401 Certification is contingent upon the execution of the following conditions:**

1) The applicant must comply with the requirements of the applicable Clean Water Act section 404 permit.

2) Applicant shall ensure that all fees associated with this project shall be paid to each respective agency prior to conducting any on-site construction activities.

3) A copy of this Certification and any subsequent amendments must be maintained on site for the duration of work as a denoted element of any project Storm Water Pollution Prevention Plan (SWPPP), Water Quality Management Plan (WQMP) and/or Habitat Mitigation and Management Plan (HMMP).

4) Proposed on-site and off-site mitigation shall be timely implemented. Materials documenting the purchase of necessary mitigation credits shall be provided to this office prior to the discharge of fill to, or the dredging or excavation of material from, waters of the United States or Waters of the State of California.

5) A HMMP for the onsite mitigation shall be provided to this office for approval prior to the discharge of fill to, or the dredging or excavation of material from, waters of United States or Waters of the State of California.

6) The applicant shall complete the post-construction restoration of temporary impacts to waters of the U.S. within 30 days following completion of construction activities. Upon consideration of a written request, this period may be extended by Regional Board authorization to accommodate proper planting times. If restoration is not initiated within one year of impacts, additional mitigation may be required to offset temporal loss of waters of the U.S.

7) Prior to construction activities, the project proponent shall delineate the work area with brightly colored fencing or other methods to ensure both temporary and permanent impacts to Waters of the United States and Wasters of the State of California do not exceed the limits authorized in this certification.

8) All materials generated from construction activities associated with this project shall be managed appropriately. This shall include identifying all potential pollution sources within the scope of work of this project, and incorporating all necessary pollution prevention BMPs as they relate to each potential pollution source identified. Additionally no materials maybe stored within waters of the United States or Waters of the State of California.

9) The project proponent shall utilize BMPs during project construction to minimize the controllable discharges of sediment and other wastes to drainage systems or other waters of the state and of the United States.

10) Substances resulting from project-related activities that could be harmful to aquatic life, including, but not limited to, petroleum lubricants and fuels, cured and uncured cements, epoxies, paints and other protective coating materials, portland cement concrete or asphalt concrete, and washings and cuttings thereof, shall not be discharged to soils or waters of the state. All waste concrete shall be removed.

11) Motorized equipment shall not be maintained or parked within or near any stream crossing, channel or lake margin in such a manner that petroleum products or other pollutants from the equipment may enter these areas under any flow conditions. Vehicles shall not be driven or equipment operated in waters of the state on-site, except as necessary to complete the proposed project. No equipment shall be operated in areas of flowing water.

12) This Water Quality Certification is subject to the acquisition of all local, regional, state, and federal permits and approvals as required by law. Failure to meet any conditions contained herein or any the conditions contained in any other permit or approval issued by the State of California or any subdivision thereof may result in the revocation of this Certification and civil or criminal liability.

13) Best management practices to stabilize disturbed soils must include the use of native plant species whenever feasible.

14) Applicant shall ensure that all elements of the approved WQMP are fully implemented to address all identified pollutants and hydrologic conditions of concern resulting from the project.

15) Applicant shall follow all procedures and policies specified within the project's HMMP.

16) Construction de-watering discharges, including temporary stream diversions necessary for project construction may be regulated under Regional Board Order No. R8-2009-0003, General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (De Minimus) Threat to Water Quality. For more information, please review Order No. R8-2009-0003 at www.waterboards.ca.gov/santaana/

17) Prior to any grading for the project in riparian areas or wetlands that are slated to be impacted, functional assessments of these areas shall be conducted using the California Rapid Assessment Method, February 2012 (CRAM). Similarly, wetland and riparian habitat mitigation sites shall be assessed periodically with CRAM, beginning with the end of the first growing season following the initial planting of the mitigation site. Mitigation site

assessments shall be conducted annually, during the period from October through December, until success criteria are met for consecutive years. This information shall be reported to http://www.californiawetlands.net/tracker/

Under California Water Code, Section 1058, and Pursuant to 23 CCR §3860, the following shall be included as conditions of all water quality certification actions:

(a) Every certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section §13330 of the Water Code and Article 6 (commencing with Section 3867) of this Chapter.

(b) Certification is not intended and shall not be construed to apply to any activity involving a hydroelectric facility and requiring a FERC license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to Subsection §3855(b) of this Chapter and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

(c) Certification is conditioned upon total payment of any fee required under this Chapter and owed by the applicant.

If the above stated conditions are changed, any of the criteria or conditions as previously described are not met, or new information becomes available that indicates a water quality problem, the Regional Board may require the applicant to submit a report of waste discharge and obtain Waste Discharge Requirements.

In the event of any violation or threatened violation of the conditions of this certification, the holder of any permit or license subject to this certification shall be subject to any remedies, penalties, process or sanctions as provided for under state law. For purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification. Violations of the conditions of this certification may subject the applicant to civil liability pursuant to Water Code section 13350 and/or 13385.

This letter constitutes a Water Quality Standards Certification issued pursuant to Clean Water Act Section 401. I hereby issue an order certifying that any discharge from the referenced project will comply with the applicable provisions of Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act, and with other applicable requirements of State law.

This discharge is also regulated under State Water Resources Control Board Order No. 2003-0017-DWQ (Order No. 2003-0017-DWQ), "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received Water Quality Certification" which requires compliance with all conditions of this Water Quality Standards Certification. Order No. 2003-0017-DWQ is available at: www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0017.pdf

Should there be any questions, please contact Jason Bill at (951) 782-3295 or Marc Brown at (951) 321-4584.

Sincerely,

Kurt V. Berchtold
Executive Officer
Santa Ana Regional Water Quality Control Board

cc (via electronic mail):
LSA Associates, Inc. – Denise Woodward – denise.woodward@lsa-assoc.com
U. S. Army Corps of Engineers, Los Angeles Office - James Mace
CA Department of Fish and Wildlife – Kim Freeburn-Marquez
State Water Resources Control Board, Office of Chief Counsel-David Rice
State Water Resources Control Board DWQ -Water Quality Certification Unit
U.S. EPA -Supervisor of the Wetlands Regulatory Office WTR-8

# Appendix C
**U**SACE Non-Notifying
NWP #12

VCS Environmental
EXPERT SOLUTIONS | CEQA-NEPA . Biology . Regulatory

# Memorandum

Date: March 10, 2020

To: Miriam Yemane, U.S. Army Corps of Engineers

From: Wade Caffrey, VCS Environmental

Subject: Monteolivo Offsite Sewer Line Project: After-the-Fact Non-Notifying Nationwide Permit #12

The purpose of this memorandum is to provide the United States Army Corps of Engineers (USACE) with documentation that the Monteolivo Offsite Sewer Line Project has proceeded under a Non-notifying Nationwide Permit (NWP) #12 for temporary and permanent impacts to Waters of the United States. This notification is being submitted by VCS Environmental on behalf of the applicant, Mari Girgis, LLC. The requirements to submit a notification under NWP #12 are as follows:

> "The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to or along a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials."

The Monteolivo Offsite Sewer Line Project is located in the City of Corona, Riverside County, California. The Project constructed an underground sewer line off-site for the Monteolivo Residential Development Project (NWP Permit No. SPL-2014-00649-JEM) beneath an existing access road. In addition, an existing culvert was replaced and a headwall was installed at an off-site storm drain outlet. Impacts to waters of the U.S. included the widening, slope stabilization, and replacement of an existing culvert at an unnamed drainage.

Approximately 0.15 acre (1,200 linear feet) of temporary impacts occurred to the unnamed drainage (non-wetland waters of the U.S.) for slope stabilization of the adjacent access road and culvert replacement. The temporarily impacted features were returned to their pre-project

contours. In addition, 0.02 acre (135 linear feet) of permanent impacts to non-wetland waters of the U.S. occurred for placement of rip-rap within the unnamed drainage. None of these impacts are known to have occurred within a special aquatic site, including wetlands as defined in the 404(b)(1) Guidelines.

A section 1600 Operation of Law (No. 1600-2019-0139-R6) and Section 401 Notice of Violation (No. 33-2014-25) have been issued for impacts to both waters of the U.S. and waters of the State, both of which are included for your reference.

A notification to the USACE for this Project is not necessary because permanent loss of waters of the U.S. did not exceed 1/10-acre or 500 feet. In addition, the Project site did not involve mechanized land clearing in a forested wetland for the utility line right-of-way and the access road was not constructed within the jurisdictional waters. Furthermore, a Section 10 permit is not required because the impacted waters are non-navigable waters. VCS was not involved with the project when impacts occurred, however, the Applicant has stated that no impacts to Section 7 or Section 106 resources are known to have occurred.

Please contact me at wcaffrey@vcsenvironmental.com or 949.489.2700 extension 213 should you have any questions or comments.

Enclosures (2):

- 1600 Op-Law No. 1600-2019-0139-R6
- 401 NOV No. 332014-25

# Appendix D
Photopages



Photo 1. View to the southwest, concrete outlet into the unnamed draiange



Photo 2. View to the north of the unnamed drainage (left) and access road (right).



Photo 3. View to the northwest of the Riverside Canal.



Photo 4. View to the east of the water quality pond.

# Determination of

# Biologically Equivalent or Superior Preservation Report

## Monteolivo Sewer Line Project

City of Corona

**Mari Girgis, LLC**

*Emad Bolous*

*Tel: (949) 833-8813*

**VCS Environmental**

*Wade Caffrey*

*Tel: (949) 489-2700 x213*

**March 2020**

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C. USACE Non-Notifying NWP #12
D. Photopages

# 1 EXECUTIVE SUMMARY

Mari Girgis, LLC presents this after-the-fact Determination of Biologically Equivalent or Superior Preservation (DBESP) which incorporates the findings from a literature review and general field assessment conducted by VCS Environmental (VCS). VCS prepared this report for the Monteolivo Sewer Line Project (Project) following Project impacts, as further discussed in Section 2.

Pursuant to the Multiple Species Habitat Conservation Plan (MSHCP) Section 6.1.2, Protection of Species Associated with Riparian/Riverine and Vernal Pools Areas, a total of 0.917 acres of areas considered MSHCP Riparian/Riverine features were impacted within the Project site. The Project permanently impacted 0.017 acres of MHSCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources. The Project also temporarily impacted 0.34 acres of MSHCP Riverine Resources. No MSHCP vernal pool resources were impacted.

As required under Operation of Law No. 1600-2019-0139-R6 (Appendix A), the Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total of 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through the purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District.

## 2 INTRODUCTION

### 2.1 Project Description

The Monteolivo Residential Development Project prepared an MSHCP Compliance Report in January 2014 to address impacts associated with grading for the construction of 103 single-family homes and associated on-site infrastructure. This DBESP report is being prepared to address impacts associated with the off-site Monteolivo Sewer Line Project located directly north of the residential development. As further described below, impacts to MSHCP resources were not anticipated for the sewer line Project, but did occur and, therefore, this is being submitted as an after-the-fact DBESP. Please note, an after-the-fact Operation of Law was issued by the California Department of Fish and Wildlife on September 25, 2019 (Appendix A), a Notice of Violation was issued from the Regional Water Quality Control Board on August 15, 2019 (Appendix B) and a Non-Notifying Nationwide Permit #12 was submitted to the U.S. Army Corps of Engineers on March 9, 2020 (Appendix C).

The Monteolivo Residential Development Project required two off-site improvements. The first was an off-site 8" sewer line to be constructed in an access road between the Monteolivo site and the public sewer in Sherbourne Avenue. This line was not expected to impact MSHCP riparian or riverine resources. However, heavy rains caused significant erosion and a landslide buried the access road. Consequently, the sewer line to be constructed was relocated in the field 20-feet easterly, in order to protect the sewer improvements and access road. The adjacent Riverside Canal and an unnamed drainage to the Riverside Canal also had to be slope-stabilized as a result of the erosion and landslide. This included the replacement of the failed easterly bank in the Riverside Canal with un-grouted rip-rap and widening of the unnamed drainage.

Additionally, in order to finish an on-site storm drain, replacement of an existing culvert, installation of a headwall, and installation of approximately 135 linear feet of riprap for energy dissipation occurred. These improvements occurred directly north of the residential development project site; within the unnamed drainage. These improvements were also not contemplated in the 2014 MSHCP Compliance Report.

### 2.2 Project Area

The Project site is located approximately 0.2 miles east of interstate 15 and one mile south of the State Route 91. The Project site is regionally accessible from Ontario Avenue and State Street to the south. A regional and vicinity map are attached as Figures 1 and 2. The Project site is bounded by the impacted Monteolivo Residential Development Project to the south, an existing residential community to the west, and agricultural/open space to the east and north.

The topography throughout the Project site is generally flat. Elevations on the Project site range from approximately 700 feet above mean sea level (MSL) to 720 feet above MSL. The Project

site is located within Section 32, Township 3 South and Range 6 West of the United States Geological Survey (USGS) Topographic Map, 7.5 Minute Series, Corona South Quadrangle, and is located on Assessor's Parcel Numbers 107-080-026, 107-080-034 (partial) and 107-080-036 (partial).

The Project Site is located in the Western Riverside MSHCP Temescal Canyon Area Plan and Gavilan Habitat Management Unit. The majority of the Project site and all impacts to MSHCP riparian/riverine features are not located within an MSHCP Area Plan Subunit, Criteria Cell, or Criteria Cell Group and are not located within any of the identified existing or proposed Cores and Linkages. A small portion of the Project site is located within Criteria Cell 1923, as further discussed in Section 7.2. The Project is not located within any conserved lands or public/quasi-public lands.

The Project site is located within the MSHCP survey area for burrowing owl (*Athene cunicularia*) and narrow endemic plant species San Diego ambrosia (*Ambrosia pumila*), Brand's phacelia (*Phacelia stellaris*), and San Miguel savory (*Clinopodium chandleri*). The Project site is not within a survey area for amphibians, mammals, or criteria area species.

The Project is located in the Santa Ana River watershed. The current drainage pattern includes an unnamed drainage that flows from south to north into the existing Riverside Canal, which eventually outlets into Temescal Creek (Reach 2). This eventually flow into the Santa Ana River, more than 4 miles north of the Project site.

## 3 RIPARIAN/RIVERINE MITIGATION (SECTION 6.1.2)

### 3.1 Methods

Section 6.1.2 of the MSHCP states that "riparian/riverine resources are lands which contain habitat dominated by trees, shrubs, persistent emergent [wetland plant species], or emergent mosses and lichens, which occur close to or which depend upon moisture from a nearby freshwater source; or areas with freshwater after flow during all or a portion of the year" and "Vernal pools are seasonal wetlands that occur in depression areas that have wetland indicators of all three parameters (soils, vegetation and hydrology) during the wetter portion of the growing season but normally lack wetland indicators of hydrology and/or vegetation during the drier portion of the growing season". To determine the areas where "Riparian/Riverine Areas and Vernal Pools" were present, the delineators reviewed previous biological, cultural, and construction reports on the adjacent Monteolivo Residential Development Project site; and reviewed historical aerial imagery.

A site visit to document the current condition of the Project site was conducted by VCS biologist Wade Caffrey on August 28, 2019 and current photographs are in Appendix D.

The boundaries of the pre- and post-construction riparian/riverine resources were determined primarily through the use of present and historical aerial imagery (Google 2019). The physical

features of the channel banks and the dripline of any adjacent riparian vegetation extending beyond the bank edges were used to delineate the boundaries of the riparian/riverine resources. A map was compiled showing the impacted MSHCP Riparian/Riverine resources (Figure 3).

Please note, the extent of impacts to MSHCP Riparian/Riverine features are considered best estimates.

3.2 Results/Impacts

As shown in Table 1, permanent impacts occurred to approximately 0.017 acres of MSHCP riverine resources and 0.56 acres of riparian resources. In addition, temporary impacts to 0.34 acres of riverine resources also occurred (Figure 3). Please note, the widening of the unnamed drainage created an increase in MSHCP jurisdictional riverine waters by 0.24 acres, not reflected in the table below.

**Table 1**
**Impacts to Riparian/Riverine Resources Within the Project Site**

| Resource | Permanent Impact (acres) | Temporary Impact (acres) |
|---|---|---|
| MSHCP Riverine | 0.017 | 0.34* |
| MSHCP Riparian | 0.56 | 0.0 |
| **MSHCP TOTAL** | **0.577** | **0.34** |

*Does not include the 0.24 acres of created MSHCP riverine resources

A sewage treatment pond present on the Project site was also altered but was determined to not be a jurisdictional water of the U.S. or State due to its use as an isolated waste treatment facility. The sewage treatment pond would also not be considered an MSHCP riparian/riverine feature because it did not contain a freshwater source. A portion on the pond was converted into a water quality basin and the remainder still exists as a remnant pond, but no longer treats sewage.

No vernal pools, seasonal depressions or fairy shrimp habitat were observed through aerial review or the post-construction site visit in 2019. The Project site does not contain vegetative, hydrologic, or soil characteristics associated with vernal pool and fairy shrimp habitats. The United States Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey lists 1 soil type (Arbuckle Gravelly Loam, 2-9% slopes, dry) and 1 land type (Rough Broken Land) for the Project site; both of which are considered well-draining and therefore not suitable for vernal pools, seasonal depressions, and other fairy shrimp habitat. The field

observations, combined with the NRCS identifying a well-drained soil profile on the Project site, determined the lack of vernal pools and seasonal depressions on the Project site.

In regard to fairy shrimp, three species are covered by the MSHCP including the Riverside fairy shrimp (*Streptocephalus woottoni*), Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*), and vernal pool fairy shrimp (*Branchinecta lynchi*). According to the MSHCP, vernal pool fairy shrimp habitat is limited to vernal pools and alkali vernal pools, and Santa Rosa Plateau fairy shrimp are limited to vernal pools formed on basalt flows. No portion of the Project site is described as having an alkali complex or basalt flows. In addition, no form of vernal pools are considered to be present on the Project site and therefore Santa Rosa Plateau and vernal pool fairy shrimp are not either.

The Riverside fairy shrimp however is known to inhabit more than just vernal pools, including depressions and road ruts. Aside from the sewage treatment pond, no other depressions or road ruts were observed or inundated on aerial imagery or during the post-construction site visit in 2019. The aforementioned remnant sewage treatment pond would not be considered suitable habitat for Riverside fairy shrimp because up until Project impacts the pond contained sewage not believed to be suitable for fairy shrimp.

### 3.3 Mitigation and Equivalency

#### *3.3.1 Direct Effects*

Pursuant to the CDFW Operation of Law, the Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District. The implementation of this mitigation is expected to be biologically superior to that of the impacted areas because it will result in an increase of quality habitat and will be funded through a mitigation bank which will ensure the enhancement area to be protected in perpetuity.

#### *3.3.2 Indirect Effects*

During construction, standard BMP's such as silt fencing and sandbags/straw wattles were implemented where appropriate to prevent impacts to downstream waters. No known indirect effects occurred to MSHCP jurisdictional features and therefore no mitigation is proposed.

## 4 RIPARIAN BIRDS (SECTION 6.1.2)

The MSHCP lists five bird species for protection based off association with riparian/riverine and vernal pool habitats. These species include bald eagle (*Haliaeetus leucocephalus*), least Bell's

vireo (*Vireo bellii pusillus*), peregrine falcon (*Falco peregrinus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and western yellow-billed cuckoo (*Coccyzus americanus occidentalis).*

## 4.1 Methods

No general or focused surveys for riparian birds occurred prior to Project implementation.

A review of relevant available literature on riparian habitat and birds within the Project site and vicinity was conducted. Riparian birds that have the potential to occur within the immediate region of the Project site were identified. Several agencies, including the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW), publish lists of particular taxa (species and subspecies) and the associated level of protection or concern associated with each. VCS reviewed and consulted literature and databases focused on the Project site, and included the following sources listed below:

- The California Natural Diversity Database (CNDDB), a CDFW species account database that inventories status and locations of special status species in California, was used to identify any riparian birds that may exist within a two-mile radius of the Project site (CDFW 2019). CNDDB records are generally used as a starting point when determining what special status species, if any, may occur in a particular area. However, these records may be old, lack data not yet entered, and do not represent all the special status species that could be in that particular area.

- A map of USFWS critical habitat to determine species with critical habitat mapped in the general vicinity of the Project (USFWS 2019).

- Pertinent maps, scientific literature, websites, and regional flora and fauna field guides

## 4.2 Results/Impacts

The California Natural Diversity Data Base records show recent occurrences (2006, 2010, and 2014) of least Bell’s vireo from within the project limits. Least Bell's vireo were observed adjacent to the impact areas after Project activities were complete, however, no known impacts to least Bell's vireo occurred.

No additional MSHCP covered riparian birds were observed within the Project site following Project impacts.

## 4.3 Mitigation and Equivalency

No known direct or indirect impacts to least Bell’s vireo or other MSHCP covered riparian bird species occurred and therefore no mitigation is proposed.

## 5 NARROW ENDEMIC PLANT SPECIES MITIGATION (SECTION 6.1.3)

### 5.1 Methods

No focused narrow endemic plant surveys were conducted prior to Project impacts. Habitat suitability for narrow endemic plant species was reviewed using the definitions listed in table 6-1 of the MSHCP.

### 5.2 Results/Impacts

No suitable habitat for the narrow endemic plant survey species is present on the Project site, as further detailed in Table 2 below.

**Table 2: Narrow Endemic and Plant Survey Species Habitat Suitability**

| Species | MSHCP Habitat | Habitat Suitability |
|---|---|---|
| San Diego ambrosia *(Ambrosia pumila)* | Occurs on open floodplain terraces on Gerretson gravelly fine sandy loams, or in the watershed margins of vernal pools or alkali playas on Las Posas loam in close proximity to willow silty alkaline soils. Occurs in sparse annual vegetation | Unsuitable. No Garretson gravelly fine sandy loams, vernal pools, or alkali playas on Las Posas loam. |
| Brand's phacelia *(Phacelia stellaris)* | Occurs in coastal scrub habitats on sandy washes or benches in alluvial floodplains. The species is generally dependent on periodic flooding and sediment transport. The MSHCP account for this species states that "within western Riverside county, Brand's phacelia is restricted to sandy benches along the Santa Ana River. | Unsuitable. Typical habitat conditions are not present. |
| San Miguel Savory *(Satureja chandleri)* | Occurs on rocky, gabbroic, or metavolcanic substrates in chaparral or oak woodlands. | Unsuitable. Non-rocky, gabbroic, or metavolcanic substrates |

### 5.3 Mitigation and Equivalency

No known direct or indirect impacts to narrow endemic plant species occurred and therefore no mitigation is proposed.

## 6 ADDITIONAL SURVEY NEEDS AND PROCEDURES (SECTION 6.3.2)

### 6.1 Criteria Area Species Survey

Surveys for Criteria Area species are not required for this Project under MSHCP Section 6.3.2.

### 6.2 Burrowing Owl

As shown on Figure 4, the Project site falls within the MSHCP burrowing owl survey area.

#### *6.2.1 Methods*

No focused or pre-construction burrowing owl surveys were conducted prior to Project impacts.

#### *6.2.2 Results/Impacts*

No known direct or indirect impacts to narrow endemic plant species occurred.

#### *6.2.3 Mitigation and Equivalency*

No known direct or indirect impacts to burrowing owl occurred.

### 6.3 Criteria Area Species Survey – Mammals

Surveys for Criteria Area mammal species are not required for this Project under MSHCP Section 6.3.2.

### 6.4 Criteria Area Species Survey – Amphibians

Surveys for Criteria Area amphibian species are not required for this Project under MSHCP Section 6.3.2.

## 7 ADDITIONAL CONSIDERATIONS

### 7.1 Delhi Sands Flower-Loving Fly

Delhi soil types are not mapped within the Project site, and therefore, no surveys are required for the Delhi Sands flower-loving fly.

### 7.2 Criteria Cell

A small portion of the Project site lies within Criteria Cell 1923 (Figure 4). No impacts to MSHCP resources occurred within this portion of the Project site. In addition, this portion of the Project site has been previously affected by development and is not located within or nearby the portions of the criteria cell dedicated for conservation. Therefore, pursuant to Section 6.1.4 *Guidelines Pertaining to the Urban Wildlands Interface,* the Project did not

create edge effects on any conserved habitat, reserve lands, or public quasi/public conserved lands.

To prevent any direct impacts to the Criteria Cell outside of the Project site, standard BMP's were used during construction including the use of silt fencing and sandbags/straw wattles where appropriate.

### 7.3 Wildlife Movement

The Project is not located within an MSHCP Area Plan Subunit, Criteria Cell, or Criteria Cell Group and is not located within any of the identified existing or proposed Cores and Linkages; therefore, the site is not considered to function as a regional wildlife movement area. It is possible that the Project site functions in local wildlife movement, however, due to the existing and on-going development to the west and south, it is unlikely that the site plays a critical role in local wildlife movement.

### 7.4 Hydrology

The Project is located in the Santa Ana River watershed. The current drainage pattern includes an unnamed drainage that flows from south to north into the existing Riverside Canal, which flows east and outlets into Temescal Creek (Reach 2). This eventually flows into the Santa Ana River, more than 4 miles north of the Project site. Project impacts did not alter the general drainage pattern of the unnamed drainage or the Riverside canal.

The sewage treatment basin was an isolated system created in the 1980's for the purpose of retaining and decomposing organic matter from the sewer discharge of adjacent properties. The City of Corona, along with the Regional Water Quality Control Board, asked the Monteolivo Residential Development Project to connect the neighboring community to their proposed sewer line to eliminate the problematic sewage treatment pond. The sewage treatment pond was divided in two, and a portion of the basin was improved as a water quality basin to detain runoff from residential areas in the upper watershed of Monteolivo Residential Project and groundwater discharge. The water quality basin will receive water from storm drain and irrigation runoff from the Monteolivo Residential Project once it is built out.

*Flood Storage*

The unnamed drainage was widened and therefore has a greater amount of flood storage than compared to pre-project conditions, making the post-project conditions biologically superior. The flood storage of the Riverside Canal was not altered due to Project impacts.

*Sediment and Toxic Trapping*

The post-construction water quality basin, remnant pond, unnamed drainage, and Riverside Canal will continue to trap sediments from the project site and the upper watershed in the same manner as the pre-construction site conditions. In addition, the constructed water quality

basin is designed to trap and settle toxins in the water to allow algae, fungi, and soil bacteria to decompose inorganic and organic chemicals. These features make it biologically superior to the pre-construction sewage treatment pond.

## 8 Mitigation

As discussed above, the Monteolivo Sewer Line Project plans to purchase mitigation for impacts to MSHCP riparian/riverine resources. The Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total of 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through the purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District.

## 9 REFERENCES


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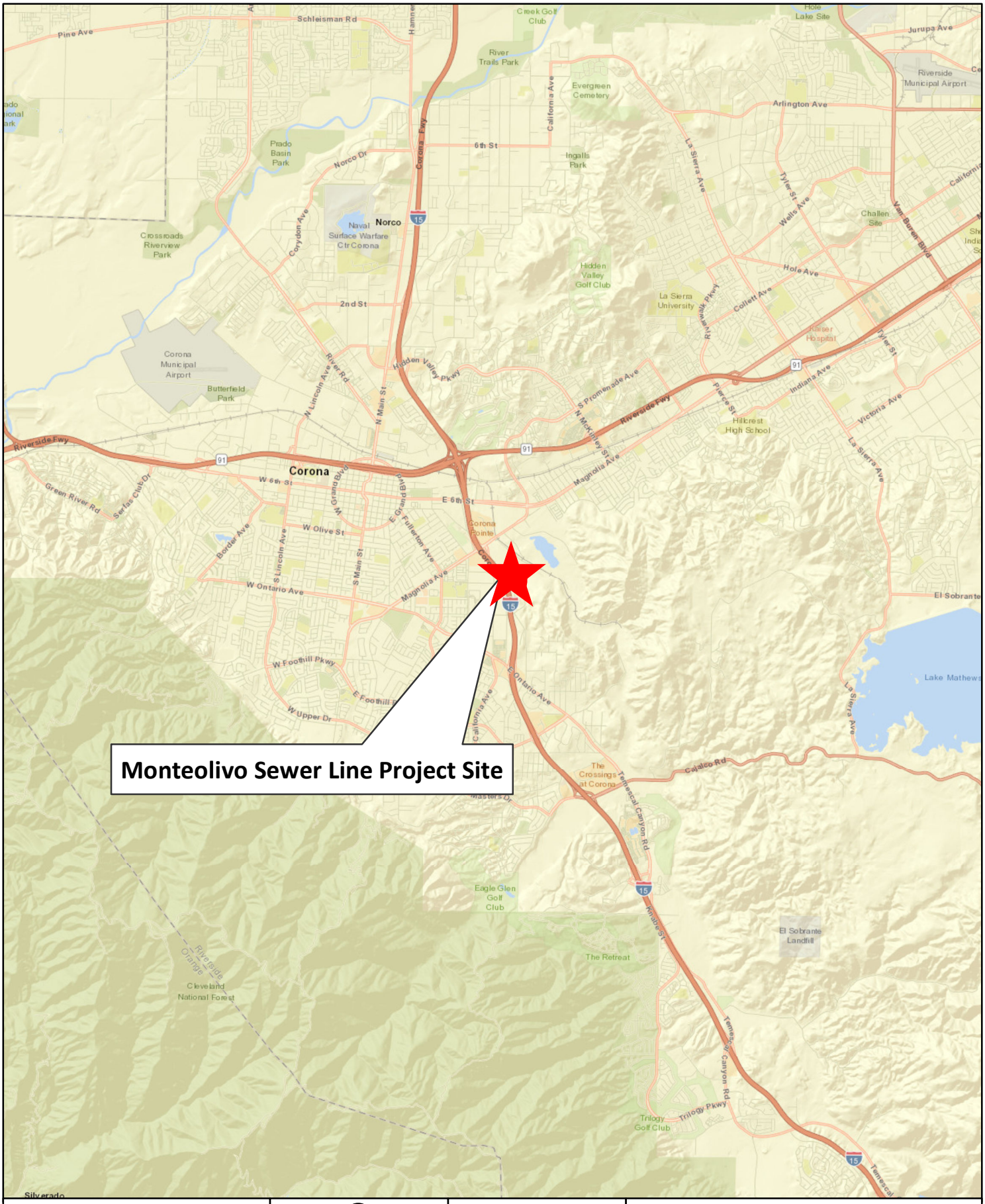
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# Figures




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources: ESRI

0 0.5 1 Miles
1 in = 2 miles

**Figure 1**

**Mari Girgis, LLC**
**Monteolivo Sewer Line Project**

Regional Map




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources:
ESRI

0 500 1,000 Feet
1 in = 800 feet

**Figure 2**

**Mari Girgis, LLC**
**Monteolivo Sewer Line Proejct**

Vicinity Map




Prepared By:
VCS Environmental

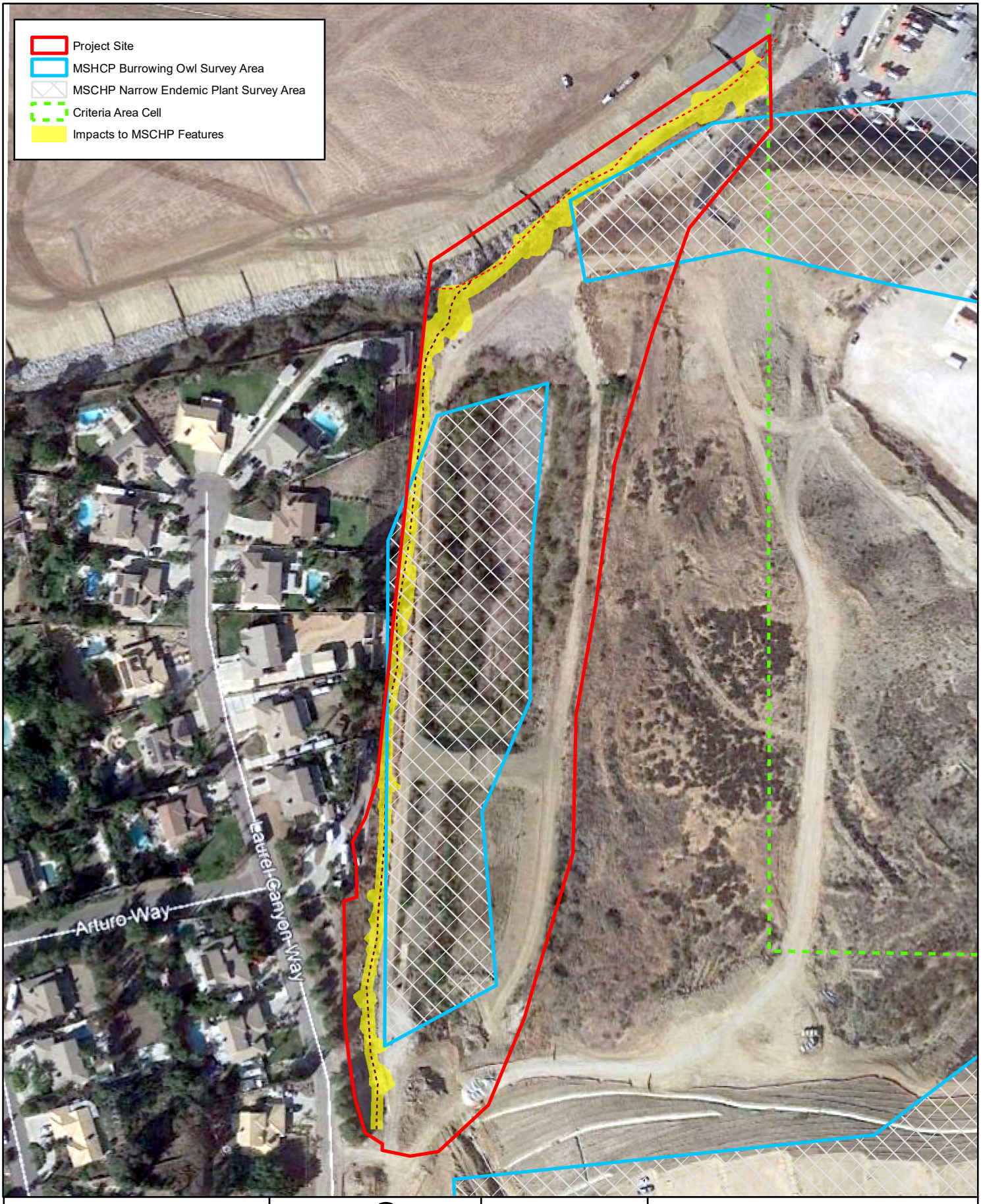
Map Created: October 2019
Data Sources:
Google Earth, LSA, VCS

0 100 200 ft
1 in = 200 feet

*Not including the created 0.24 acres of riverine features

Figure 3

Mari Girgis, LLC
Monteolivo Sewer Line Project
**Impacts to MSHCP Riparian/Riverine Features**




Prepared By:
VCS Environmental

Map Created: October 2019
Data Sources:
MSHCP

0 100 200 ft
1 in = 200 feet

Mari Girgis, LLC
Monteolivo Sewer Line Project

**MSHCP Survey Areas**

**Appendix A**
CDFW Operation of Law
and Application

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
3602 Inland Empire Blvd.,Suite C-220
Ontario, CA 91764
(909) 484-0167
www.wildlife.ca.gov

*EDMUND G. BROWN, Jr., Governor*
*CHARLTON H. BONHAM, Director*

April 16, 2015

Tom Mungari
Nova Homes, Inc.
245 Fischer Avenue, Unit A-8A
Costa Mesa, CA 92626

Subject: Notification of Lake or Streambed Alteration No. 1600-2014-0218-R6
Monteolivio Project

Dear Mr. Mungari:

The California Department of Fish and Wildlife (Department) had until January 18, 2015 to submit a draft Lake or Streambed Alteration Agreement (Agreement) to you or inform you that an Agreement is not required. The Department did not meet that date. As a result, by law, you may now complete the project described in your notification without an Agreement.

Please note that pursuant to Fish and Game Code section 1602(a)(4)(D), if you proceed with this project, it must be the same as described and conducted in the same manner as specified in the notification and any modifications to that notification received by the Department in writing prior to January 18, 2015. This includes completing the project within the proposed term and seasonal work period and implementing all avoidance and mitigation measures to protect fish and wildlife resources specified in the notification. If the term proposed in your notification has expired, you will need to re-notify the Department before you may begin your project. Beginning or completing a project that differs in any way from the one described in the notification may constitute a violation of Fish and Game Code section 1602.

*Your notification proposes work within an unnamed wash, tributary to Temescal Canyon Wash. The project site is bisected by Laurel Canyon Way and is located 0.2 mile east of Interstate 15, one mile south of State Route 91, in the City of Corona, County of Riverside, California. The proposed project includes the construction of 103 residential lots with a minimum lot size of 12,000 square feet and associated infrastructure, the realignment of the onsite drainage channel, and the construction of a mitigation basin. Your project will permanently impact 1.35 acres and temporarily impact 1.52 acres of habitat subject to CDFW jurisdiction. Best Management Practices (BMPs) and avoidance measures for this project include: following the Water Quality Management Plan and Storm Water Prevention Pollution Plan; avoiding vegetation disturbing activities during nesting bird season; following construction noise and lighting BMPs; and incorporating barriers to minimize unauthorized public access. CDFW recommends the Designated Biologist(s) survey the project site, and within a recommended 500*

*buffer surrounding the project site, for both diurnal and nocturnal nesting birds, prior to commencing project activities (including construction and/or site preparation) regardless of season. You have proposed to mitigate project impacts by: creating and restoring 2.46 acres of habitat onsite, consisting of at least 1.92 acres of riparian habitat and 0.08 acre of wetlands; providing sufficient funds to the Riverside Corona Resource Conservation District for the restoration of 0.76 acre of streambed; and by providing sufficient funds to a conservation entity for ongoing habitat restoration of 1.52 acres. The mitigation basin and drainage channel and will be dedicated to conservation in perpetuity through a conservation easement held by the Riverside-Corona Resource Conservation District or other CDFW-approved entity, with the exception of a 20-foot area on either end of all culverts within these areas. Onsite restoration, maintenance, and reporting will be conducted in accordance with the Habitat Mitigation and Monitoring Plan. Your proposed work period will end no later than October 19, 2019.*

Also note that while you are entitled to complete the project without an Agreement, you are still responsible for complying with other applicable local, state, and federal laws. These include, but are not limited to, the state and federal Endangered Species Acts and Fish and Game Code sections 5650 (water pollution) and 5901 (fish passage).

Finally, if you decide to proceed with your project without an Agreement, you must have a copy of this letter and your notification with all attachments available at all times at the work site. If you have any questions regarding this matter, please contact Claire Ingel at (909) 484-3979 or Claire.ingel@wildlife.ca.gov

Sincerely,

Jeff Brandt
Senior Environmental Scientist

cc: Claire Ingel, Environmental Scientist

ec: Denise Woodard, LSA Associates, Inc.

| *FOR DEPARTMENT USE ONLY* | | | | |
|---|---|---|---|---|
| *Date Received* | *Amount Received* | *Amount Due* | *Date Complete* | *Notification No.* |
| | *$* | *$* | | |
| *Assigned to:* | | | | |

# NOTIFICATION OF LAKE OR STREAMBED ALTERATION

**Complete EACH field, unless otherwise indicated, following the instructions and submit ALL required enclosures, attachments, and fee(s) to the CDFW regional or field office that serves the area where the project will occur. Attach additional pages to notification, if necessary.**

## 1. APPLICANT PROPOSING PROJECT

| | |
|---|---|
| Name | Emad Bolous |
| Business/Agency | Mari Girgis, LLC |
| Mailing Address | 4030 Birch Street, Suite 100 |
| City, State, Zip | Newport Beach, CA 92660 |
| Phone Number | 949-833-8813 |
| Email | ebolous@aol.com |

## 2. CONTACT PERSON (*Complete only if different from applicant.*)

| | |
|---|---|
| Name | Wade Caffrey |
| Business/Agency | VCS Environmental |
| Mailing Address | 30900 Rancho Viejo Road |
| City, State, Zip | San Juan Capistrano, CA 92675 |
| Phone Number | 949-489-2700 ext. 213 |
| Email | wcaffrey@vcsenvironmental.com |

While an applicant is legally responsible for complying with Fish and Game Code section 1602 et seq., an applicant may designate and authorize an agent (e.g., lawyer, consultant, or other individual) to act as a Designated Representative. The Designated Representative is authorized to sign the notification and any agreement on behalf of the Applicant.

**Do you authorize the Contact Person above to represent you as your Authorized Designated Representative?**

| | |
|---|---|
| ☑ Yes, I authorize. | ☐ No, I do not authorize. |

## 3. PROPERTY OWNER (*Complete only if different from applicant*)

| | |
|---|---|
| Name | Belaire HOA |
| Mailing Address | P.O. Box 77134 |
| City, State, Zip | Corona, CA 92877 |
| Phone Number | |
| Email | |

**4. PROJECT NAME AND AGREEMENT TERM**

| | | | | |
|---|---|---|---|---|
| A. Project Name | Monteolivo Sewer Line Project | | | |
| B. Agreement Term Requested | ☑ Regular (*5 years or less*)<br>☐ Long-term (*greater than 5 years)* | | | |
| C. Project Term | Beginning (*year*) | 2016 | Ending (*year*) | 2021 |

D. Seasonal Work Period

| Season(s)* | Start Date (*month/day*) | End Date (*month/day*) | E. Number of Work Days |
|---|---|---|---|
| 1 | 01/01 | 12/31 | 365 |
| 2 | 01/01 | 12/31 | 365 |
| 3 | 01/01 | 12/31 | 365 |
| 4 | 01/01 | 12/31 | 365 |
| 5 | 01/01 | 12/31 | 365 |

** Continue on additional page(s) if necessary*

**5. AGREEMENT TYPE**

Check the applicable box. If boxes B – F are checked, complete the specified attachment.

| | | |
|---|---|---|
| A. | ☑ Standard *(Most construction projects, excluding the categories listed below)* | |
| B. | ☐ Gravel/Sand/Rock Extraction (*Attachment A*) | *Mine I.D. Number:* _____ |
| C. | ☐ Timber Harvesting (*Attachment B*) | *THP Number:* _____ |
| D. | ☐ Water Diversion/Extraction/Impoundment (*Attachment C*) | *SWRCB Number:* _____ |
| E. | ☐ Routine Maintenance (*Attachment D*) | |
| F. | ☐ Cannabis Cultivation (*Attachment E*) | |
| G. | ☐ CDFW Grant Programs | *Agreement Number:* _____ |
| H. | ☐ Master | |
| I. | ☐ Master Timber Operations | |

## 6. FEES

See the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. ***Note: CDFW may not process this notification until the correct fee has been received.***

| | A. Project Name | B. Project Cost | C. Project Fee |
|---|---|---|---|
| 1 | Monteolivo Project | $325,000 | $4,460.50 |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| | | D. Base Fee *(if applicable)* | |
| | | **E. TOTAL FEE*** | $4,460.50 |

** Check, money order, and Visa or MasterCard (select Environmental Fees from Menu) payments are accepted.*

## 7. PRIOR NOTIFICATION AND ORDERS

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, CDFW for the project described in this notification?

☑ Yes (*Provide the information below*) ☐ No

| Applicant | Notification Number | Date |
|---|---|---|
| Nova Homes, Inc. | 1600-2014-0218-R6 | 04/16/2015 |

B. Is this notification being submitted in response to a court or administrative order or notice, or a notice of violation (NOV) issued by CDFW?

☑ Yes ☐ No (*Enclose a copy of the order, notice, or NOV. If the applicant was directed to notify CDFW verbally rather than in writing, identify the person who directed the applicant to submit this notification, the agency he or she represents, and describe the circumstances relating to the order.*)

| Name of person who directed notification | Agency |
|---|---|
| Claire Ingel | CDFW |

Describe circumstances relating to order

An off-site property adjacent to the existing Monteolivo Residential Development property was used to construct a sewer line for the development and surrounding communities, as well as decomission an existing sewage treatment pond per the Project's Conditions of Approval. Permits from the wildlife agencies were not acquired for the off-site property prior to impacts to jurisdictional features.

☐ *Continued on additional page(s)*

## 8. PROJECT LOCATION

A. Address or description of project location.
(*Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway.*)

The Project is located approximately 0.2 miles east of interstate 15 and one mile south of the State Route 91. The northwest portion of the proposed project is bisected by Laurel Canyon Way. The Project site is regionally accessible from Ontario Avenue and State Street to the south. A regional and vicinity map are attached as Figures 1 and 2.

☐ *Continued on additional page(s)*

| | |
|---|---|
| B. River, stream, or lake affected by the project. | Riverside Canal and unnamed drainage to Riverside Canal |
| C. What water body is the river, stream, or lake tributary to? | Temescal Wash |
| D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts? | ☐ Yes ☑ No ☐ Unknown |
| E. County | Riverside County |

| F. USGS 7.5 Minute Quad Map Name | G. Township | H. Range | I. Section | J. ¼ Section |
|---|---|---|---|---|
| Corona South, California | 3 South | 6 West | 32 | |
| | | | | |
| | | | | |

☐ *Continued on additional page(s)*

K. Meridian (check one) ☐ Humboldt ☐ Mt. Diablo ☑ San Bernardino

L. Assessor's Parcel Number(s)

| | |
|---|---|
| 107-080-026 | 107-080-036 (partial) |
| 107-080-034 (partial) | |

☐ *Continued on additional page(s)*

M. Geographic coordinates (*Provide the latitude and longitude coordinates for the property where the project(s) will take place. CDFW utilizes decimal degrees and WGS 84 datum. Access Google Maps Help if you need assistance in finding your coordinates.)*

| | | |
|---|---|---|
| Latitude/Longitude | *Latitude:* 33.8583 | *Longitude:* -117.5331 |
| | *Latitude:* 33.8616 | *Longitude:* -117.5329 |
| | *Latitude:* 33.8625 | *Longitude:* -117.5312 |
| | *Latitude:* 33.8610 | *Longitude:* -117.5321 |
| | *Latitude:* 33.8584 | *Longitude:* -117.5325 |

## 9. PROJECT CATEGORY

| WORK TYPE | NEW CONSTRUCTION | REPLACE EXISTING STRUCTURE | REPAIR-MAINTAIN-OPERATE EXISTING STRUCTURE |
|---|---|---|---|
| Bank stabilization – bioengineering/recontouring | ☑ | ☐ | ☐ |
| Bank stabilization – rip-rap/retaining wall/gabion | ☑ | ☑ | ☐ |
| Boat dock/pier | ☐ | ☐ | ☐ |
| Boat ramp | ☐ | ☐ | ☐ |
| Bridge | ☐ | ☐ | ☐ |
| Channel clearing/vegetation management | ☐ | ☐ | ☐ |
| Culvert | ☐ | ☑ | ☐ |
| Debris basin | ☐ | ☐ | ☐ |
| Dam | ☐ | ☐ | ☐ |
| Filling of wetland, river, stream, or lake | ☑ | ☐ | ☐ |
| Geotechnical survey | ☐ | ☐ | ☐ |
| Habitat enhancement – revegetation/mitigation | ☐ | ☐ | ☐ |
| Levee | ☐ | ☐ | ☐ |
| Low water crossing | ☐ | ☐ | ☐ |
| Road/trail | ☐ | ☐ | ☐ |
| Sediment removal: pond, stream, or marina | ☐ | ☐ | ☐ |
| flood control | ☐ | ☐ | ☐ |
| Storm drain outfall structure | ☐ | ☑ | ☐ |
| Temporary stream crossing | ☐ | ☐ | ☐ |
| Utility crossing: horizontal directional drilling | ☐ | ☐ | ☐ |
| jack/bore | ☐ | ☐ | ☐ |
| open trench | ☐ | ☐ | ☐ |
| Water diversion without facility | ☐ | ☐ | ☐ |
| Water diversion with facility | ☐ | ☐ | ☐ |
| Other *(specify)*: | ☐ | ☐ | ☐ |

**10. PROJECT DESCRIPTION**

A. Describe the project in detail. Include photographs of the project location and immediate surrounding area.

- Written description of all project activities with detailed step-by-step description of project implementation.
- Include any structures (e.g., rip-rap, culverts) that will be placed or modified in or near the stream, river, or lake, and any channel clearing.
- Specify volume, and dimensions of all materials and features (e.g., rip rap fields) that will be used or installed.
- If water will be diverted or drafted, specify the purpose or use and include Attachment C.
- Enclose diagrams, drawings, design plans, construction specifications, and maps that provide all of the following: site specific construction details; dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, stockpile areas, areas of temporary disturbance, and where the equipment/machinery will access the project area.
  - A helpful resource to assist in the development of quality PDF maps in Google Earth. See Using Google Earth to Map your Property (PDF).

This application is being submitted as an after-the-fact SAA Notification for the Monteolivo Sewer Line Project (Project).

The Monteolivo Residential Development Project obtained a CDFW Operation of Law dated April 16, 2015 (SAA #1600-2014-0218-R6) for impacts associated with grading for the construction of 103 single-family homes and associated on-site infrastructure.

The Project required two off-site improvements. The first was an off-site 8Žsewer line to be constructed in an access road between the Monteolivo site and the public sewer in Sherbourne Avenue. This line was not expected to impact waters of the State. However, heavy rains caused significant erosion and a landslide buried the access road. Consequently, the sewer line to be constructed was relocated in the field 20-feet easterly. In order to protect the sewer improvements and access road, the adjacent Riverside Canal and an unnamed drainage to the Riverside Canal had to be slope-stabilized. This included the replacement of the failed easterly bank in the Riverside Canal with un-grouted rip-rap and widening of the unnamed drainage.

The second improvement was not contemplated in the original 1600 application. In order to finish an on-site storm drain, replacement of an existing culvert, installation of a headwall, and installation of approximately 135 linear feet of riprap for energy dissipation occurred. These improvements occurred directly north of the residential development project site; within the off-site portion of the unnamed drainage.

Post-construction site photographs are attached as Appendix A.

☐ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

Construction equipment, including but not limited to dozers, excavators, and dump trucks were required for this work.

☐ *Continued on additional page(s)*

| | |
|---|---|
| C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B). | ☐ Yes ☑ No (*Skip to box 11*) |
| D. Will the project require work in the wetted portion of the channel? | ☐ Yes (*Enclose a plan to divert water around work site*)<br>☑ No |

## 11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

Permanent Impacts:
-0.017 acres of permanent impacts occurred to streambed waters of the State for placement of rip rap in the unnamed drainage.
-0.56 acres of permanent impacts occurred to riparian waters of the State for removal of riparian vegetation within the Riverside Canal and unnamed drainage.
Temporary Impacts:
-0.34 acres of temporary impacts occurred to streambed waters of the state for widening of the unnamed drainage and replacement of rip rap in the Riverside Canal

Note: The total acreage of streambed waters of the State within the unnamed drainage increased by 0.24 acres post-construction due to widening of the drainage. Impacts can be seen on Figure 3.

☐ *Continued on additional page(s)*

B. Will the project affect any vegetation? ☑ Yes (*Complete the tables below*) ☐ No *(Include aerial photo with date supporting this determination)*

| Vegetation Type | Temporary Impact | Permanent Impact |
|---|---|---|
| Disturbed | Linear feet: _____ Total area: 0.34 | Linear feet: _____ Total area: 0.02 |
| Riparian | Linear feet: _____ Total area: _____ | Linear feet: _____ Total area: 0.56 |

| Tree Species | Number of Trees to be Removed | Trunk Diameter (range) |
|---|---|---|
| Freemont cottonwood (Populus fremontii) | 2 | N/A |
| Goodding's willow (Salix goodingii) | 12 | N/A |
| arroyo willow (Salix lasiolepis) | 12 | N/A |
| blue elderberry (Sambucus nigra ssp. cerulea) | 12 | N/A |

*numbers approximate based on aerial review

☐ *Continued on additional page(s)*

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

☑ Yes *(List each species and/or describe the habitat below)* ☐ No ☐ Unknown

Least Bell's vireo (FE, SE) were observed adjacent to waters of the State impact areas after Project activities were complete. No known impacts to Least Bell's vireo occurred.

☐ *Continued on additional page(s)*

D. Identify the source(s) of information that supports a "yes" or "no" answer above in Box 11.C.

-CNDDB
-Observed adjacent to impact areas.

☐ *Continued on additional page(s)*

E. Has a biological study been completed for the project site?

☐ Yes (*Enclose the biological study*) ☑ No

*Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.*

F. Has one or more technical studies (e.g., engineering, hydrologic, geological, or geomorphological) been completed for the project or project site?

☑ Yes *(Enclose the study(ies))* ☐ No *Hydrology report included as Appendix B

*Note: One or more technical studies may be required to evaluate potential project impacts to a lake or streambed.*

G. Have fish or wildlife resources or waters of the state been mapped or delineated on the project site?

☑ Yes (*Enclose the mapped results*) ☐ No

*Note: Check "yes" if fish and wildlife resources or waters of the state on the project site have been mapped or delineated. "'Wildlife' means and includes all wild animals, birds, plants, fish, amphibians, reptiles and related ecological communities, including the habitat upon which the wildlife depends." (Fish & G. Code, § 89.5.) If "yes" is checked, submit the mapping or delineation. If the mapping or delineation is in digital format (e.g., GIS shape files or KMZ), you must submit the information in this format for CDFW to deem your notification complete. If "no" is checked, or the resolution of the mapping or delineation is insufficient, CDFW may request mapping or delineation (in digital or non-digital format), or higher resolution mapping or delineation for CDFW to deem the notification complete.*

**12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES**

A. Describe the techniques that will be used to prevent sediment, hazardous, or other deleterious materials from entering watercourses during and after construction.

Techniques used during construction to prevent sediment and pollutants from entering the watercourse included the use silt fencing, sandbags/straw wattles where appropriate and designating equipment staging locations outside of the drainage. Post construction, the drainages were slope-stabilized (which included the installation/replacement of rip rap) to prevent erosion.

☐ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

Vegetation removal only occurred in areas necessary to complete Project activities.

☐ *Continued on additional page(s)*

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

(1) The Project proposes to mitigate for permanent impacts to 0.017 acres of streambed waters of the State though purchase of mitigation at a 2:1 ratio for a total of 0.034 acres of credits.
(2) The Project proposes to mitigate for permanent impacts to 0.56 acres of riparian waters of the State through purchase of mitigation at a 2:1 ratio for a total of 1.12 acres of credits.
(3) The Project proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits.

*All credits purchased would be ephemeral enhancement through the Riverside-Corona Resource Conservation District*

☐ *Continued on additional page(s)*

## 13. PERMITS

List any local, State, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

| | | | |
|---|---|---|---|
| A. | USACE 404 NWP | ☑ Applied | ☐ Issued |
| B. | RWQCB 401 WQC | ☑ Applied | ☐ Issued |
| C. | MSHCP DBESP & Consistency Analysis - drafted for submittal | ☐ Applied | ☐ Issued |

D. Unknown whether ☐ local, ☐ State, or ☐ federal permit is needed for the project. (*Check each box that applies*)

☐ *Continued on additional page(s)*

## 14. ENVIRONMENTAL REVIEW

| | | | |
|---|---|---|---|
| A. Has a CEQA lead agency been determined? | ☑ Yes (*Complete boxes B, C, D, E, and F*) ☐ No (*Skip to box 14.G*) | | |
| B. CEQA Lead Agency | City of Corona | | |
| C. Contact Person | Sandra Yang | D. Phone Number | 951-736-2262 |

E. Has a draft or final document been prepared for the project pursuant to CEQA and/or NEPA?

☐ Yes (*Check the box below for each CEQA or NEPA document that has been prepared and enclose a copy of each.*)

☑ No (*Check the box below for each CEQA or NEPA document listed below that will be or is being prepared.*)

| | | |
|---|---|---|
| ☐ Notice of Exemption | ☑ Mitigated Negative Declaration | ☐ NEPA document (*type*): |
| ☑ Initial Study | ☐ Environmental Impact Report | |
| ☐ Negative Declaration | ☐ Notice of Determination *(Enclose)* | |
| ☐ THP/ NTMP | ☐ Mitigation, Monitoring, & Reporting Plan | |

F. State Clearinghouse Number (*if applicable*)

G. If the project described in this notification is not the "whole project" or action pursuant to CEQA, briefly describe the entire project (Cal. Code Regs., tit. 14 § 15378).

☐ *Continued on additional page(s)*

H. Has a CEQA filing fee been paid pursuant to Fish and Game Code section 711.4?

☐ Yes (*Enclose proof of payment*) ☑ No (*Briefly explain below the reason a CEQA filing fee has not been paid)*

*Note: The CEQA filing fee is in addition to the notification fee. If a CEQA filing fee is required, the Lake or Streambed Alteration Agreement may not be finalized until paid.*

An addendum to the IS/MND is being prepared and a NOD + fees will be paid.

**15. SITE INSPECTION**

Check one box only.

☐ In the event CDFW determines that a site inspection is necessary, I hereby authorize a CDFW representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant CDFW such entry.

☑ I request CDFW to first contact (*insert name*) Wade Caffrey - VCS Environmental at (*insert phone number or email address*) wcaffrey@vcsenvironmental.com to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay CDFW's determination as to whether a Lake or Streambed Alteration Agreement is required and/or CDFW's issuance of a draft agreement pursuant to this notification.

**16. DIGITAL FORMAT**

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

☑ Yes (Please enclose the information via digital media with the completed notification form.)

☐ No

**17. SIGNATURE**

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, CDFW may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless CDFW has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

Emad Bolous
Signature of Applicant or Applicant's Authorized Representative

5/21/19
Date

Emad Bolous
Print Name




Prepared By:
VCS Environmental

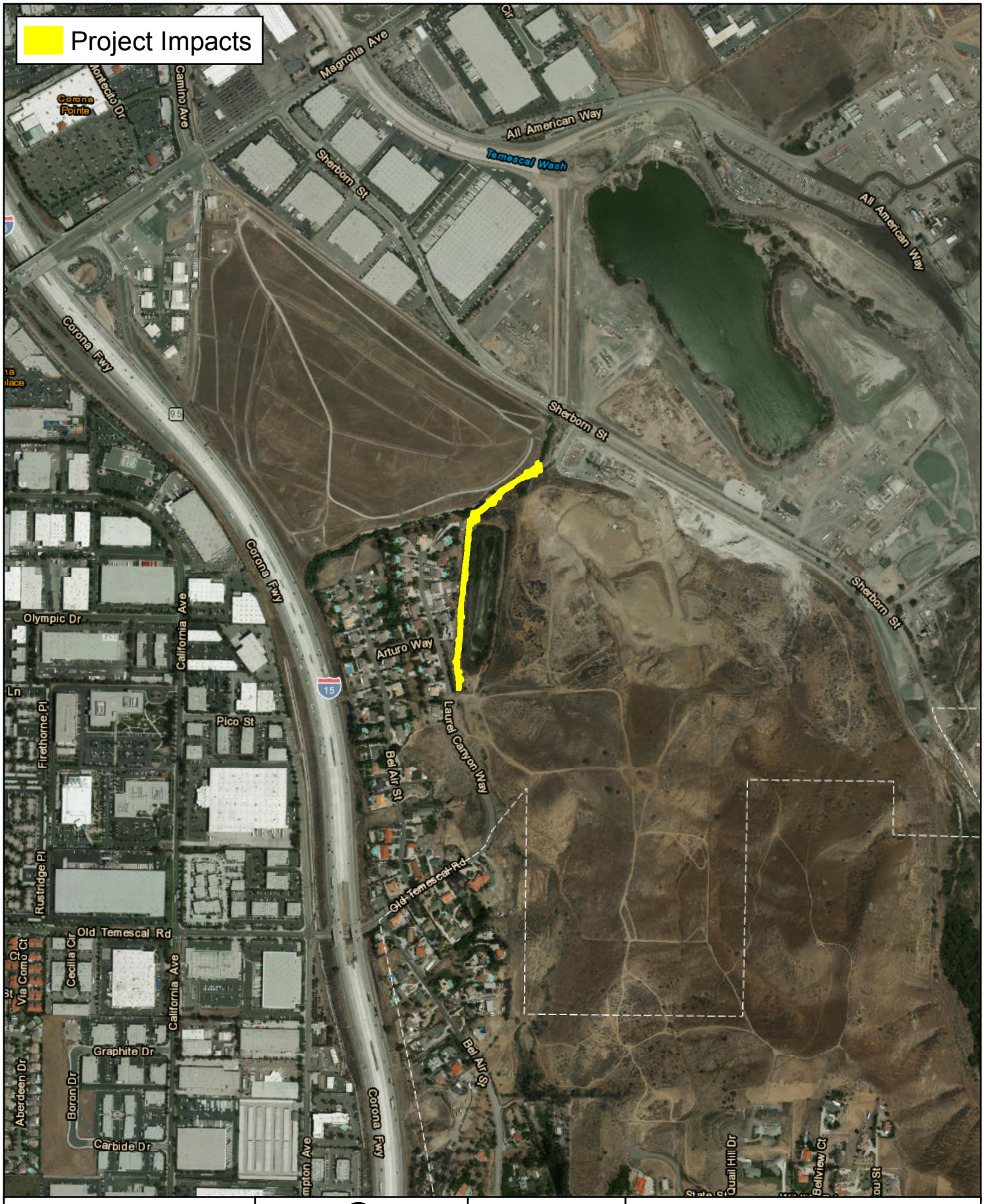
Map Created: March 2019
Data Sources: ESRI

0 0.5 1 Miles
1 in = 2 miles

**Figure 1**

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Regional Map




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources:
ESRI

0 500 1,000 Feet
1 in = 800 feet

**Figure 2**

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Vicinity Map




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources:
Google Earth, LSA, VCS

0 100 200 ft
1 in = 200 feet

*Not including the created 0.24 acres of streambed WoS

Figure 3

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Jurisdictional Waters of the State



Photograph 1: *View of improvements to the unnamed drainage. Photograph taken May 3, 2017*



Photograph 2: *View of new culvert that includes two, five-foot diameter concrete culverts and a 20-foot wide headwall. Photograph taken May 3, 2017.*



Photograph 3: *View of habitat conditions at the confluence of the drainage and the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 4: *View of general habitat conditions along the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 5: *View of general habitat conditions along the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 6: *View of grouted rip-rap on the northerly bank of the Riverside Canal and un-grouted rock rip-rap that was placed on the southerly bank as part of the sewer line project. Photograph taken May 3, 2017.*

**Appendix B**
RWQCB Notice of
Violation No. 332014-25

CALIFORNIA
Water Boards

GAVIN NEWSOM
GOVERNOR

JARED BLUMENFELD
SECRETARY FOR
ENVIRONMENTAL PROTECTION

# Santa Ana Regional Water Quality Control Board

August 15, 2019

**Certified Mail**
**Return Receipt Requested**

Mr. Tom Mungari
Nova Homes, Inc.
245 Fischer Drive, Unit A-8A
Costa Mesa, CA 92626

tom@novahomesinc.us

**NOTICE OF VIOLATIONS: VIOLATIONS OF CALIFORNIA WATER CODE SECTION 13376 AND CLEAN WATER ACT SECTIONS 301 AND 401 - THE MONTEOLIVO PROJECT, CITY OF CORONA, RIVERSIDE COUNTY (USACE FILE NO. NOT AVAILABLE) (SARWQCB WDID # 332014-25)**

Dear Mr. Mungari:

On March 4, 2015, the Santa Ana Regional Water Quality Control Board (Santa Ana Water Board) issued you, on behalf of Nova Homes, Inc. (Discharger), a Clean Water Act Section 401 Water Quality Standards Certification (Certification) for the above referenced project. The project, as proposed in the application for Certification, included permanent fill to a tributary to Temescal Creek, for a total of 0.34 acre of permanent impacts to Non-Wetland Waters of the United States (WOTUS). In addition, the Certification authorized temporary impacts to 0.08 acre of Wetland WOTUS and 0.32 acre of Non-Wetland WOTUS.

The discharge of fill was associated with the construction of a single-family home residential development. In issuing the Certification, the Santa Ana Water Board indicated that discharges of fill to waters of the State (WOTS) were also authorized under State Water Resources Control Board Order No. 2003-0017-DWQ, "Statewide General Waste Discharge Requirements for Dredged or Fill Discharges that Have Received State Water Quality Certification" (Order No. 2003-0017-DWQ). Order No. 2003-0017-DWQ requires compliance with all conditions in the Certification.

On May 23, 2019, the Santa Ana Water Board received a request (Request) from VCS Environmental, on behalf of the Discharger, to amend the March 4, 2015 Certification for the project. The Discharger requested that unauthorized additional temporary and

permanent discharges of fill to jurisdictional WOTUS and WOTS be certified under an amended Certification. These unauthorized discharges occurred during the construction of the residential development.

The additional discharges of fill were not authorized by the March 4, 2015 Certification or other Certifications. The discharges of unauthorized fill are a violation of California Water Code section 13376 and Clean Water Act sections 301 and 401.The additional discharge of fill to WOTUS and WOTS are associated with the construction of an off-site 8-inch sewer line, replacement of a culvert, and construction of a headwall and 135 linear feet of a riprap energy dissipating structure. The additional un-certified impacts are detailed in Tables 1 and 2 below.

Table 1. Impacts to WOTUS

| | Temporary | Permanent |
|---|---|---|
| Non-Wetland | 0.15 acre | 0.02 acre |
| Wetland | -- | -- |
| Total | 0.15 acre | 0.02 acre |

Table 2. Impacts to WOTS (excluding WOTUS)

| | Temporary | Permanent |
|---|---|---|
| Streambed | 0.34 acre | 0.017 acre |
| Riparian | -- | 0.56 acre |
| Total | 0.34 acre | 0.58 acre |

In the Request, the Discharger proposed to mitigate the additional impacts through the purchase of ephemeral enhancement mitigation credits from the Riverside-Corona Resource Conservation District at a 1:1 ratio for temporary impacts and 2:1 ratio for permanent impacts to WOTS (not including WOTUS) for a total of 1.49 acres of credits. It is noted that based on the ratios and impacts provided in the Request the proposed mitigation, based on the ratio provided, should be 1.69 acres of credits for all impacts. An Application Fee of $1,638.00 was also submitted with the Request.

The Santa Ana Water Board finds that the purchase of 1.69 acres of enhancement mitigation credits from a Santa Ana Water Board-approved mitigation bank or in-lieu fee program, in addition to recontouring the areas of temporary impact to pre-construction contours, would be acceptable to offset the additional impacts detailed in the Request. However, a copy of the receipt for the purchase of 1.69 acres of enhancement credits from a Santa Ana Water Board-approved mitigation bank or in-lieu fee program must be provided to the Santa Ana Water Board.

In addition, the Santa Ana Water Board requests that the full amount of the Project Fee be paid to the State Water Resources Control Board. The Application Fee of one thousand six hundred thirty-eight dollars ($1,638.00) was received with the application materials. However, a Project Fee must also be paid. The Project Fee, based on

1.09 acres of discharge to all WOTS (including WOTUS), is fourteen thousand one hundred fifty-five dollars ($14,155.00). The full Project Fee must be submitted to the Santa Ana Water Board for processing.

Past approvals from the Santa Ana Water Board are not in effect until the payment of associated fees and purchase of mitigation credits. Performance of any further work described in the Certification, prior to payment of the fees and purchase of mitigation credits, is unlawful and may result in imposition of penalties via Water Code section 13385 and other statutes, as applicable.

The Santa Ana Water Board will issue an amended Certification for the Monteolivo Project with the following conditions that are listed below. In addition, the conditions of this Notice of Violations will be met if the following are completed by September 20, 2019:

1. Provide proof of Mitigation Credit purchases to Santa Ana Water Board staff;

2. Submit a check for fourteen thousand one hundred fifty-five dollars ($14,155.00) made out to the State Water Resources Control Board. Send the check to this Santa Ana Water Board office with reference to SARWQCB WDID # 332014-25; and

4. All mitigation requirements and conditions of the original certification are completed.

If the above conditions are not met, there may be further enforcement actions taken.

If you have any questions regarding this matter, please contact Jason Bill at (951) 782-3295 (Jason.Bill@waterboards.ca.gov) or Dave Woelfel at (951) 782-7960 (David.Woefel@waterboards.ca.gov).

Sincerely,

Jayne Joy
Assistant Executive Officer
Santa Ana Regional Water Quality Control Board

Enclosure: March 4, 2015 Certification for SARWQCB WDID # 332014-25

cc (w/o enclosure):

U.S. Army Corps of Engineers, Los Angeles Office – James Mace – James.E.Mace@usace.army.mil
U.S. Environmental Protection Agency, Region 9 – Wetlands Section –
Megan Fitzgerald – Fitzgerald.Megan@epa.gov
Melissa Scianni – Scianni.Melissa@epa.gov
California Department of Fish and Wildlife – Jeff Brandt – Jeff.Brandt@wildlife.ca.gov
State Water Resources Control Board, Office of Enforcement –
Daniel Kippen, Esq. – Dan.Kippen@waterboards.ca.gov
State Water Resources Control Board, Division of Water Quality – Water Quality Certification Unit – Stateboard401.Stateboard401@waterboards.ca.gov
VCS Environmental – Wade Caffrey – wcaffrey@vcsenvironmental.com

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Mr. Tom Mungari
Nova Homes, Inc.
245 Fischer Drive, Unit A-8A
Costa Mesa, CA 92626

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Santa Ana Regional Water Quality Control Board

March 4, 2015

Tom Mungari
Nova Homes, Inc.
245 Fischer Drive, Unit A-8A
Costa Mesa, CA 92626

tom@novahomesinc.us

**CLEAN WATER ACT SECTION 401 WATER QUALITY STANDARDS CERTIFICATION FOR THE MONTEOLIVO PROJECT, CITY OF CORONA, RIVERSIDE COUNTY (ACOE CORPS FILE NO. N/A) (SARWQCB PROJECT NO. 332014-25)**

Dear Mr. Mungari,

On October 20, 2014, we received an application for Clean Water Act Section 401 Water Quality Standards Certification ("Certification") from the City of Corona Public Works Department for a residential development project in the City of Corona, Riverside County. A letter detailing revisions from the original application to the proposed project and proposed mitigation was received on December 19, 2004. The project will consist of the construction of 106 single-family residential lots, associated roadways and infrastructure, occupying 61 acres of project land. Additionally, a mitigation/conservation area for the creation/restoration of riparian/streambed habitat will be created. On October 20, 2014, the applicant submitted a check for $1,201.00, with the Certification application materials. On March 2, 2015 another check for an additional $30,531.00, was received, which satisfies this project's fee requirement for consideration of a 401 Certification. This fee amount was determined using the Dredge and Fill Fee Calculator on the State Water Resources Control Board (SWRCB) web site, which is based on the most current iteration of California Code of Regulations, Division 3, Chapter 9, Article 1, section 2200 (a) (3). This letter responds to your request for certification that the proposed project, described in your application and summarized below, will comply with State water quality standards outlined in the Water Quality Control Plan for the Santa Ana River Basin (1995) (Basin Plan) and subsequent Basin Plan amendments:

Project Description: The proposed project includes the permanent realignment of an unnamed tributary of Temescal Creek Reach 2 that flows parallel to Laurel Canyon Way for the length of the project site. The realigned Temescal Creek tributary's channel bottom and banks will be lined with ungrouted riprap for a length of 951 feet. The channel will be trapezoidal in shape

with a five-foot wide bed and three to one side slopes. One road crossing with a culvert that leads into the development will be constructed over the realigned drainage. Additionally, a 3.68 acre Mitigation Basin will be constructed within the project site. A portion of the mitigation basin will be graded to restore 0.08 acres to jurisdictional wetlands.

The work will take place within an unsectioned area of the El Sobrante Land Grant, of the U.S. Geological Survey *Corona South* 7.5 minute topographic quadrangle maps (UTM Zone 11 450906.26 Easting 3746309.23 Northing).

Receiving water: Unnamed tributary of Temescal Creek Reach 2, Temescal Creek Reaches 1-2 and Upper Santa Ana River Reach 3, which have present or potential beneficial uses, including: agricultural supply (AGR), groundwater recharge (GWR), water contact recreation (REC1), non-contact water recreation (REC2), warm freshwater habitat (WARM), Rare, Threatened or Endangered Species (RARE), and wildlife habitat (WILD).

Fill area:

| | | |
|---|---|---|
| Temporary Impact to Wetland Waters of the US | 0.08 acre | linear feet N/A |
| Permanent Impact to Non-Wetland Waters of the US | 0.34 acre | 2,533 linear feet |
| Temporary Impact to Non-Wetland Waters of the US | 0.32 acre | 787 linear feet |

Dredge/Fill volume: N/A

Federal permit: U.S. Army Corps of Engineers Nationwide Permit No. 29

You have proposed to mitigate water quality impacts as described in your Certification application. The proposed mitigation is summarized below:

Onsite Water Quality Standards Mitigation Proposed:

- Standard water quality related best management practices (BMPs) will be employed during construction activities.
- Temporary impacts to both Wetland and Non-Wetland Waters of the United States will be mitigated by creating a 3.68 acre On-Site Mitigation Basin. Of the 3.68 acres, at least 0.08 acres will be restored to Wetland Waters.

Offsite Water Quality Standards Mitigation Proposed:

- The applicant will mitigate the project's impacts offsite through the acquisition of in-lieu fee program mitigation credits from the Riverside-Corona Resource Conservation District, for the restoration of 0.76 acres of non-wetlands/riparian habitat.
- The applicant will mitigate the project's impacts offsite through the acquisition of in-lieu fee program mitigation credits from the Santa Ana Watershed Association by enhancing 1.52 acres within the watershed.

Should the proposed project impact state- or federally-listed endangered species or their habitat, implementation of measures identified in consultation with U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife will ensure those impacts are mitigated to an acceptable level. Appropriate BMPs will be implemented to reduce construction-related impacts to Waters of the State.

This Water Quality Certification is subject to the acquisition of all local, regional, state, and federal permits and approvals as required by law. Failure to meet any conditions contained herein, or any conditions contained in any other permit or approval for this project issued by the State of California, or any subdivision thereof, may result in appropriate enforcement action, including imposition of administrative civil liability.

Pursuant to California Code of Regulations, Title 14, Chapter 3, Section 15096, as a responsible agency, the Regional Board is required to consider an EIR or Negative Declaration prepared by the lead agency in determining whether to approve a project. A responsible agency has responsibility for mitigating and avoiding only the direct and indirect environmental effects of those parts of the project which it decides to carry out, finance, or approve. Further, the responsible agency must make findings as required by Sections 15091 and, if necessary, 15093, for each and every significant impact of the project.

As required by Section 15096, the Regional Board has considered the Mitigated Negative Declaration (MND) prepared for the proposed project and filed with the Riverside County Clerk and Recorder by the City of Corona on September 3, 2014, and information provided subsequently in the applicant's application, in approving this Certification. More specifically, the Regional Board has considered those sections of the MND relating to water quality. Based on the mitigation proposed in the MND, and the conditions set forth in this Certification, impacts to water quality will be reduced to a less than significant level and beneficial uses will be protected. Thus, the Regional Board independently finds that changes or alterations have been required in, or incorporated into the project, which avoid or mitigate impacts to water quality to a less than significant level.

**This 401 Certification is contingent upon the execution of the following conditions:**

1) The applicant must comply with the requirements of the applicable Clean Water Act section 404 permit.

2) Applicant shall ensure that all fees associated with this project shall be paid to each respective agency prior to conducting any on-site construction activities.

3) A copy of this Certification and any subsequent amendments must be maintained on site for the duration of work as a denoted element of any project Storm Water Pollution Prevention Plan (SWPPP), Water Quality Management Plan (WQMP) and/or Habitat Mitigation and Management Plan (HMMP).

4) Proposed on-site and off-site mitigation shall be timely implemented. Materials documenting the purchase of necessary mitigation credits shall be provided to this office prior to the discharge of fill to, or the dredging or excavation of material from, waters of the United States or Waters of the State of California.

5) A HMMP for the onsite mitigation shall be provided to this office for approval prior to the discharge of fill to, or the dredging or excavation of material from, waters of United States or Waters of the State of California.

6) The applicant shall complete the post-construction restoration of temporary impacts to waters of the U.S. within 30 days following completion of construction activities. Upon consideration of a written request, this period may be extended by Regional Board authorization to accommodate proper planting times. If restoration is not initiated within one year of impacts, additional mitigation may be required to offset temporal loss of waters of the U.S.

7) Prior to construction activities, the project proponent shall delineate the work area with brightly colored fencing or other methods to ensure both temporary and permanent impacts to Waters of the United States and Wasters of the State of California do not exceed the limits authorized in this certification.

8) All materials generated from construction activities associated with this project shall be managed appropriately. This shall include identifying all potential pollution sources within the scope of work of this project, and incorporating all necessary pollution prevention BMPs as they relate to each potential pollution source identified. Additionally no materials maybe stored within waters of the United States or Waters of the State of California.

9) The project proponent shall utilize BMPs during project construction to minimize the controllable discharges of sediment and other wastes to drainage systems or other waters of the state and of the United States.

10) Substances resulting from project-related activities that could be harmful to aquatic life, including, but not limited to, petroleum lubricants and fuels, cured and uncured cements, epoxies, paints and other protective coating materials, portland cement concrete or asphalt concrete, and washings and cuttings thereof, shall not be discharged to soils or waters of the state. All waste concrete shall be removed.

11) Motorized equipment shall not be maintained or parked within or near any stream crossing, channel or lake margin in such a manner that petroleum products or other pollutants from the equipment may enter these areas under any flow conditions. Vehicles shall not be driven or equipment operated in waters of the state on-site, except as necessary to complete the proposed project. No equipment shall be operated in areas of flowing water.

12) This Water Quality Certification is subject to the acquisition of all local, regional, state, and federal permits and approvals as required by law. Failure to meet any conditions contained herein or any the conditions contained in any other permit or approval issued by the State of California or any subdivision thereof may result in the revocation of this Certification and civil or criminal liability.

13) Best management practices to stabilize disturbed soils must include the use of native plant species whenever feasible.

14) Applicant shall ensure that all elements of the approved WQMP are fully implemented to address all identified pollutants and hydrologic conditions of concern resulting from the project.

15) Applicant shall follow all procedures and policies specified within the project's HMMP.

16) Construction de-watering discharges, including temporary stream diversions necessary for project construction may be regulated under Regional Board Order No. R8-2009-0003, General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (De Minimus) Threat to Water Quality. For more information, please review Order No. R8-2009-0003 at www.waterboards.ca.gov/santaana/

17) Prior to any grading for the project in riparian areas or wetlands that are slated to be impacted, functional assessments of these areas shall be conducted using the California Rapid Assessment Method, February 2012 (CRAM). Similarly, wetland and riparian habitat mitigation sites shall be assessed periodically with CRAM, beginning with the end of the first growing season following the initial planting of the mitigation site. Mitigation site

assessments shall be conducted annually, during the period from October through December, until success criteria are met for consecutive years. This information shall be reported to http://www.californiawetlands.net/tracker/

Under California Water Code, Section 1058, and Pursuant to 23 CCR §3860, the following shall be included as conditions of all water quality certification actions:

(a) Every certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section §13330 of the Water Code and Article 6 (commencing with Section 3867) of this Chapter.

(b) Certification is not intended and shall not be construed to apply to any activity involving a hydroelectric facility and requiring a FERC license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to Subsection §3855(b) of this Chapter and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

(c) Certification is conditioned upon total payment of any fee required under this Chapter and owed by the applicant.

If the above stated conditions are changed, any of the criteria or conditions as previously described are not met, or new information becomes available that indicates a water quality problem, the Regional Board may require the applicant to submit a report of waste discharge and obtain Waste Discharge Requirements.

In the event of any violation or threatened violation of the conditions of this certification, the holder of any permit or license subject to this certification shall be subject to any remedies, penalties, process or sanctions as provided for under state law. For purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification. Violations of the conditions of this certification may subject the applicant to civil liability pursuant to Water Code section 13350 and/or 13385.

This letter constitutes a Water Quality Standards Certification issued pursuant to Clean Water Act Section 401. I hereby issue an order certifying that any discharge from the referenced project will comply with the applicable provisions of Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act, and with other applicable requirements of State law.

This discharge is also regulated under State Water Resources Control Board Order No. 2003-0017-DWQ (Order No. 2003-0017-DWQ), "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received Water Quality Certification" which requires compliance with all conditions of this Water Quality Standards Certification. Order No. 2003-0017-DWQ is available at: www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0017.pdf

Should there be any questions, please contact Jason Bill at (951) 782-3295 or Marc Brown at (951) 321-4584.

Sincerely,

Kurt V. Berchtold
Executive Officer
Santa Ana Regional Water Quality Control Board

cc (via electronic mail):
LSA Associates, Inc. – Denise Woodward – denise.woodward@lsa-assoc.com
U. S. Army Corps of Engineers, Los Angeles Office - James Mace
CA Department of Fish and Wildlife – Kim Freeburn-Marquez
State Water Resources Control Board, Office of Chief Counsel-David Rice
State Water Resources Control Board DWQ -Water Quality Certification Unit
U.S. EPA -Supervisor of the Wetlands Regulatory Office WTR-8

# Appendix C
**U**SACE Non-Notifying
NWP #12

VCS Environmental
EXPERT SOLUTIONS | CEQA-NEPA . Biology . Regulatory

# Memorandum

Date: March 10, 2020

To: Miriam Yemane, U.S. Army Corps of Engineers

From: Wade Caffrey, VCS Environmental

Subject: Monteolivo Offsite Sewer Line Project: After-the-Fact Non-Notifying Nationwide Permit #12

The purpose of this memorandum is to provide the United States Army Corps of Engineers (USACE) with documentation that the Monteolivo Offsite Sewer Line Project has proceeded under a Non-notifying Nationwide Permit (NWP) #12 for temporary and permanent impacts to Waters of the United States. This notification is being submitted by VCS Environmental on behalf of the applicant, Mari Girgis, LLC. The requirements to submit a notification under NWP #12 are as follows:

> "The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to or along a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials."

The Monteolivo Offsite Sewer Line Project is located in the City of Corona, Riverside County, California. The Project constructed an underground sewer line off-site for the Monteolivo Residential Development Project (NWP Permit No. SPL-2014-00649-JEM) beneath an existing access road. In addition, an existing culvert was replaced and a headwall was installed at an off-site storm drain outlet. Impacts to waters of the U.S. included the widening, slope stabilization, and replacement of an existing culvert at an unnamed drainage.

Approximately 0.15 acre (1,200 linear feet) of temporary impacts occurred to the unnamed drainage (non-wetland waters of the U.S.) for slope stabilization of the adjacent access road and culvert replacement. The temporarily impacted features were returned to their pre-project

contours. In addition, 0.02 acre (135 linear feet) of permanent impacts to non-wetland waters of the U.S. occurred for placement of rip-rap within the unnamed drainage. None of these impacts are known to have occurred within a special aquatic site, including wetlands as defined in the 404(b)(1) Guidelines.

A section 1600 Operation of Law (No. 1600-2019-0139-R6) and Section 401 Notice of Violation (No. 33-2014-25) have been issued for impacts to both waters of the U.S. and waters of the State, both of which are included for your reference.

A notification to the USACE for this Project is not necessary because permanent loss of waters of the U.S. did not exceed 1/10-acre or 500 feet. In addition, the Project site did not involve mechanized land clearing in a forested wetland for the utility line right-of-way and the access road was not constructed within the jurisdictional waters. Furthermore, a Section 10 permit is not required because the impacted waters are non-navigable waters. VCS was not involved with the project when impacts occurred, however, the Applicant has stated that no impacts to Section 7 or Section 106 resources are known to have occurred.

Please contact me at wcaffrey@vcsenvironmental.com or 949.489.2700 extension 213 should you have any questions or comments.

Enclosures (2):

- 1600 Op-Law No. 1600-2019-0139-R6
- 401 NOV No. 332014-25

# Appendix D
Photopages



Photo 1. View to the southwest, concrete outlet into the unnamed draiange



Photo 2. View to the north of the unnamed drainage (left) and access road (right).



Photo 3. View to the northwest of the Riverside Canal.



Photo 4. View to the east of the water quality pond.

# Determination of

# Biologically Equivalent or Superior Preservation Report

## Monteolivo Sewer Line Project

City of Corona

**Mari Girgis, LLC**

*Emad Bolous*

*Tel: (949) 833-8813*

**VCS Environmental**

*Wade Caffrey*

*Tel: (949) 489-2700 x213*

**March 2020**

**Revised August 2020**

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D. Photopages

# 1 EXECUTIVE SUMMARY

Mari Girgis, LLC presents this after-the-fact Determination of Biologically Equivalent or Superior Preservation (DBESP) which incorporates the findings from a literature review and general field assessment conducted by VCS Environmental (VCS). VCS prepared this report for the Monteolivo Sewer Line Project (Project) following Project impacts, as further discussed in Section 2.

Pursuant to the Multiple Species Habitat Conservation Plan (MSHCP) Section 6.1.2, Protection of Species Associated with Riparian/Riverine and Vernal Pools Areas, a total of 0.917 acres of areas considered MSHCP Riparian/Riverine features were impacted within the Project site. The Project permanently impacted 0.017 acres of MHSCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources. The Project also temporarily impacted 0.34 acres of MSHCP Riverine Resources. No MSHCP vernal pool resources were impacted and no impacts to MSHCP Criteria Cells occurred.

As required under Operation of Law No. 1600-2019-0139-R6 (Appendix A), the Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total of 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through the purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District.

## 2 INTRODUCTION

### 2.1 Project Description

The Monteolivo Residential Development Project prepared an MSHCP Compliance Report in January 2014 to address impacts associated with grading for the construction of 103 single-family homes and associated on-site infrastructure. This DBESP report is being prepared to address impacts associated with the off-site Monteolivo Sewer Line Project located directly north of the residential development. No impacts to MSHCP Criteria Cells occurred. As further described below, impacts to MSHCP resources were not anticipated for the sewer line Project, but did occur and, therefore, this is being submitted as an after-the-fact DBESP. Please note, an after-the-fact Operation of Law was issued by the California Department of Fish and Wildlife on September 25, 2019 (Appendix A), a Notice of Violation was issued from the Regional Water Quality Control Board on August 15, 2019 (Appendix B) and a Non-Notifying Nationwide Permit #12 was submitted to the U.S. Army Corps of Engineers on March 9, 2020 (Appendix C).

The Monteolivo Residential Development Project required two off-site improvements. The first was an off-site 8" sewer line to be constructed in an access road between the Monteolivo site and the public sewer in Sherbourne Avenue. This line was not expected to impact MSHCP riparian or riverine resources. However, heavy rains caused significant erosion and a landslide buried the access road. Consequently, the sewer line to be constructed was relocated in the field 20-feet easterly, in order to protect the sewer improvements and access road. The adjacent Riverside Canal and an unnamed drainage to the Riverside Canal also had to be slope-stabilized as a result of the erosion and landslide. This included the replacement of the failed easterly bank in the Riverside Canal with un-grouted rip-rap and widening of the unnamed drainage.

Additionally, in order to finish an on-site storm drain, replacement of an existing culvert, installation of a headwall, and installation of approximately 135 linear feet of riprap for energy dissipation occurred. These improvements occurred directly north of the residential development project site; within the unnamed drainage. These improvements were also not contemplated in the 2014 MSHCP Compliance Report.

### 2.2 Project Area

The Project site is located approximately 0.2 miles east of interstate 15 and one mile south of the State Route 91. The Project site is regionally accessible from Ontario Avenue and State Street to the south. A regional and vicinity map are attached as Figures 1 and 2. The Project site is bounded by the impacted Monteolivo Residential Development Project to the south, an existing residential community to the west, and agricultural/open space to the east and north.

The topography throughout the Project site is generally flat. Elevations on the Project site range from approximately 700 feet above mean sea level (MSL) to 720 feet above MSL. The Project site is located within Section 32, Township 3 South and Range 6 West of the United States Geological Survey (USGS) Topographic Map, 7.5 Minute Series, Corona South Quadrangle, and is located on Assessor's Parcel Numbers 107-080-026, 107-080-034 (partial) and 107-080-036 (partial).

The Project Site is located in the Western Riverside MSHCP Temescal Canyon Area Plan and Gavilan Habitat Management Unit. The Project site and all impacts to MSHCP riparian/riverine features are not located within an MSHCP Area Plan Subunit, Criteria Cell, or Criteria Cell Group and are not located within any of the identified existing or proposed Cores and Linkages. The Project is not located within any conserved lands or public/quasi-public lands, however, is located adjacent to Criteria Cell 1923.

The Project site is located within the MSHCP survey area for burrowing owl (*Athene cunicularia*) and narrow endemic plant species San Diego ambrosia (*Ambrosia pumila*), Brand's phacelia (*Phacelia stellaris*), and San Miguel savory (*Clinopodium chandleri*). The Project site is not within a survey area for amphibians, mammals, or criteria area species.

The Project is located in the Santa Ana River watershed. The current drainage pattern includes an unnamed drainage that flows from south to north into the existing Riverside Canal, which eventually outlets into Temescal Creek (Reach 2). This eventually flow into the Santa Ana River, more than 4 miles north of the Project site.

## 3 RIPARIAN/RIVERINE MITIGATION (SECTION 6.1.2)

### 3.1 Methods

Section 6.1.2 of the MSHCP states that "riparian/riverine resources are lands which contain habitat dominated by trees, shrubs, persistent emergent [wetland plant species], or emergent mosses and lichens, which occur close to or which depend upon moisture from a nearby freshwater source; or areas with freshwater after flow during all or a portion of the year" and "Vernal pools are seasonal wetlands that occur in depression areas that have wetland indicators of all three parameters (soils, vegetation and hydrology) during the wetter portion of the growing season but normally lack wetland indicators of hydrology and/or vegetation during the drier portion of the growing season". To determine the areas where "Riparian/Riverine Areas and Vernal Pools" were present, the delineators reviewed previous biological, cultural, and construction reports on the adjacent Monteolivo Residential Development Project site; and reviewed historical aerial imagery.

A site visit to document the current condition of the Project site was conducted by VCS biologist Wade Caffrey on August 28, 2019 and current photographs are in Appendix D.

The boundaries of the pre- and post-construction riparian/riverine resources were determined primarily through the use of present and historical aerial imagery (Google 2019). The physical features of the channel banks and the dripline of any adjacent riparian vegetation extending beyond the bank edges were used to delineate the boundaries of the riparian/riverine resources. A map was compiled showing the impacted MSHCP Riparian/Riverine resources (Figure 3).

Please note, the extent of impacts to MSHCP Riparian/Riverine features are considered best estimates.

3.2 Results/Impacts

As shown in Table 1, permanent impacts occurred to approximately 0.017 acres of MSHCP riverine resources and 0.56 acres of riparian resources. In addition, temporary impacts to 0.34 acres of riverine resources also occurred (Figure 3). Please note, the widening of the unnamed drainage created an increase in MSHCP jurisdictional riverine waters by 0.24 acres, not reflected in the table below. No impacts to MSHCP riparian/riverine resources within a Criteria Cell occurred.

**Table 1**
**Impacts to Riparian/Riverine Resources Within the Project Site**

| Resource | Permanent Impact (acres) | Temporary Impact (acres) |
|---|---|---|
| MSHCP Riverine | 0.017 | 0.34* |
| MSHCP Riparian | 0.56 | 0.0 |
| **MSHCP TOTAL** | **0.577** | **0.34** |

*Does not include the 0.24 acres of created MSHCP riverine resources

A sewage treatment pond present on the Project site was also altered but was determined to not be a jurisdictional water of the U.S. or State due to its use as an isolated waste treatment facility. The sewage treatment pond would also not be considered an MSHCP riparian/riverine feature because it did not contain a freshwater source. A portion on the pond was converted into a water quality basin and the remainder still exists as a remnant pond, but no longer treats sewage.

No vernal pools, seasonal depressions or fairy shrimp habitat were observed through aerial review or the post-construction site visit in 2019. The Project site does not contain vegetative, hydrologic, or soil characteristics associated with vernal pool and fairy shrimp habitats. The United States Department of Agriculture Natural Resources Conservation Service (NRCS) Web

Soil Survey lists 1 soil type (Arbuckle Gravelly Loam, 2-9% slopes, dry) and 1 land type (Rough Broken Land) for the Project site; both of which are considered well-draining and therefore not suitable for vernal pools, seasonal depressions, and other fairy shrimp habitat. The field observations, combined with the NRCS identifying a well-drained soil profile on the Project site, determined the lack of vernal pools and seasonal depressions on the Project site.

In regard to fairy shrimp, three species are covered by the MSHCP including the Riverside fairy shrimp (*Streptocephalus woottoni*), Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*), and vernal pool fairy shrimp (*Branchinecta lynchi*). According to the MSHCP, vernal pool fairy shrimp habitat is limited to vernal pools and alkali vernal pools, and Santa Rosa Plateau fairy shrimp are limited to vernal pools formed on basalt flows. No portion of the Project site is described as having an alkali complex or basalt flows. In addition, no form of vernal pools are considered to be present on the Project site and therefore Santa Rosa Plateau and vernal pool fairy shrimp are not either.

The Riverside fairy shrimp however is known to inhabit more than just vernal pools, including depressions and road ruts. Aside from the sewage treatment pond, no other depressions or road ruts were observed or inundated on aerial imagery or during the post-construction site visit in 2019. The aforementioned remnant sewage treatment pond would not be considered suitable habitat for Riverside fairy shrimp because up until Project impacts the pond contained sewage not believed to be suitable for fairy shrimp.

## 3.3 Mitigation and Equivalency

### *3.3.1 Direct Effects*

Pursuant to the CDFW Operation of Law, the Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District. The implementation of this mitigation is expected to be biologically superior to that of the impacted areas because it will result in an increase of quality habitat and will be funded through a mitigation bank which will ensure the enhancement area to be protected in perpetuity.

### *3.3.2 Indirect Effects*

During construction, standard BMP's such as silt fencing and sandbags/straw wattles were implemented where appropriate to prevent impacts to downstream waters. No known indirect effects occurred to MSHCP jurisdictional features and therefore no mitigation is proposed.

## 4 RIPARIAN BIRDS (SECTION 6.1.2)

The MSHCP lists five bird species for protection based off association with riparian/riverine and vernal pool habitats. These species include bald eagle (*Haliaeetus leucocephalus*), least Bell's vireo (*Vireo bellii pusillus*), peregrine falcon (*Falco peregrinus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and western yellow-billed cuckoo (*Coccyzus americanus occidentalis).*

### 4.1 Methods

No general or focused surveys for riparian birds occurred prior to Project implementation.

A review of relevant available literature on riparian habitat and birds within the Project site and vicinity was conducted. Riparian birds that have the potential to occur within the immediate region of the Project site were identified. Several agencies, including the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW), publish lists of particular taxa (species and subspecies) and the associated level of protection or concern associated with each. VCS reviewed and consulted literature and databases focused on the Project site, and included the following sources listed below:

- The California Natural Diversity Database (CNDDB), a CDFW species account database that inventories status and locations of special status species in California, was used to identify any riparian birds that may exist within a two-mile radius of the Project site (CDFW 2019). CNDDB records are generally used as a starting point when determining what special status species, if any, may occur in a particular area. However, these records may be old, lack data not yet entered, and do not represent all the special status species that could be in that particular area.

- A map of USFWS critical habitat to determine species with critical habitat mapped in the general vicinity of the Project (USFWS 2019).

- Pertinent maps, scientific literature, websites, and regional flora and fauna field guides

### 4.2 Results/Impacts

The California Natural Diversity Data Base records show recent occurrences (2006, 2010, and 2014) of least Bell's vireo from within the project limits. Least Bell's vireo were observed adjacent to the impact areas after Project activities (LSA 2018) were complete, however, no known impacts to least Bell's vireo occurred.

No additional MSHCP covered riparian birds were observed within the Project site following Project impacts.

4.3 Mitigation and Equivalency

No known direct or indirect impacts to least Bell's vireo or other MSHCP covered riparian bird species occurred and therefore no mitigation is proposed.

## 5 NARROW ENDEMIC PLANT SPECIES MITIGATION (SECTION 6.1.3)

5.1 Methods

No focused narrow endemic plant surveys were conducted prior to Project impacts. Habitat suitability for narrow endemic plant species was reviewed using the definitions listed in table 6-1 of the MSHCP.

5.2 Results/Impacts

No suitable habitat for the narrow endemic plant survey species is present on the Project site, as further detailed in Table 2 below.

**Table 2: Narrow Endemic and Plant Survey Species Habitat Suitability**

| Species | MSHCP Habitat | Habitat Suitability |
|---|---|---|
| San Diego ambrosia *(Ambrosia pumila)* | Occurs on open floodplain terraces on Gerretson gravelly fine sandy loams, or in the watershed margins of vernal pools or alkali playas on Las Posas loam in close proximity to willow silty alkaline soils. Occurs in sparse annual vegetation | Unsuitable. No Garretson gravelly fine sandy loams, vernal pools, or alkali playas on Las Posas loam. |
| Brand's phacelia *(Phacelia stellaris)* | Occurs in coastal scrub habitats on sandy washes or benches in alluvial floodplains. The species is generally dependent on periodic flooding and sediment transport. The MSHCP account for this species states that "within western Riverside county, Brand's phacelia is restricted to sandy benches along the Santa Ana River. | Unsuitable. Typical habitat conditions are not present. |
| San Miguel Savory *(Satureja chandleri)* | Occurs on rocky, gabbroic, or metavolcanic substrates in chaparral or oak woodlands. | Unsuitable. Non-rocky, gabbroic, or metavolcanic substrates |

5.3 Mitigation and Equivalency

No known direct or indirect impacts to narrow endemic plant species occurred and therefore no mitigation is proposed.

## 6 ADDITIONAL SURVEY NEEDS AND PROCEDURES (SECTION 6.3.2)

6.1 Criteria Area Species Survey

Surveys for Criteria Area species are not required for this Project under MSHCP Section 6.3.2.

6.2 Burrowing Owl

As shown on Figure 4, the Project site falls within the MSHCP burrowing owl survey area.

### *6.2.1 Methods*

No focused or pre-construction burrowing owl surveys were conducted prior to Project impacts.

### *6.2.2 Results/Impacts*

No known direct or indirect impacts to narrow endemic plant species occurred.

### *6.2.3 Mitigation and Equivalency*

No known direct or indirect impacts to burrowing owl occurred.

6.3 Criteria Area Species Survey – Mammals

Surveys for Criteria Area mammal species are not required for this Project under MSHCP Section 6.3.2.

6.4 Criteria Area Species Survey – Amphibians

Surveys for Criteria Area amphibian species are not required for this Project under MSHCP Section 6.3.2.

## 7 ADDITIONAL CONSIDERATIONS

7.1 Delhi Sands Flower-Loving Fly

Delhi soil types are not mapped within the Project site, and therefore, no surveys are required for the Delhi Sands flower-loving fly.

## 7.2 Criteria Cell

The Project site is not located within a Criteria Cell however is adjacent to Criteria Cell 1923 (Figure 4). No impacts to a Criteria Cell occurred. The portion of the Project site adjacent to Criteria Cell 1923 has been previously affected by development and is not located within or nearby the portions of the Criteria Cell dedicated for conservation. Therefore, pursuant to Section 6.1.4 *Guidelines Pertaining to the Urban Wildlands Interface,* the Project did not create edge effects on any conserved habitat, reserve lands, or public quasi/public conserved lands.

To prevent any indirect impacts to the adjacent Criteria Cell, standard BMP's were used during construction including the use of silt fencing and sandbags/straw wattles where appropriate.

## 7.3 Wildlife Movement

The Project is not located within an MSHCP Area Plan Subunit, Criteria Cell, or Criteria Cell Group and is not located within any of the identified existing or proposed Cores and Linkages; therefore, the site is not considered to function as a regional wildlife movement area. It is possible that the Project site functions in local wildlife movement, however, due to the existing and on-going development to the west and south, it is unlikely that the site plays a critical role in local wildlife movement.

## 7.4 Hydrology

The Project is located in the Santa Ana River watershed. The current drainage pattern includes an unnamed drainage that flows from south to north into the existing Riverside Canal, which flows east and outlets into Temescal Creek (Reach 2). This eventually flows into the Santa Ana River, more than 4 miles north of the Project site. Project impacts did not alter the general drainage pattern of the unnamed drainage or the Riverside canal.

The sewage treatment basin was an isolated system created in the 1980's for the purpose of retaining and decomposing organic matter from the sewer discharge of adjacent properties. The City of Corona, along with the Regional Water Quality Control Board, asked the Monteolivo Residential Development Project to connect the neighboring community to their proposed sewer line to eliminate the problematic sewage treatment pond. The sewage treatment pond was divided in two, and a portion of the basin was improved as a water quality basin to detain runoff from residential areas in the upper watershed of Monteolivo Residential Project and groundwater discharge. The water quality basin will receive water from storm drain and irrigation runoff from the Monteolivo Residential Project once it is built out.

*Flood Storage*

The unnamed drainage was widened and therefore has a greater amount of flood storage than compared to pre-project conditions, making the post-project conditions biologically superior. The flood storage of the Riverside Canal was not altered due to Project impacts.

*Sediment and Toxic Trapping*

The post-construction water quality basin, remnant pond, unnamed drainage, and Riverside Canal will continue to trap sediments from the project site and the upper watershed in the same manner as the pre-construction site conditions. In addition, the constructed water quality basin is designed to trap and settle toxins in the water to allow algae, fungi, and soil bacteria to decompose inorganic and organic chemicals. These features make it biologically superior to the pre-construction sewage treatment pond.

## 8 Mitigation

As discussed above, the Monteolivo Sewer Line Project plans to purchase mitigation for impacts to MSHCP riparian/riverine resources. The Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total of 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through the purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District.

## 9 REFERENCES


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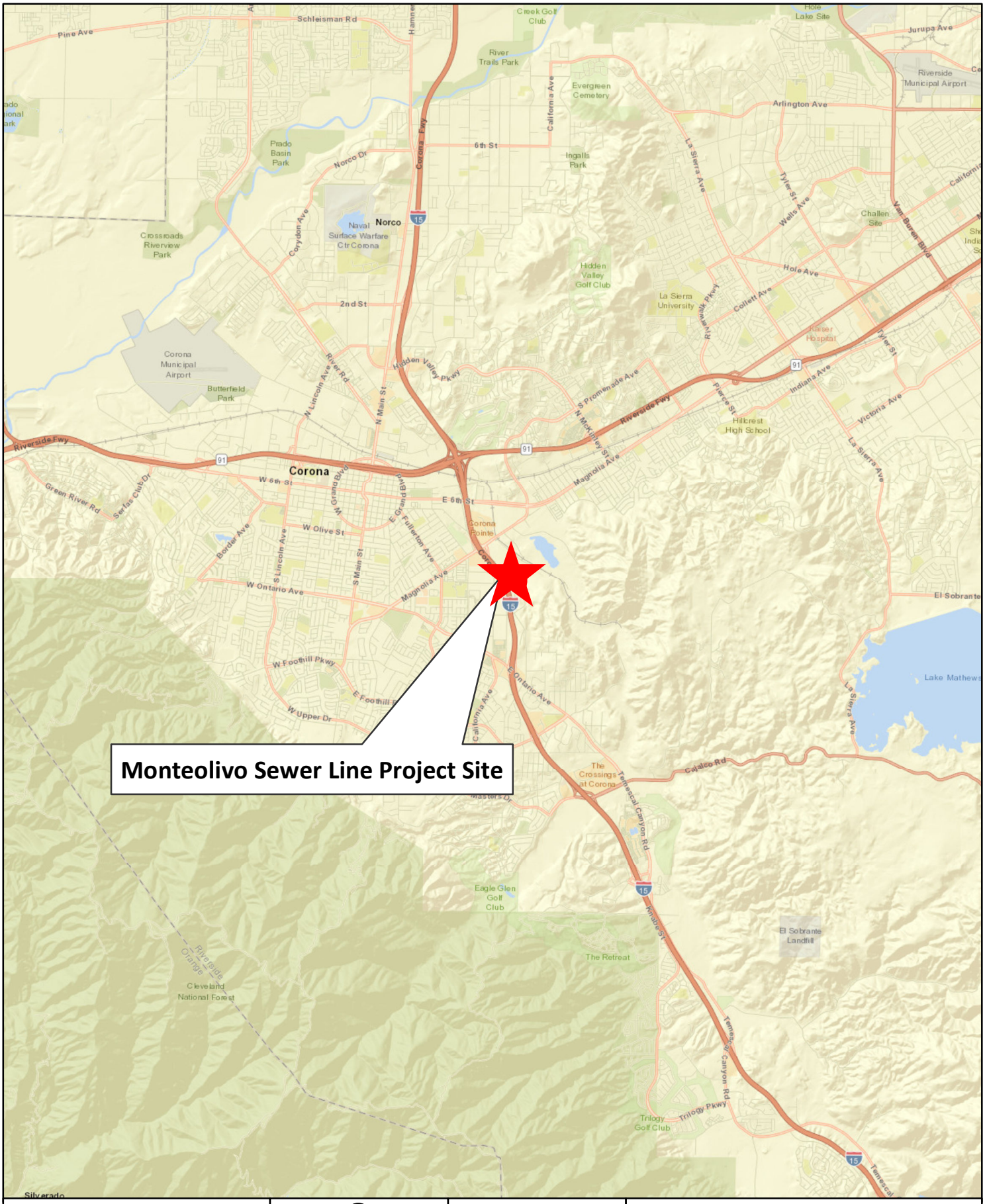
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# Figures




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources: ESRI

0 0.5 1 Miles
1 in = 2 miles

**Figure 1**

**Mari Girgis, LLC**
**Monteolivo Sewer Line Project**

Regional Map




Prepared By:
VCS Environmental

Map Created: August 2020
Data Sources:
ESRI

0 500 1,000 Feet
1 in = 800 feet

**Figure 2**

**Mari Girgis, LLC**
**Monteolivo Sewer Line Proejct**

Vicinity Map




Prepared By:
VCS Environmental

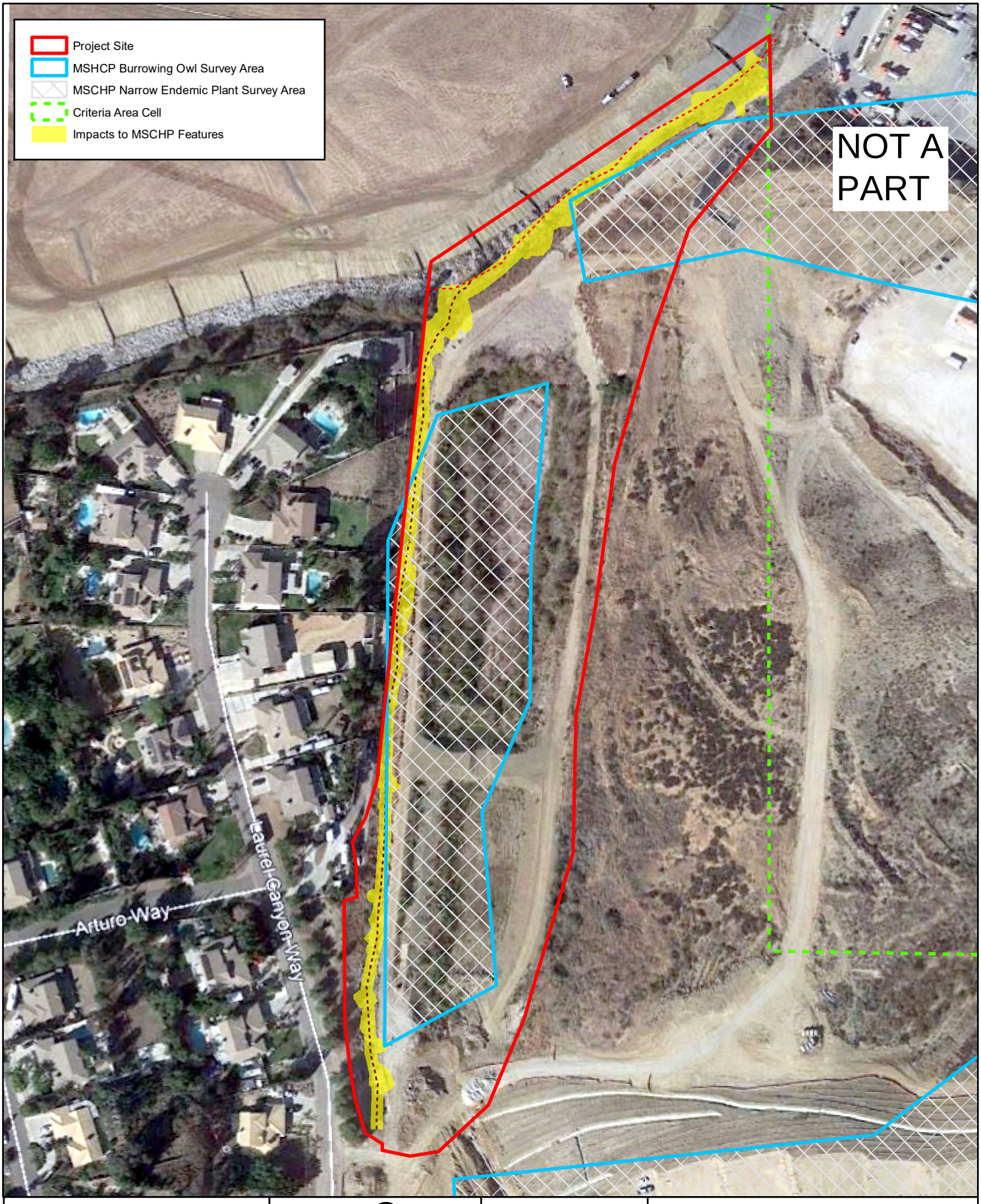
Map Created: August 2020
Data Sources:
Google Earth, LSA, VCS

0 100 200 ft
1 in = 200 feet

*Not including the created 0.24 acres of riverine features

Figure 3

Mari Girgis, LLC
Monteolivo Sewer Line Project
**Impacts to MSHCP Riparian/Riverine Features**




Prepared By:
VCS Environmental

Map Created: August 2020
Data Sources:
MSHCP

0 100 200 ft
1 in = 200 feet

Mari Girgis, LLC
Monteolivo Sewer Line Project

**MSHCP Survey Areas**

**Appendix A**
CDFW Operation of Law
and Application

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
3602 Inland Empire Blvd.,Suite C-220
Ontario, CA 91764
(909) 484-0167
www.wildlife.ca.gov

*EDMUND G. BROWN, Jr., Governor*
*CHARLTON H. BONHAM, Director*

April 16, 2015

Tom Mungari
Nova Homes, Inc.
245 Fischer Avenue, Unit A-8A
Costa Mesa, CA 92626

Subject: Notification of Lake or Streambed Alteration No. 1600-2014-0218-R6
Monteolivio Project

Dear Mr. Mungari:

The California Department of Fish and Wildlife (Department) had until January 18, 2015 to submit a draft Lake or Streambed Alteration Agreement (Agreement) to you or inform you that an Agreement is not required. The Department did not meet that date. As a result, by law, you may now complete the project described in your notification without an Agreement.

Please note that pursuant to Fish and Game Code section 1602(a)(4)(D), if you proceed with this project, it must be the same as described and conducted in the same manner as specified in the notification and any modifications to that notification received by the Department in writing prior to January 18, 2015. This includes completing the project within the proposed term and seasonal work period and implementing all avoidance and mitigation measures to protect fish and wildlife resources specified in the notification. If the term proposed in your notification has expired, you will need to re-notify the Department before you may begin your project. Beginning or completing a project that differs in any way from the one described in the notification may constitute a violation of Fish and Game Code section 1602.

*Your notification proposes work within an unnamed wash, tributary to Temescal Canyon Wash. The project site is bisected by Laurel Canyon Way and is located 0.2 mile east of Interstate 15, one mile south of State Route 91, in the City of Corona, County of Riverside, California. The proposed project includes the construction of 103 residential lots with a minimum lot size of 12,000 square feet and associated infrastructure, the realignment of the onsite drainage channel, and the construction of a mitigation basin. Your project will permanently impact 1.35 acres and temporarily impact 1.52 acres of habitat subject to CDFW jurisdiction. Best Management Practices (BMPs) and avoidance measures for this project include: following the Water Quality Management Plan and Storm Water Prevention Pollution Plan; avoiding vegetation disturbing activities during nesting bird season; following construction noise and lighting BMPs; and incorporating barriers to minimize unauthorized public access. CDFW recommends the Designated Biologist(s) survey the project site, and within a recommended 500*

*buffer surrounding the project site, for both diurnal and nocturnal nesting birds, prior to commencing project activities (including construction and/or site preparation) regardless of season. You have proposed to mitigate project impacts by: creating and restoring 2.46 acres of habitat onsite, consisting of at least 1.92 acres of riparian habitat and 0.08 acre of wetlands; providing sufficient funds to the Riverside Corona Resource Conservation District for the restoration of 0.76 acre of streambed; and by providing sufficient funds to a conservation entity for ongoing habitat restoration of 1.52 acres. The mitigation basin and drainage channel and will be dedicated to conservation in perpetuity through a conservation easement held by the Riverside-Corona Resource Conservation District or other CDFW-approved entity, with the exception of a 20-foot area on either end of all culverts within these areas. Onsite restoration, maintenance, and reporting will be conducted in accordance with the Habitat Mitigation and Monitoring Plan. Your proposed work period will end no later than October 19, 2019.*

Also note that while you are entitled to complete the project without an Agreement, you are still responsible for complying with other applicable local, state, and federal laws. These include, but are not limited to, the state and federal Endangered Species Acts and Fish and Game Code sections 5650 (water pollution) and 5901 (fish passage).

Finally, if you decide to proceed with your project without an Agreement, you must have a copy of this letter and your notification with all attachments available at all times at the work site. If you have any questions regarding this matter, please contact Claire Ingel at (909) 484-3979 or Claire.ingel@wildlife.ca.gov

Sincerely,

Jeff Brandt
Senior Environmental Scientist

cc: Claire Ingel, Environmental Scientist

ec: Denise Woodard, LSA Associates, Inc.

| *FOR DEPARTMENT USE ONLY* | | | | |
|---|---|---|---|---|
| *Date Received* | *Amount Received* | *Amount Due* | *Date Complete* | *Notification No.* |
| | *$* | *$* | | |
| *Assigned to:* | | | | |

# NOTIFICATION OF LAKE OR STREAMBED ALTERATION

**Complete EACH field, unless otherwise indicated, following the instructions and submit ALL required enclosures, attachments, and fee(s) to the CDFW regional or field office that serves the area where the project will occur. Attach additional pages to notification, if necessary.**

## 1. APPLICANT PROPOSING PROJECT

| | |
|---|---|
| Name | Emad Bolous |
| Business/Agency | Mari Girgis, LLC |
| Mailing Address | 4030 Birch Street, Suite 100 |
| City, State, Zip | Newport Beach, CA 92660 |
| Phone Number | 949-833-8813 |
| Email | ebolous@aol.com |

## 2. CONTACT PERSON (*Complete only if different from applicant.*)

| | |
|---|---|
| Name | Wade Caffrey |
| Business/Agency | VCS Environmental |
| Mailing Address | 30900 Rancho Viejo Road |
| City, State, Zip | San Juan Capistrano, CA 92675 |
| Phone Number | 949-489-2700 ext. 213 |
| Email | wcaffrey@vcsenvironmental.com |

While an applicant is legally responsible for complying with Fish and Game Code section 1602 et seq., an applicant may designate and authorize an agent (e.g., lawyer, consultant, or other individual) to act as a Designated Representative. The Designated Representative is authorized to sign the notification and any agreement on behalf of the Applicant.

**Do you authorize the Contact Person above to represent you as your Authorized Designated Representative?**

| | |
|---|---|
| ☑ Yes, I authorize. | ☐ No, I do not authorize. |

## 3. PROPERTY OWNER (*Complete only if different from applicant*)

| | |
|---|---|
| Name | Belaire HOA |
| Mailing Address | P.O. Box 77134 |
| City, State, Zip | Corona, CA 92877 |
| Phone Number | |
| Email | |

**4. PROJECT NAME AND AGREEMENT TERM**

| | | | | |
|---|---|---|---|---|
| A. Project Name | Monteolivo Sewer Line Project | | | |
| B. Agreement Term Requested | ☑ Regular (*5 years or less*)<br>☐ Long-term (*greater than 5 years)* | | | |
| C. Project Term | Beginning (*year*) | 2016 | Ending (*year*) | 2021 |

D. Seasonal Work Period

| Season(s)* | Start Date (*month/day*) | End Date (*month/day*) | E. Number of Work Days |
|---|---|---|---|
| 1 | 01/01 | 12/31 | 365 |
| 2 | 01/01 | 12/31 | 365 |
| 3 | 01/01 | 12/31 | 365 |
| 4 | 01/01 | 12/31 | 365 |
| 5 | 01/01 | 12/31 | 365 |

** Continue on additional page(s) if necessary*

**5. AGREEMENT TYPE**

Check the applicable box. If boxes B – F are checked, complete the specified attachment.

| | | |
|---|---|---|
| A. | ☑ Standard *(Most construction projects, excluding the categories listed below)* | |
| B. | ☐ Gravel/Sand/Rock Extraction (*Attachment A*) | *Mine I.D. Number:* _____ |
| C. | ☐ Timber Harvesting (*Attachment B*) | *THP Number:* _____ |
| D. | ☐ Water Diversion/Extraction/Impoundment (*Attachment C*) | *SWRCB Number:* _____ |
| E. | ☐ Routine Maintenance (*Attachment D*) | |
| F. | ☐ Cannabis Cultivation (*Attachment E*) | |
| G. | ☐ CDFW Grant Programs | *Agreement Number:* _____ |
| H. | ☐ Master | |
| I. | ☐ Master Timber Operations | |

## 6. FEES

See the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. ***Note: CDFW may not process this notification until the correct fee has been received.***

| | A. Project Name | B. Project Cost | C. Project Fee |
|---|---|---|---|
| 1 | Monteolivo Project | $325,000 | $4,460.50 |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| | | D. Base Fee *(if applicable)* | |
| | | **E. TOTAL FEE*** | $4,460.50 |

** Check, money order, and Visa or MasterCard (select Environmental Fees from Menu) payments are accepted.*

## 7. PRIOR NOTIFICATION AND ORDERS

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, CDFW for the project described in this notification?

☑ Yes (*Provide the information below*) ☐ No

| Applicant | Notification Number | Date |
|---|---|---|
| Nova Homes, Inc. | 1600-2014-0218-R6 | 04/16/2015 |

B. Is this notification being submitted in response to a court or administrative order or notice, or a notice of violation (NOV) issued by CDFW?

☑ Yes ☐ No (*Enclose a copy of the order, notice, or NOV. If the applicant was directed to notify CDFW verbally rather than in writing, identify the person who directed the applicant to submit this notification, the agency he or she represents, and describe the circumstances relating to the order.*)

| Name of person who directed notification | Agency |
|---|---|
| Claire Ingel | CDFW |

Describe circumstances relating to order

An off-site property adjacent to the existing Monteolivo Residential Development property was used to construct a sewer line for the development and surrounding communities, as well as decomission an existing sewage treatment pond per the Project's Conditions of Approval. Permits from the wildlife agencies were not acquired for the off-site property prior to impacts to jurisdictional features.

☐ *Continued on additional page(s)*

## 8. PROJECT LOCATION

A. Address or description of project location.
(*Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway.*)

The Project is located approximately 0.2 miles east of interstate 15 and one mile south of the State Route 91. The northwest portion of the proposed project is bisected by Laurel Canyon Way. The Project site is regionally accessible from Ontario Avenue and State Street to the south. A regional and vicinity map are attached as Figures 1 and 2.

☐ *Continued on additional page(s)*

| | |
|---|---|
| B. River, stream, or lake affected by the project. | Riverside Canal and unnamed drainage to Riverside Canal |
| C. What water body is the river, stream, or lake tributary to? | Temescal Wash |
| D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts? | ☐ Yes ☑ No ☐ Unknown |
| E. County | Riverside County |

| F. USGS 7.5 Minute Quad Map Name | G. Township | H. Range | I. Section | J. ¼ Section |
|---|---|---|---|---|
| Corona South, California | 3 South | 6 West | 32 | |
| | | | | |
| | | | | |

☐ *Continued on additional page(s)*

K. Meridian (check one) ☐ Humboldt ☐ Mt. Diablo ☑ San Bernardino

L. Assessor's Parcel Number(s)

| | |
|---|---|
| 107-080-026 | 107-080-036 (partial) |
| 107-080-034 (partial) | |

☐ *Continued on additional page(s)*

M. Geographic coordinates (*Provide the latitude and longitude coordinates for the property where the project(s) will take place. CDFW utilizes decimal degrees and WGS 84 datum. Access Google Maps Help if you need assistance in finding your coordinates.)*

| | | |
|---|---|---|
| Latitude/Longitude | *Latitude:* 33.8583 | *Longitude:* -117.5331 |
| | *Latitude:* 33.8616 | *Longitude:* -117.5329 |
| | *Latitude:* 33.8625 | *Longitude:* -117.5312 |
| | *Latitude:* 33.8610 | *Longitude:* -117.5321 |
| | *Latitude:* 33.8584 | *Longitude:* -117.5325 |

## 9. PROJECT CATEGORY

| WORK TYPE | NEW CONSTRUCTION | REPLACE EXISTING STRUCTURE | REPAIR-MAINTAIN-OPERATE EXISTING STRUCTURE |
|---|---|---|---|
| Bank stabilization – bioengineering/recontouring | ☑ | ☐ | ☐ |
| Bank stabilization – rip-rap/retaining wall/gabion | ☑ | ☑ | ☐ |
| Boat dock/pier | ☐ | ☐ | ☐ |
| Boat ramp | ☐ | ☐ | ☐ |
| Bridge | ☐ | ☐ | ☐ |
| Channel clearing/vegetation management | ☐ | ☐ | ☐ |
| Culvert | ☐ | ☑ | ☐ |
| Debris basin | ☐ | ☐ | ☐ |
| Dam | ☐ | ☐ | ☐ |
| Filling of wetland, river, stream, or lake | ☑ | ☐ | ☐ |
| Geotechnical survey | ☐ | ☐ | ☐ |
| Habitat enhancement – revegetation/mitigation | ☐ | ☐ | ☐ |
| Levee | ☐ | ☐ | ☐ |
| Low water crossing | ☐ | ☐ | ☐ |
| Road/trail | ☐ | ☐ | ☐ |
| Sediment removal: pond, stream, or marina | ☐ | ☐ | ☐ |
| flood control | ☐ | ☐ | ☐ |
| Storm drain outfall structure | ☐ | ☑ | ☐ |
| Temporary stream crossing | ☐ | ☐ | ☐ |
| Utility crossing: horizontal directional drilling | ☐ | ☐ | ☐ |
| jack/bore | ☐ | ☐ | ☐ |
| open trench | ☐ | ☐ | ☐ |
| Water diversion without facility | ☐ | ☐ | ☐ |
| Water diversion with facility | ☐ | ☐ | ☐ |
| Other *(specify)*: | ☐ | ☐ | ☐ |

**10. PROJECT DESCRIPTION**

A. Describe the project in detail. Include photographs of the project location and immediate surrounding area.

- Written description of all project activities with detailed step-by-step description of project implementation.
- Include any structures (e.g., rip-rap, culverts) that will be placed or modified in or near the stream, river, or lake, and any channel clearing.
- Specify volume, and dimensions of all materials and features (e.g., rip rap fields) that will be used or installed.
- If water will be diverted or drafted, specify the purpose or use and include Attachment C.
- Enclose diagrams, drawings, design plans, construction specifications, and maps that provide all of the following: site specific construction details; dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, stockpile areas, areas of temporary disturbance, and where the equipment/machinery will access the project area.
  - A helpful resource to assist in the development of quality PDF maps in Google Earth. See Using Google Earth to Map your Property (PDF).

This application is being submitted as an after-the-fact SAA Notification for the Monteolivo Sewer Line Project (Project).

The Monteolivo Residential Development Project obtained a CDFW Operation of Law dated April 16, 2015 (SAA #1600-2014-0218-R6) for impacts associated with grading for the construction of 103 single-family homes and associated on-site infrastructure.

The Project required two off-site improvements. The first was an off-site 8Žsewer line to be constructed in an access road between the Monteolivo site and the public sewer in Sherbourne Avenue. This line was not expected to impact waters of the State. However, heavy rains caused significant erosion and a landslide buried the access road. Consequently, the sewer line to be constructed was relocated in the field 20-feet easterly. In order to protect the sewer improvements and access road, the adjacent Riverside Canal and an unnamed drainage to the Riverside Canal had to be slope-stabilized. This included the replacement of the failed easterly bank in the Riverside Canal with un-grouted rip-rap and widening of the unnamed drainage.

The second improvement was not contemplated in the original 1600 application. In order to finish an on-site storm drain, replacement of an existing culvert, installation of a headwall, and installation of approximately 135 linear feet of riprap for energy dissipation occurred. These improvements occurred directly north of the residential development project site; within the off-site portion of the unnamed drainage.

Post-construction site photographs are attached as Appendix A.

☐ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

Construction equipment, including but not limited to dozers, excavators, and dump trucks were required for this work.

☐ *Continued on additional page(s)*

| | |
|---|---|
| C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B). | ☐ Yes ☑ No (*Skip to box 11*) |
| D. Will the project require work in the wetted portion of the channel? | ☐ Yes (*Enclose a plan to divert water around work site*)<br>☑ No |

## 11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

Permanent Impacts:
-0.017 acres of permanent impacts occurred to streambed waters of the State for placement of rip rap in the unnamed drainage.
-0.56 acres of permanent impacts occurred to riparian waters of the State for removal of riparian vegetation within the Riverside Canal and unnamed drainage.
Temporary Impacts:
-0.34 acres of temporary impacts occurred to streambed waters of the state for widening of the unnamed drainage and replacement of rip rap in the Riverside Canal

Note: The total acreage of streambed waters of the State within the unnamed drainage increased by 0.24 acres post-construction due to widening of the drainage. Impacts can be seen on Figure 3.

☐ *Continued on additional page(s)*

B. Will the project affect any vegetation? ☑ Yes (*Complete the tables below*) ☐ No *(Include aerial photo with date supporting this determination)*

| Vegetation Type | Temporary Impact | Permanent Impact |
|---|---|---|
| Disturbed | Linear feet: _____ Total area: 0.34 | Linear feet: _____ Total area: 0.02 |
| Riparian | Linear feet: _____ Total area: _____ | Linear feet: _____ Total area: 0.56 |

| Tree Species | Number of Trees to be Removed | Trunk Diameter (range) |
|---|---|---|
| Freemont cottonwood (Populus fremontii) | 2 | N/A |
| Goodding's willow (Salix goodingii) | 12 | N/A |
| arroyo willow (Salix lasiolepis) | 12 | N/A |
| blue elderberry (Sambucus nigra ssp. cerulea) | 12 | N/A |

*numbers approximate based on aerial review

☐ *Continued on additional page(s)*

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

☑ Yes *(List each species and/or describe the habitat below)* ☐ No ☐ Unknown

Least Bell's vireo (FE, SE) were observed adjacent to waters of the State impact areas after Project activities were complete. No known impacts to Least Bell's vireo occurred.

☐ *Continued on additional page(s)*

D. Identify the source(s) of information that supports a "yes" or "no" answer above in Box 11.C.

-CNDDB
-Observed adjacent to impact areas.

☐ *Continued on additional page(s)*

E. Has a biological study been completed for the project site?

☐ Yes (*Enclose the biological study*) ☑ No

*Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.*

F. Has one or more technical studies (e.g., engineering, hydrologic, geological, or geomorphological) been completed for the project or project site?

☑ Yes *(Enclose the study(ies))* ☐ No *Hydrology report included as Appendix B

*Note: One or more technical studies may be required to evaluate potential project impacts to a lake or streambed.*

G. Have fish or wildlife resources or waters of the state been mapped or delineated on the project site?

☑ Yes (*Enclose the mapped results*) ☐ No

*Note: Check "yes" if fish and wildlife resources or waters of the state on the project site have been mapped or delineated. "'Wildlife' means and includes all wild animals, birds, plants, fish, amphibians, reptiles and related ecological communities, including the habitat upon which the wildlife depends." (Fish & G. Code, § 89.5.) If "yes" is checked, submit the mapping or delineation. If the mapping or delineation is in digital format (e.g., GIS shape files or KMZ), you must submit the information in this format for CDFW to deem your notification complete. If "no" is checked, or the resolution of the mapping or delineation is insufficient, CDFW may request mapping or delineation (in digital or non-digital format), or higher resolution mapping or delineation for CDFW to deem the notification complete.*

**12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES**

A. Describe the techniques that will be used to prevent sediment, hazardous, or other deleterious materials from entering watercourses during and after construction.

Techniques used during construction to prevent sediment and pollutants from entering the watercourse included the use silt fencing, sandbags/straw wattles where appropriate and designating equipment staging locations outside of the drainage. Post construction, the drainages were slope-stabilized (which included the installation/replacement of rip rap) to prevent erosion.

☐ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

Vegetation removal only occurred in areas necessary to complete Project activities.

☐ *Continued on additional page(s)*

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

(1) The Project proposes to mitigate for permanent impacts to 0.017 acres of streambed waters of the State though purchase of mitigation at a 2:1 ratio for a total of 0.034 acres of credits.
(2) The Project proposes to mitigate for permanent impacts to 0.56 acres of riparian waters of the State through purchase of mitigation at a 2:1 ratio for a total of 1.12 acres of credits.
(3) The Project proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits.

*All credits purchased would be ephemeral enhancement through the Riverside-Corona Resource Conservation District*

☐ *Continued on additional page(s)*

## 13. PERMITS

List any local, State, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

| | | | |
|---|---|---|---|
| A. | USACE 404 NWP | ☑ Applied | ☐ Issued |
| B. | RWQCB 401 WQC | ☑ Applied | ☐ Issued |
| C. | MSHCP DBESP & Consistency Analysis - drafted for submittal | ☐ Applied | ☐ Issued |

D. Unknown whether ☐ local, ☐ State, or ☐ federal permit is needed for the project. (*Check each box that applies*)

☐ *Continued on additional page(s)*

## 14. ENVIRONMENTAL REVIEW

| | | | |
|---|---|---|---|
| A. Has a CEQA lead agency been determined? | ☑ Yes (*Complete boxes B, C, D, E, and F*) ☐ No (*Skip to box 14.G*) | | |
| B. CEQA Lead Agency | City of Corona | | |
| C. Contact Person | Sandra Yang | D. Phone Number | 951-736-2262 |

E. Has a draft or final document been prepared for the project pursuant to CEQA and/or NEPA?

☐ Yes (*Check the box below for each CEQA or NEPA document that has been prepared and enclose a copy of each.*)

☑ No (*Check the box below for each CEQA or NEPA document listed below that will be or is being prepared.*)

| | | |
|---|---|---|
| ☐ Notice of Exemption | ☑ Mitigated Negative Declaration | ☐ NEPA document (*type*): |
| ☑ Initial Study | ☐ Environmental Impact Report | |
| ☐ Negative Declaration | ☐ Notice of Determination *(Enclose)* | |
| ☐ THP/ NTMP | ☐ Mitigation, Monitoring, & Reporting Plan | |

F. State Clearinghouse Number (*if applicable*)

G. If the project described in this notification is not the "whole project" or action pursuant to CEQA, briefly describe the entire project (Cal. Code Regs., tit. 14 § 15378).

☐ *Continued on additional page(s)*

H. Has a CEQA filing fee been paid pursuant to Fish and Game Code section 711.4?

☐ Yes (*Enclose proof of payment*) ☑ No (*Briefly explain below the reason a CEQA filing fee has not been paid)*

*Note: The CEQA filing fee is in addition to the notification fee. If a CEQA filing fee is required, the Lake or Streambed Alteration Agreement may not be finalized until paid.*

An addendum to the IS/MND is being prepared and a NOD + fees will be paid.

**15. SITE INSPECTION**

Check one box only.

☐ In the event CDFW determines that a site inspection is necessary, I hereby authorize a CDFW representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant CDFW such entry.

☑ I request CDFW to first contact (*insert name*) Wade Caffrey - VCS Environmental at (*insert phone number or email address*) wcaffrey@vcsenvironmental.com to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay CDFW's determination as to whether a Lake or Streambed Alteration Agreement is required and/or CDFW's issuance of a draft agreement pursuant to this notification.

**16. DIGITAL FORMAT**

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

☑ Yes (Please enclose the information via digital media with the completed notification form.)

☐ No

**17. SIGNATURE**

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, CDFW may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless CDFW has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

Emad Bolous
Signature of Applicant or Applicant's Authorized Representative

5/21/19
Date

Emad Bolous
Print Name




Prepared By:

VCS Environmental

Map Created: March 2019

Data Sources: ESRI

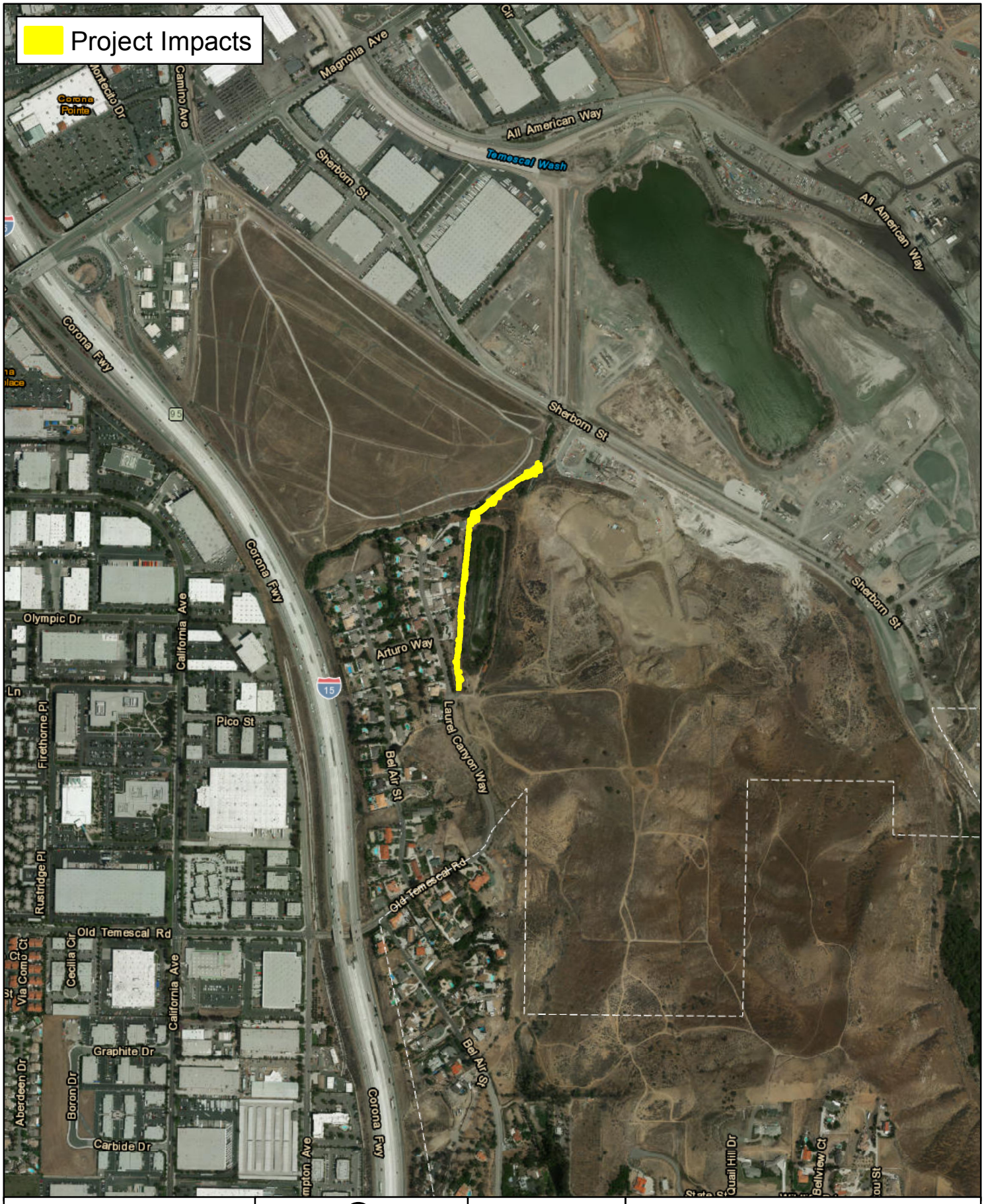
0 0.5 1 Miles

1 in = 2 miles

**Figure 1**

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Regional Map




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources:
ESRI

0 500 1,000 Feet
1 in = 800 feet

**Figure 2**

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Vicinity Map




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources:
Google Earth, LSA, VCS

0 100 200 ft
1 in = 200 feet

*Not including the created 0.24 acres of streambed WoS

Figure 3

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Jurisdictional Waters of the State



Photograph 1: *View of improvements to the unnamed drainage. Photograph taken May 3, 2017*



Photograph 2: *View of new culvert that includes two, five-foot diameter concrete culverts and a 20-foot wide headwall. Photograph taken May 3, 2017.*



Photograph 3: *View of habitat conditions at the confluence of the drainage and the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 4: *View of general habitat conditions along the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 5: *View of general habitat conditions along the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 6: *View of grouted rip-rap on the northerly bank of the Riverside Canal and un-grouted rock rip-rap that was placed on the southerly bank as part of the sewer line project. Photograph taken May 3, 2017.*

**Appendix B**
RWQCB Notice of
Violation No. 332014-25

CALIFORNIA
Water Boards

GAVIN NEWSOM
GOVERNOR

JARED BLUMENFELD
SECRETARY FOR
ENVIRONMENTAL PROTECTION

# Santa Ana Regional Water Quality Control Board

August 15, 2019

**Certified Mail**
**Return Receipt Requested**

Mr. Tom Mungari
Nova Homes, Inc.
245 Fischer Drive, Unit A-8A
Costa Mesa, CA 92626

tom@novahomesinc.us

**NOTICE OF VIOLATIONS: VIOLATIONS OF CALIFORNIA WATER CODE SECTION 13376 AND CLEAN WATER ACT SECTIONS 301 AND 401 - THE MONTEOLIVO PROJECT, CITY OF CORONA, RIVERSIDE COUNTY (USACE FILE NO. NOT AVAILABLE) (SARWQCB WDID # 332014-25)**

Dear Mr. Mungari:

On March 4, 2015, the Santa Ana Regional Water Quality Control Board (Santa Ana Water Board) issued you, on behalf of Nova Homes, Inc. (Discharger), a Clean Water Act Section 401 Water Quality Standards Certification (Certification) for the above referenced project. The project, as proposed in the application for Certification, included permanent fill to a tributary to Temescal Creek, for a total of 0.34 acre of permanent impacts to Non-Wetland Waters of the United States (WOTUS). In addition, the Certification authorized temporary impacts to 0.08 acre of Wetland WOTUS and 0.32 acre of Non-Wetland WOTUS.

The discharge of fill was associated with the construction of a single-family home residential development. In issuing the Certification, the Santa Ana Water Board indicated that discharges of fill to waters of the State (WOTS) were also authorized under State Water Resources Control Board Order No. 2003-0017-DWQ, "Statewide General Waste Discharge Requirements for Dredged or Fill Discharges that Have Received State Water Quality Certification" (Order No. 2003-0017-DWQ). Order No. 2003-0017-DWQ requires compliance with all conditions in the Certification.

On May 23, 2019, the Santa Ana Water Board received a request (Request) from VCS Environmental, on behalf of the Discharger, to amend the March 4, 2015 Certification for the project. The Discharger requested that unauthorized additional temporary and

permanent discharges of fill to jurisdictional WOTUS and WOTS be certified under an amended Certification. These unauthorized discharges occurred during the construction of the residential development.

The additional discharges of fill were not authorized by the March 4, 2015 Certification or other Certifications. The discharges of unauthorized fill are a violation of California Water Code section 13376 and Clean Water Act sections 301 and 401.The additional discharge of fill to WOTUS and WOTS are associated with the construction of an off-site 8-inch sewer line, replacement of a culvert, and construction of a headwall and 135 linear feet of a riprap energy dissipating structure. The additional un-certified impacts are detailed in Tables 1 and 2 below.

Table 1. Impacts to WOTUS

| | Temporary | Permanent |
|---|---|---|
| Non-Wetland | 0.15 acre | 0.02 acre |
| Wetland | -- | -- |
| Total | 0.15 acre | 0.02 acre |

Table 2. Impacts to WOTS (excluding WOTUS)

| | Temporary | Permanent |
|---|---|---|
| Streambed | 0.34 acre | 0.017 acre |
| Riparian | -- | 0.56 acre |
| Total | 0.34 acre | 0.58 acre |

In the Request, the Discharger proposed to mitigate the additional impacts through the purchase of ephemeral enhancement mitigation credits from the Riverside-Corona Resource Conservation District at a 1:1 ratio for temporary impacts and 2:1 ratio for permanent impacts to WOTS (not including WOTUS) for a total of 1.49 acres of credits. It is noted that based on the ratios and impacts provided in the Request the proposed mitigation, based on the ratio provided, should be 1.69 acres of credits for all impacts. An Application Fee of $1,638.00 was also submitted with the Request.

The Santa Ana Water Board finds that the purchase of 1.69 acres of enhancement mitigation credits from a Santa Ana Water Board-approved mitigation bank or in-lieu fee program, in addition to recontouring the areas of temporary impact to pre-construction contours, would be acceptable to offset the additional impacts detailed in the Request. However, a copy of the receipt for the purchase of 1.69 acres of enhancement credits from a Santa Ana Water Board-approved mitigation bank or in-lieu fee program must be provided to the Santa Ana Water Board.

In addition, the Santa Ana Water Board requests that the full amount of the Project Fee be paid to the State Water Resources Control Board. The Application Fee of one thousand six hundred thirty-eight dollars ($1,638.00) was received with the application materials. However, a Project Fee must also be paid. The Project Fee, based on

1.09 acres of discharge to all WOTS (including WOTUS), is fourteen thousand one hundred fifty-five dollars ($14,155.00). The full Project Fee must be submitted to the Santa Ana Water Board for processing.

Past approvals from the Santa Ana Water Board are not in effect until the payment of associated fees and purchase of mitigation credits. Performance of any further work described in the Certification, prior to payment of the fees and purchase of mitigation credits, is unlawful and may result in imposition of penalties via Water Code section 13385 and other statutes, as applicable.

The Santa Ana Water Board will issue an amended Certification for the Monteolivo Project with the following conditions that are listed below. In addition, the conditions of this Notice of Violations will be met if the following are completed by September 20, 2019:

1. Provide proof of Mitigation Credit purchases to Santa Ana Water Board staff;

2. Submit a check for fourteen thousand one hundred fifty-five dollars ($14,155.00) made out to the State Water Resources Control Board. Send the check to this Santa Ana Water Board office with reference to SARWQCB WDID # 332014-25; and

4. All mitigation requirements and conditions of the original certification are completed.

If the above conditions are not met, there may be further enforcement actions taken.

If you have any questions regarding this matter, please contact Jason Bill at (951) 782-3295 (Jason.Bill@waterboards.ca.gov) or Dave Woelfel at (951) 782-7960 (David.Woefel@waterboards.ca.gov).

Sincerely,

Jayne Joy
Assistant Executive Officer
Santa Ana Regional Water Quality Control Board

Enclosure: March 4, 2015 Certification for SARWQCB WDID # 332014-25

cc (w/o enclosure):

U.S. Army Corps of Engineers, Los Angeles Office – James Mace – James.E.Mace@usace.army.mil
U.S. Environmental Protection Agency, Region 9 – Wetlands Section –
Megan Fitzgerald – Fitzgerald.Megan@epa.gov
Melissa Scianni – Scianni.Melissa@epa.gov
California Department of Fish and Wildlife – Jeff Brandt – Jeff.Brandt@wildlife.ca.gov
State Water Resources Control Board, Office of Enforcement –
Daniel Kippen, Esq. – Dan.Kippen@waterboards.ca.gov
State Water Resources Control Board, Division of Water Quality – Water Quality Certification Unit – Stateboard401.Stateboard401@waterboards.ca.gov
VCS Environmental – Wade Caffrey – wcaffrey@vcsenvironmental.com

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Mr. Tom Mungari
Nova Homes, Inc.
245 Fischer Drive, Unit A-8A
Costa Mesa, CA 92626

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Santa Ana Regional Water Quality Control Board

March 4, 2015

Tom Mungari
Nova Homes, Inc.
245 Fischer Drive, Unit A-8A
Costa Mesa, CA 92626

tom@novahomesinc.us

**CLEAN WATER ACT SECTION 401 WATER QUALITY STANDARDS CERTIFICATION FOR THE MONTEOLIVO PROJECT, CITY OF CORONA, RIVERSIDE COUNTY (ACOE CORPS FILE NO. N/A) (SARWQCB PROJECT NO. 332014-25)**

Dear Mr. Mungari,

On October 20, 2014, we received an application for Clean Water Act Section 401 Water Quality Standards Certification ("Certification") from the City of Corona Public Works Department for a residential development project in the City of Corona, Riverside County. A letter detailing revisions from the original application to the proposed project and proposed mitigation was received on December 19, 2004. The project will consist of the construction of 106 single-family residential lots, associated roadways and infrastructure, occupying 61 acres of project land. Additionally, a mitigation/conservation area for the creation/restoration of riparian/streambed habitat will be created. On October 20, 2014, the applicant submitted a check for $1,201.00, with the Certification application materials. On March 2, 2015 another check for an additional $30,531.00, was received, which satisfies this project's fee requirement for consideration of a 401 Certification. This fee amount was determined using the Dredge and Fill Fee Calculator on the State Water Resources Control Board (SWRCB) web site, which is based on the most current iteration of California Code of Regulations, Division 3, Chapter 9, Article 1, section 2200 (a) (3). This letter responds to your request for certification that the proposed project, described in your application and summarized below, will comply with State water quality standards outlined in the Water Quality Control Plan for the Santa Ana River Basin (1995) (Basin Plan) and subsequent Basin Plan amendments:

Project Description: The proposed project includes the permanent realignment of an unnamed tributary of Temescal Creek Reach 2 that flows parallel to Laurel Canyon Way for the length of the project site. The realigned Temescal Creek tributary's channel bottom and banks will be lined with ungrouted riprap for a length of 951 feet. The channel will be trapezoidal in shape

with a five-foot wide bed and three to one side slopes. One road crossing with a culvert that leads into the development will be constructed over the realigned drainage. Additionally, a 3.68 acre Mitigation Basin will be constructed within the project site. A portion of the mitigation basin will be graded to restore 0.08 acres to jurisdictional wetlands.

The work will take place within an unsectioned area of the El Sobrante Land Grant, of the U.S. Geological Survey *Corona South* 7.5 minute topographic quadrangle maps (UTM Zone 11 450906.26 Easting 3746309.23 Northing).

Receiving water: Unnamed tributary of Temescal Creek Reach 2, Temescal Creek Reaches 1-2 and Upper Santa Ana River Reach 3, which have present or potential beneficial uses, including: agricultural supply (AGR), groundwater recharge (GWR), water contact recreation (REC1), non-contact water recreation (REC2), warm freshwater habitat (WARM), Rare, Threatened or Endangered Species (RARE), and wildlife habitat (WILD).

Fill area:

| | | |
|---|---|---|
| Temporary Impact to Wetland Waters of the US | 0.08 acre | linear feet N/A |
| Permanent Impact to Non-Wetland Waters of the US | 0.34 acre | 2,533 linear feet |
| Temporary Impact to Non-Wetland Waters of the US | 0.32 acre | 787 linear feet |

Dredge/Fill volume: N/A

Federal permit: U.S. Army Corps of Engineers Nationwide Permit No. 29

You have proposed to mitigate water quality impacts as described in your Certification application. The proposed mitigation is summarized below:

Onsite Water Quality Standards Mitigation Proposed:

- Standard water quality related best management practices (BMPs) will be employed during construction activities.
- Temporary impacts to both Wetland and Non-Wetland Waters of the United States will be mitigated by creating a 3.68 acre On-Site Mitigation Basin. Of the 3.68 acres, at least 0.08 acres will be restored to Wetland Waters.

Offsite Water Quality Standards Mitigation Proposed:

- The applicant will mitigate the project's impacts offsite through the acquisition of in-lieu fee program mitigation credits from the Riverside-Corona Resource Conservation District, for the restoration of 0.76 acres of non-wetlands/riparian habitat.
- The applicant will mitigate the project's impacts offsite through the acquisition of in-lieu fee program mitigation credits from the Santa Ana Watershed Association by enhancing 1.52 acres within the watershed.

Should the proposed project impact state- or federally-listed endangered species or their habitat, implementation of measures identified in consultation with U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife will ensure those impacts are mitigated to an acceptable level. Appropriate BMPs will be implemented to reduce construction-related impacts to Waters of the State.

This Water Quality Certification is subject to the acquisition of all local, regional, state, and federal permits and approvals as required by law. Failure to meet any conditions contained herein, or any conditions contained in any other permit or approval for this project issued by the State of California, or any subdivision thereof, may result in appropriate enforcement action, including imposition of administrative civil liability.

Pursuant to California Code of Regulations, Title 14, Chapter 3, Section 15096, as a responsible agency, the Regional Board is required to consider an EIR or Negative Declaration prepared by the lead agency in determining whether to approve a project. A responsible agency has responsibility for mitigating and avoiding only the direct and indirect environmental effects of those parts of the project which it decides to carry out, finance, or approve. Further, the responsible agency must make findings as required by Sections 15091 and, if necessary, 15093, for each and every significant impact of the project.

As required by Section 15096, the Regional Board has considered the Mitigated Negative Declaration (MND) prepared for the proposed project and filed with the Riverside County Clerk and Recorder by the City of Corona on September 3, 2014, and information provided subsequently in the applicant's application, in approving this Certification. More specifically, the Regional Board has considered those sections of the MND relating to water quality. Based on the mitigation proposed in the MND, and the conditions set forth in this Certification, impacts to water quality will be reduced to a less than significant level and beneficial uses will be protected. Thus, the Regional Board independently finds that changes or alterations have been required in, or incorporated into the project, which avoid or mitigate impacts to water quality to a less than significant level.

**This 401 Certification is contingent upon the execution of the following conditions:**

1) The applicant must comply with the requirements of the applicable Clean Water Act section 404 permit.

2) Applicant shall ensure that all fees associated with this project shall be paid to each respective agency prior to conducting any on-site construction activities.

3) A copy of this Certification and any subsequent amendments must be maintained on site for the duration of work as a denoted element of any project Storm Water Pollution Prevention Plan (SWPPP), Water Quality Management Plan (WQMP) and/or Habitat Mitigation and Management Plan (HMMP).

4) Proposed on-site and off-site mitigation shall be timely implemented. Materials documenting the purchase of necessary mitigation credits shall be provided to this office prior to the discharge of fill to, or the dredging or excavation of material from, waters of the United States or Waters of the State of California.

5) A HMMP for the onsite mitigation shall be provided to this office for approval prior to the discharge of fill to, or the dredging or excavation of material from, waters of United States or Waters of the State of California.

6) The applicant shall complete the post-construction restoration of temporary impacts to waters of the U.S. within 30 days following completion of construction activities. Upon consideration of a written request, this period may be extended by Regional Board authorization to accommodate proper planting times. If restoration is not initiated within one year of impacts, additional mitigation may be required to offset temporal loss of waters of the U.S.

7) Prior to construction activities, the project proponent shall delineate the work area with brightly colored fencing or other methods to ensure both temporary and permanent impacts to Waters of the United States and Wasters of the State of California do not exceed the limits authorized in this certification.

8) All materials generated from construction activities associated with this project shall be managed appropriately. This shall include identifying all potential pollution sources within the scope of work of this project, and incorporating all necessary pollution prevention BMPs as they relate to each potential pollution source identified. Additionally no materials maybe stored within waters of the United States or Waters of the State of California.

9) The project proponent shall utilize BMPs during project construction to minimize the controllable discharges of sediment and other wastes to drainage systems or other waters of the state and of the United States.

10) Substances resulting from project-related activities that could be harmful to aquatic life, including, but not limited to, petroleum lubricants and fuels, cured and uncured cements, epoxies, paints and other protective coating materials, portland cement concrete or asphalt concrete, and washings and cuttings thereof, shall not be discharged to soils or waters of the state. All waste concrete shall be removed.

11) Motorized equipment shall not be maintained or parked within or near any stream crossing, channel or lake margin in such a manner that petroleum products or other pollutants from the equipment may enter these areas under any flow conditions. Vehicles shall not be driven or equipment operated in waters of the state on-site, except as necessary to complete the proposed project. No equipment shall be operated in areas of flowing water.

12) This Water Quality Certification is subject to the acquisition of all local, regional, state, and federal permits and approvals as required by law. Failure to meet any conditions contained herein or any the conditions contained in any other permit or approval issued by the State of California or any subdivision thereof may result in the revocation of this Certification and civil or criminal liability.

13) Best management practices to stabilize disturbed soils must include the use of native plant species whenever feasible.

14) Applicant shall ensure that all elements of the approved WQMP are fully implemented to address all identified pollutants and hydrologic conditions of concern resulting from the project.

15) Applicant shall follow all procedures and policies specified within the project's HMMP.

16) Construction de-watering discharges, including temporary stream diversions necessary for project construction may be regulated under Regional Board Order No. R8-2009-0003, General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (De Minimus) Threat to Water Quality. For more information, please review Order No. R8-2009-0003 at www.waterboards.ca.gov/santaana/

17) Prior to any grading for the project in riparian areas or wetlands that are slated to be impacted, functional assessments of these areas shall be conducted using the California Rapid Assessment Method, February 2012 (CRAM). Similarly, wetland and riparian habitat mitigation sites shall be assessed periodically with CRAM, beginning with the end of the first growing season following the initial planting of the mitigation site. Mitigation site

assessments shall be conducted annually, during the period from October through December, until success criteria are met for consecutive years. This information shall be reported to http://www.californiawetlands.net/tracker/

Under California Water Code, Section 1058, and Pursuant to 23 CCR §3860, the following shall be included as conditions of all water quality certification actions:

(a) Every certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section §13330 of the Water Code and Article 6 (commencing with Section 3867) of this Chapter.

(b) Certification is not intended and shall not be construed to apply to any activity involving a hydroelectric facility and requiring a FERC license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to Subsection §3855(b) of this Chapter and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

(c) Certification is conditioned upon total payment of any fee required under this Chapter and owed by the applicant.

If the above stated conditions are changed, any of the criteria or conditions as previously described are not met, or new information becomes available that indicates a water quality problem, the Regional Board may require the applicant to submit a report of waste discharge and obtain Waste Discharge Requirements.

In the event of any violation or threatened violation of the conditions of this certification, the holder of any permit or license subject to this certification shall be subject to any remedies, penalties, process or sanctions as provided for under state law. For purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification. Violations of the conditions of this certification may subject the applicant to civil liability pursuant to Water Code section 13350 and/or 13385.

This letter constitutes a Water Quality Standards Certification issued pursuant to Clean Water Act Section 401. I hereby issue an order certifying that any discharge from the referenced project will comply with the applicable provisions of Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act, and with other applicable requirements of State law.

This discharge is also regulated under State Water Resources Control Board Order No. 2003-0017-DWQ (Order No. 2003-0017-DWQ), "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received Water Quality Certification" which requires compliance with all conditions of this Water Quality Standards Certification. Order No. 2003-0017-DWQ is available at: www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0017.pdf

Should there be any questions, please contact Jason Bill at (951) 782-3295 or Marc Brown at (951) 321-4584.

Sincerely,

Kurt V. Berchtold
Executive Officer
Santa Ana Regional Water Quality Control Board

cc (via electronic mail):
LSA Associates, Inc. – Denise Woodward – denise.woodward@lsa-assoc.com
U. S. Army Corps of Engineers, Los Angeles Office - James Mace
CA Department of Fish and Wildlife – Kim Freeburn-Marquez
State Water Resources Control Board, Office of Chief Counsel-David Rice
State Water Resources Control Board DWQ -Water Quality Certification Unit
U.S. EPA -Supervisor of the Wetlands Regulatory Office WTR-8

# Appendix C
**U**SACE Non-Notifying
NWP #12

VCS Environmental
EXPERT SOLUTIONS | CEQA-NEPA . Biology . Regulatory

# Memorandum

Date: March 10, 2020

To: Miriam Yemane, U.S. Army Corps of Engineers

From: Wade Caffrey, VCS Environmental

Subject: Monteolivo Offsite Sewer Line Project: After-the-Fact Non-Notifying Nationwide Permit #12

The purpose of this memorandum is to provide the United States Army Corps of Engineers (USACE) with documentation that the Monteolivo Offsite Sewer Line Project has proceeded under a Non-notifying Nationwide Permit (NWP) #12 for temporary and permanent impacts to Waters of the United States. This notification is being submitted by VCS Environmental on behalf of the applicant, Mari Girgis, LLC. The requirements to submit a notification under NWP #12 are as follows:

> "The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to or along a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials."

The Monteolivo Offsite Sewer Line Project is located in the City of Corona, Riverside County, California. The Project constructed an underground sewer line off-site for the Monteolivo Residential Development Project (NWP Permit No. SPL-2014-00649-JEM) beneath an existing access road. In addition, an existing culvert was replaced and a headwall was installed at an off-site storm drain outlet. Impacts to waters of the U.S. included the widening, slope stabilization, and replacement of an existing culvert at an unnamed drainage.

Approximately 0.15 acre (1,200 linear feet) of temporary impacts occurred to the unnamed drainage (non-wetland waters of the U.S.) for slope stabilization of the adjacent access road and culvert replacement. The temporarily impacted features were returned to their pre-project

contours. In addition, 0.02 acre (135 linear feet) of permanent impacts to non-wetland waters of the U.S. occurred for placement of rip-rap within the unnamed drainage. None of these impacts are known to have occurred within a special aquatic site, including wetlands as defined in the 404(b)(1) Guidelines.

A section 1600 Operation of Law (No. 1600-2019-0139-R6) and Section 401 Notice of Violation (No. 33-2014-25) have been issued for impacts to both waters of the U.S. and waters of the State, both of which are included for your reference.

A notification to the USACE for this Project is not necessary because permanent loss of waters of the U.S. did not exceed 1/10-acre or 500 feet. In addition, the Project site did not involve mechanized land clearing in a forested wetland for the utility line right-of-way and the access road was not constructed within the jurisdictional waters. Furthermore, a Section 10 permit is not required because the impacted waters are non-navigable waters. VCS was not involved with the project when impacts occurred, however, the Applicant has stated that no impacts to Section 7 or Section 106 resources are known to have occurred.

Please contact me at wcaffrey@vcsenvironmental.com or 949.489.2700 extension 213 should you have any questions or comments.

Enclosures (2):

- 1600 Op-Law No. 1600-2019-0139-R6
- 401 NOV No. 332014-25

# Appendix D
Photopages



Photo 1. View to the southwest, concrete outlet into the unnamed draiange



Photo 2. View to the north of the unnamed drainage (left) and access road (right).



Photo 3. View to the northwest of the Riverside Canal.



Photo 4. View to the east of the water quality pond.

# Determination of

# Biologically Equivalent or Superior Preservation Report

## Monteolivo Sewer Line Project

City of Corona

**Mari Girgis, LLC**

*Emad Bolous*

*Tel: (949) 833-8813*

**VCS Environmental**

*Wade Caffrey*

*Tel: (949) 489-2700 x213*

**March 2020**

**Revised August 2020**

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D. Photopages

# 1 EXECUTIVE SUMMARY

Mari Girgis, LLC presents this after-the-fact Determination of Biologically Equivalent or Superior Preservation (DBESP) which incorporates the findings from a literature review and general field assessment conducted by VCS Environmental (VCS). VCS prepared this report for the Monteolivo Sewer Line Project (Project) following Project impacts, as further discussed in Section 2.

Pursuant to the Multiple Species Habitat Conservation Plan (MSHCP) Section 6.1.2, Protection of Species Associated with Riparian/Riverine and Vernal Pools Areas, a total of 0.917 acres of areas considered MSHCP Riparian/Riverine features were impacted within the Project site. The Project permanently impacted 0.017 acres of MHSCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources. The Project also temporarily impacted 0.34 acres of MSHCP Riverine Resources. No MSHCP vernal pool resources were impacted and no impacts to MSHCP Criteria Cells occurred.

As required under Operation of Law No. 1600-2019-0139-R6 (Appendix A), the Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total of 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through the purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District.

## 2 INTRODUCTION

### 2.1 Project Description

The Monteolivo Residential Development Project prepared an MSHCP Compliance Report in January 2014 to address impacts associated with grading for the construction of 103 single-family homes and associated on-site infrastructure. This DBESP report is being prepared to address impacts associated with the off-site Monteolivo Sewer Line Project located directly north of the residential development. No impacts to MSHCP Criteria Cells occurred. As further described below, impacts to MSHCP resources were not anticipated for the sewer line Project, but did occur and, therefore, this is being submitted as an after-the-fact DBESP. Please note, an after-the-fact Operation of Law was issued by the California Department of Fish and Wildlife on September 25, 2019 (Appendix A), a Notice of Violation was issued from the Regional Water Quality Control Board on August 15, 2019 (Appendix B) and a Non-Notifying Nationwide Permit #12 was submitted to the U.S. Army Corps of Engineers on March 9, 2020 (Appendix C).

The Monteolivo Residential Development Project required two off-site improvements. The first was an off-site 8" sewer line to be constructed in an access road between the Monteolivo site and the public sewer in Sherbourne Avenue. This line was not expected to impact MSHCP riparian or riverine resources. However, heavy rains caused significant erosion and a landslide buried the access road. Consequently, the sewer line to be constructed was relocated in the field 20-feet easterly, in order to protect the sewer improvements and access road. The adjacent Riverside Canal and an unnamed drainage to the Riverside Canal also had to be slope-stabilized as a result of the erosion and landslide. This included the replacement of the failed easterly bank in the Riverside Canal with un-grouted rip-rap and widening of the unnamed drainage.

Additionally, in order to finish an on-site storm drain, replacement of an existing culvert, installation of a headwall, and installation of approximately 135 linear feet of riprap for energy dissipation occurred. These improvements occurred directly north of the residential development project site; within the unnamed drainage. These improvements were also not contemplated in the 2014 MSHCP Compliance Report.

### 2.2 Project Area

The Project site is located approximately 0.2 miles east of interstate 15 and one mile south of the State Route 91. The Project site is regionally accessible from Ontario Avenue and State Street to the south. A regional and vicinity map are attached as Figures 1 and 2. The Project site is bounded by the impacted Monteolivo Residential Development Project to the south, an existing residential community to the west, and agricultural/open space to the east and north.

The topography throughout the Project site is generally flat. Elevations on the Project site range from approximately 700 feet above mean sea level (MSL) to 720 feet above MSL. The Project site is located within Section 32, Township 3 South and Range 6 West of the United States Geological Survey (USGS) Topographic Map, 7.5 Minute Series, Corona South Quadrangle, and is located on Assessor's Parcel Numbers 107-080-026, 107-080-034 (partial) and 107-080-036 (partial).

The Project Site is located in the Western Riverside MSHCP Temescal Canyon Area Plan and Gavilan Habitat Management Unit. The Project site and all impacts to MSHCP riparian/riverine features are not located within an MSHCP Area Plan Subunit, Criteria Cell, or Criteria Cell Group and are not located within any of the identified existing or proposed Cores and Linkages. The Project is not located within any conserved lands or public/quasi-public lands, however, is located adjacent to Criteria Cell 1923.

The Project site is located within the MSHCP survey area for burrowing owl (*Athene cunicularia*) and narrow endemic plant species San Diego ambrosia (*Ambrosia pumila*), Brand's phacelia (*Phacelia stellaris*), and San Miguel savory (*Clinopodium chandleri*). The Project site is not within a survey area for amphibians, mammals, or criteria area species.

The Project is located in the Santa Ana River watershed. The current drainage pattern includes an unnamed drainage that flows from south to north into the existing Riverside Canal, which eventually outlets into Temescal Creek (Reach 2). This eventually flow into the Santa Ana River, more than 4 miles north of the Project site.

## 3 RIPARIAN/RIVERINE MITIGATION (SECTION 6.1.2)

### 3.1 Methods

Section 6.1.2 of the MSHCP states that "riparian/riverine resources are lands which contain habitat dominated by trees, shrubs, persistent emergent [wetland plant species], or emergent mosses and lichens, which occur close to or which depend upon moisture from a nearby freshwater source; or areas with freshwater after flow during all or a portion of the year" and "Vernal pools are seasonal wetlands that occur in depression areas that have wetland indicators of all three parameters (soils, vegetation and hydrology) during the wetter portion of the growing season but normally lack wetland indicators of hydrology and/or vegetation during the drier portion of the growing season". To determine the areas where "Riparian/Riverine Areas and Vernal Pools" were present, the delineators reviewed previous biological, cultural, and construction reports on the adjacent Monteolivo Residential Development Project site; and reviewed historical aerial imagery.

A site visit to document the current condition of the Project site was conducted by VCS biologist Wade Caffrey on August 28, 2019 and current photographs are in Appendix D.

The boundaries of the pre- and post-construction riparian/riverine resources were determined primarily through the use of present and historical aerial imagery (Google 2019). The physical features of the channel banks and the dripline of any adjacent riparian vegetation extending beyond the bank edges were used to delineate the boundaries of the riparian/riverine resources. A map was compiled showing the impacted MSHCP Riparian/Riverine resources (Figure 3).

Please note, the extent of impacts to MSHCP Riparian/Riverine features are considered best estimates.

3.2 Results/Impacts

As shown in Table 1, permanent impacts occurred to approximately 0.017 acres of MSHCP riverine resources and 0.56 acres of riparian resources. In addition, temporary impacts to 0.34 acres of riverine resources also occurred (Figure 3). Please note, the widening of the unnamed drainage created an increase in MSHCP jurisdictional riverine waters by 0.24 acres, not reflected in the table below. No impacts to MSHCP riparian/riverine resources within a Criteria Cell occurred.

**Table 1**
**Impacts to Riparian/Riverine Resources Within the Project Site**

| Resource | Permanent Impact (acres) | Temporary Impact (acres) |
|---|---|---|
| MSHCP Riverine | 0.017 | 0.34* |
| MSHCP Riparian | 0.56 | 0.0 |
| **MSHCP TOTAL** | **0.577** | **0.34** |

*Does not include the 0.24 acres of created MSHCP riverine resources

A sewage treatment pond present on the Project site was also altered but was determined to not be a jurisdictional water of the U.S. or State due to its use as an isolated waste treatment facility. The sewage treatment pond would also not be considered an MSHCP riparian/riverine feature because it did not contain a freshwater source. A portion on the pond was converted into a water quality basin and the remainder still exists as a remnant pond, but no longer treats sewage.

No vernal pools, seasonal depressions or fairy shrimp habitat were observed through aerial review or the post-construction site visit in 2019. The Project site does not contain vegetative, hydrologic, or soil characteristics associated with vernal pool and fairy shrimp habitats. The United States Department of Agriculture Natural Resources Conservation Service (NRCS) Web

Soil Survey lists 1 soil type (Arbuckle Gravelly Loam, 2-9% slopes, dry) and 1 land type (Rough Broken Land) for the Project site; both of which are considered well-draining and therefore not suitable for vernal pools, seasonal depressions, and other fairy shrimp habitat. The field observations, combined with the NRCS identifying a well-drained soil profile on the Project site, determined the lack of vernal pools and seasonal depressions on the Project site.

In regard to fairy shrimp, three species are covered by the MSHCP including the Riverside fairy shrimp (*Streptocephalus woottoni*), Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*), and vernal pool fairy shrimp (*Branchinecta lynchi*). According to the MSHCP, vernal pool fairy shrimp habitat is limited to vernal pools and alkali vernal pools, and Santa Rosa Plateau fairy shrimp are limited to vernal pools formed on basalt flows. No portion of the Project site is described as having an alkali complex or basalt flows. In addition, no form of vernal pools are considered to be present on the Project site and therefore Santa Rosa Plateau and vernal pool fairy shrimp are not either.

The Riverside fairy shrimp however is known to inhabit more than just vernal pools, including depressions and road ruts. Aside from the sewage treatment pond, no other depressions or road ruts were observed or inundated on aerial imagery or during the post-construction site visit in 2019. The aforementioned remnant sewage treatment pond would not be considered suitable habitat for Riverside fairy shrimp because up until Project impacts the pond contained sewage not believed to be suitable for fairy shrimp.

## 3.3 Mitigation and Equivalency

### *3.3.1 Direct Effects*

Pursuant to the CDFW Operation of Law, the Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District. The implementation of this mitigation is expected to be biologically superior to that of the impacted areas because it will result in an increase of quality habitat and will be funded through a mitigation bank which will ensure the enhancement area to be protected in perpetuity.

### *3.3.2 Indirect Effects*

During construction, standard BMP's such as silt fencing and sandbags/straw wattles were implemented where appropriate to prevent impacts to downstream waters. No known indirect effects occurred to MSHCP jurisdictional features and therefore no mitigation is proposed.

## 4 RIPARIAN BIRDS (SECTION 6.1.2)

The MSHCP lists five bird species for protection based off association with riparian/riverine and vernal pool habitats. These species include bald eagle (*Haliaeetus leucocephalus*), least Bell's vireo (*Vireo bellii pusillus*), peregrine falcon (*Falco peregrinus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and western yellow-billed cuckoo (*Coccyzus americanus occidentalis).*

### 4.1 Methods

No general or focused surveys for riparian birds occurred prior to Project implementation.

A review of relevant available literature on riparian habitat and birds within the Project site and vicinity was conducted. Riparian birds that have the potential to occur within the immediate region of the Project site were identified. Several agencies, including the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW), publish lists of particular taxa (species and subspecies) and the associated level of protection or concern associated with each. VCS reviewed and consulted literature and databases focused on the Project site, and included the following sources listed below:

- The California Natural Diversity Database (CNDDB), a CDFW species account database that inventories status and locations of special status species in California, was used to identify any riparian birds that may exist within a two-mile radius of the Project site (CDFW 2019). CNDDB records are generally used as a starting point when determining what special status species, if any, may occur in a particular area. However, these records may be old, lack data not yet entered, and do not represent all the special status species that could be in that particular area.

- A map of USFWS critical habitat to determine species with critical habitat mapped in the general vicinity of the Project (USFWS 2019).

- Pertinent maps, scientific literature, websites, and regional flora and fauna field guides

### 4.2 Results/Impacts

The California Natural Diversity Data Base records show recent occurrences (2006, 2010, and 2014) of least Bell's vireo from within the project limits. Least Bell's vireo were observed adjacent to the impact areas after Project activities (LSA 2018) were complete, however, no known impacts to least Bell's vireo occurred.

No additional MSHCP covered riparian birds were observed within the Project site following Project impacts.

4.3 Mitigation and Equivalency

No known direct or indirect impacts to least Bell's vireo or other MSHCP covered riparian bird species occurred and therefore no mitigation is proposed.

## 5 NARROW ENDEMIC PLANT SPECIES MITIGATION (SECTION 6.1.3)

5.1 Methods

No focused narrow endemic plant surveys were conducted prior to Project impacts. Habitat suitability for narrow endemic plant species was reviewed using the definitions listed in table 6-1 of the MSHCP.

5.2 Results/Impacts

No suitable habitat for the narrow endemic plant survey species is present on the Project site, as further detailed in Table 2 below.

**Table 2: Narrow Endemic and Plant Survey Species Habitat Suitability**

| Species | MSHCP Habitat | Habitat Suitability |
|---|---|---|
| San Diego ambrosia *(Ambrosia pumila)* | Occurs on open floodplain terraces on Gerretson gravelly fine sandy loams, or in the watershed margins of vernal pools or alkali playas on Las Posas loam in close proximity to willow silty alkaline soils. Occurs in sparse annual vegetation | Unsuitable. No Garretson gravelly fine sandy loams, vernal pools, or alkali playas on Las Posas loam. |
| Brand's phacelia *(Phacelia stellaris)* | Occurs in coastal scrub habitats on sandy washes or benches in alluvial floodplains. The species is generally dependent on periodic flooding and sediment transport. The MSHCP account for this species states that "within western Riverside county, Brand's phacelia is restricted to sandy benches along the Santa Ana River. | Unsuitable. Typical habitat conditions are not present. |
| San Miguel Savory *(Satureja chandleri)* | Occurs on rocky, gabbroic, or metavolcanic substrates in chaparral or oak woodlands. | Unsuitable. Non-rocky, gabbroic, or metavolcanic substrates |

5.3 Mitigation and Equivalency

No known direct or indirect impacts to narrow endemic plant species occurred and therefore no mitigation is proposed.

## 6 ADDITIONAL SURVEY NEEDS AND PROCEDURES (SECTION 6.3.2)

6.1 Criteria Area Species Survey

Surveys for Criteria Area species are not required for this Project under MSHCP Section 6.3.2.

6.2 Burrowing Owl

As shown on Figure 4, the Project site falls within the MSHCP burrowing owl survey area.

### *6.2.1 Methods*

No focused or pre-construction burrowing owl surveys were conducted prior to Project impacts.

### *6.2.2 Results/Impacts*

No known direct or indirect impacts to narrow endemic plant species occurred.

### *6.2.3 Mitigation and Equivalency*

No known direct or indirect impacts to burrowing owl occurred.

6.3 Criteria Area Species Survey – Mammals

Surveys for Criteria Area mammal species are not required for this Project under MSHCP Section 6.3.2.

6.4 Criteria Area Species Survey – Amphibians

Surveys for Criteria Area amphibian species are not required for this Project under MSHCP Section 6.3.2.

## 7 ADDITIONAL CONSIDERATIONS

7.1 Delhi Sands Flower-Loving Fly

Delhi soil types are not mapped within the Project site, and therefore, no surveys are required for the Delhi Sands flower-loving fly.

## 7.2 Criteria Cell

The Project site is not located within a Criteria Cell however is adjacent to Criteria Cell 1923 (Figure 4). No impacts to a Criteria Cell occurred. The portion of the Project site adjacent to Criteria Cell 1923 has been previously affected by development and is not located within or nearby the portions of the Criteria Cell dedicated for conservation. Therefore, pursuant to Section 6.1.4 *Guidelines Pertaining to the Urban Wildlands Interface,* the Project did not create edge effects on any conserved habitat, reserve lands, or public quasi/public conserved lands.

To prevent any indirect impacts to the adjacent Criteria Cell, standard BMP's were used during construction including the use of silt fencing and sandbags/straw wattles where appropriate.

## 7.3 Wildlife Movement

The Project is not located within an MSHCP Area Plan Subunit, Criteria Cell, or Criteria Cell Group and is not located within any of the identified existing or proposed Cores and Linkages; therefore, the site is not considered to function as a regional wildlife movement area. It is possible that the Project site functions in local wildlife movement, however, due to the existing and on-going development to the west and south, it is unlikely that the site plays a critical role in local wildlife movement.

## 7.4 Hydrology

The Project is located in the Santa Ana River watershed. The current drainage pattern includes an unnamed drainage that flows from south to north into the existing Riverside Canal, which flows east and outlets into Temescal Creek (Reach 2). This eventually flows into the Santa Ana River, more than 4 miles north of the Project site. Project impacts did not alter the general drainage pattern of the unnamed drainage or the Riverside canal.

The sewage treatment basin was an isolated system created in the 1980's for the purpose of retaining and decomposing organic matter from the sewer discharge of adjacent properties. The City of Corona, along with the Regional Water Quality Control Board, asked the Monteolivo Residential Development Project to connect the neighboring community to their proposed sewer line to eliminate the problematic sewage treatment pond. The sewage treatment pond was divided in two, and a portion of the basin was improved as a water quality basin to detain runoff from residential areas in the upper watershed of Monteolivo Residential Project and groundwater discharge. The water quality basin will receive water from storm drain and irrigation runoff from the Monteolivo Residential Project once it is built out.

*Flood Storage*

The unnamed drainage was widened and therefore has a greater amount of flood storage than compared to pre-project conditions, making the post-project conditions biologically superior. The flood storage of the Riverside Canal was not altered due to Project impacts.

*Sediment and Toxic Trapping*

The post-construction water quality basin, remnant pond, unnamed drainage, and Riverside Canal will continue to trap sediments from the project site and the upper watershed in the same manner as the pre-construction site conditions. In addition, the constructed water quality basin is designed to trap and settle toxins in the water to allow algae, fungi, and soil bacteria to decompose inorganic and organic chemicals. These features make it biologically superior to the pre-construction sewage treatment pond.

## 8 Mitigation

As discussed above, the Monteolivo Sewer Line Project plans to purchase mitigation for impacts to MSHCP riparian/riverine resources. The Project proposes to mitigate for permanent impacts to 0.017 acres of MSHCP Riverine Resources and 0.56 acres of MSHCP Riparian Resources though the purchase of mitigation at a 2:1 ratio for a total of 1.15 acres of credits. The Project also proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through the purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits. All credits purchased would be ephemeral enhancement credits though the Riverside-Corona Resource Conservation District.

## 9 REFERENCES


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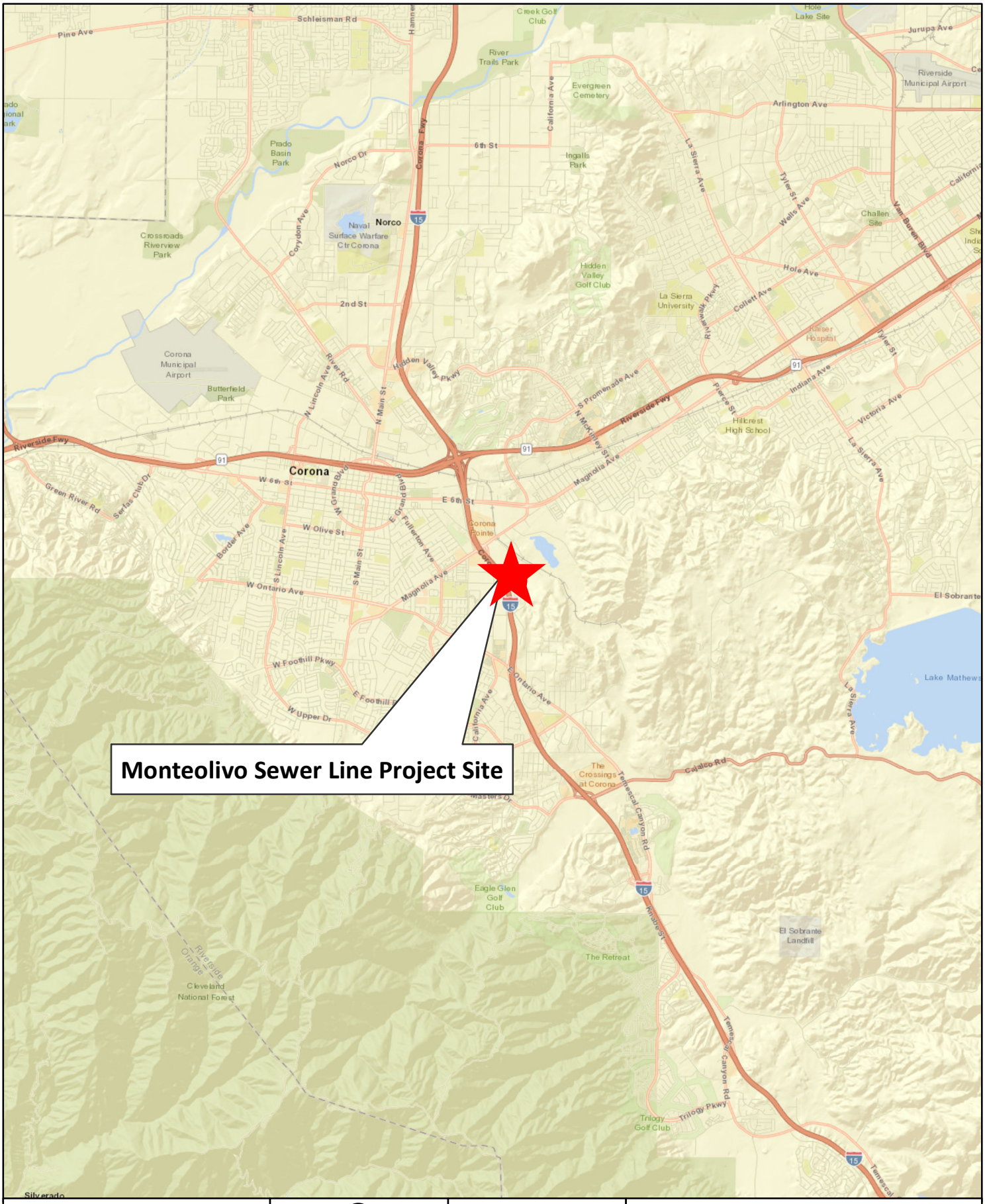
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# Figures




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources: ESRI

0 0.5 1 Miles
1 in = 2 miles

**Figure 1**

**Mari Girgis, LLC**
**Monteolivo Sewer Line Project**

Regional Map




Prepared By:
VCS Environmental

Map Created: August 2020
Data Sources:
ESRI

0 500 1,000 Feet
1 in = 800 feet

**Figure 2**

**Mari Girgis, LLC**
**Monteolivo Sewer Line Proejct**

Vicinity Map




Prepared By:
VCS Environmental

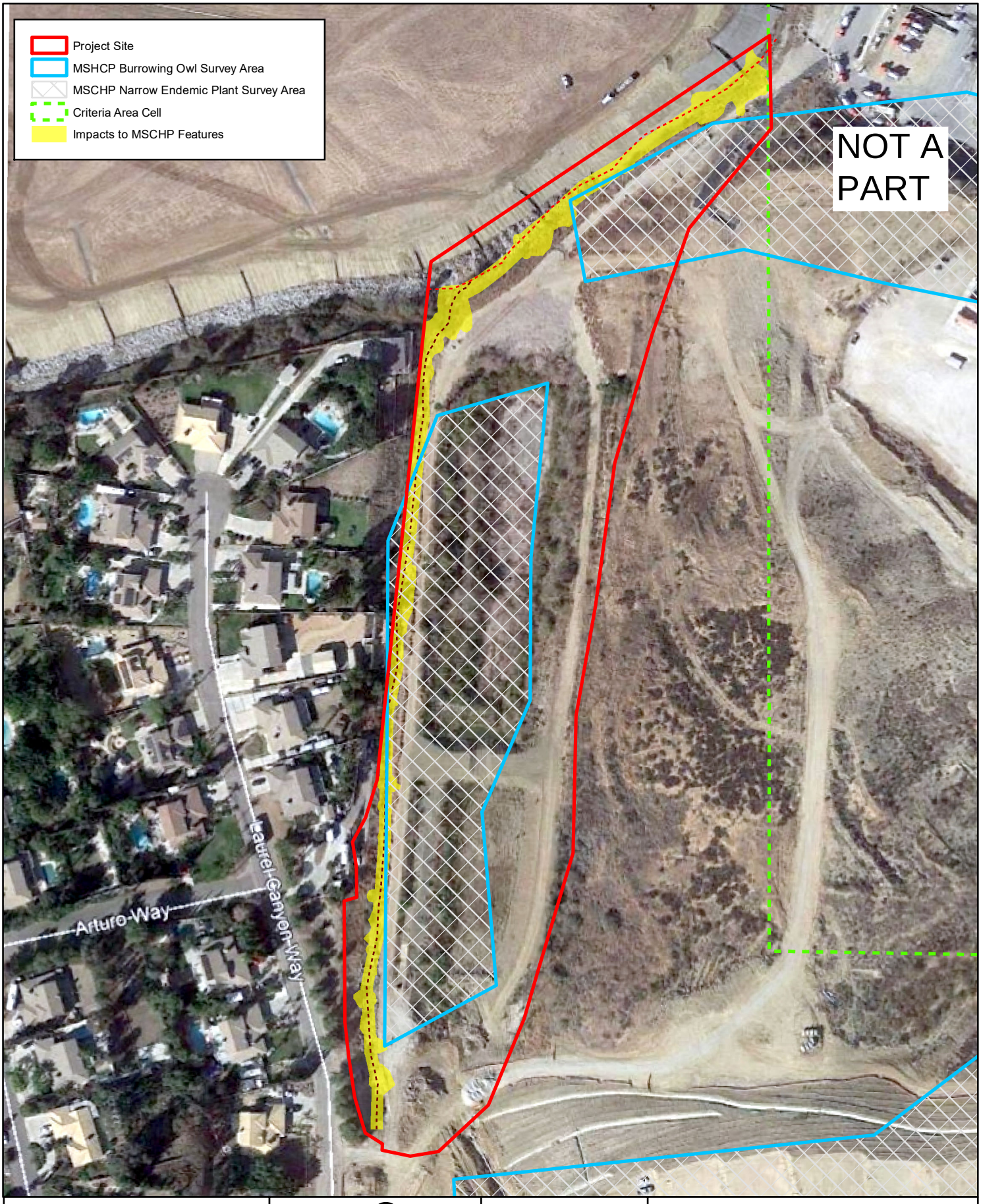
Map Created: August 2020
Data Sources:
Google Earth, LSA, VCS

0 100 200 ft
1 in = 200 feet

*Not including the created 0.24 acres of riverine features

Figure 3

Mari Girgis, LLC
Monteolivo Sewer Line Project
**Impacts to MSHCP Riparian/Riverine Features**




Prepared By:
VCS Environmental

Map Created: August 2020
Data Sources:
MSHCP

0 100 200 ft
1 in = 200 feet

Mari Girgis, LLC
Monteolivo Sewer Line Project

**MSHCP Survey Areas**

**Appendix A**
CDFW Operation of Law
and Application

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
3602 Inland Empire Boulevard, Suite C-220
Ontario, CA 91764
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

September 25, 2019

Emad Bolous
Mari Girgis, LLC
4030 Birch Street, Suite 100
Newport Beach, CA 92660

**Notification of Streambed Alteration, Notification No. 1600-2019-0139-R6, Monteolivo Sewer Line Project**

Dear Mr. Bolous:

The California Department of Fish and Wildlife (CDFW) had until August 22, 2019 to submit a draft Streambed Alteration Agreement (Agreement) to you or inform you that an Agreement is not required. CDFW did not meet that date. As a result, by law, you may now complete the project described in your notification without an Agreement.

Please note that pursuant to Fish and Game Code section 1602, subdivision (a)(4)(D), if you proceed with this project, it must be the same as described and conducted in the same manner as specified in the notification and any modifications to that notification received by CDFW in writing prior to May 28, 2019. This includes completing the project within the proposed term and seasonal work period and implementing all avoidance and mitigation measures to protect fish and wildlife resources specified in the notification. If the term proposed in your notification has expired, you will need to re-notify CDFW before you may begin your project. Beginning or completing a project that differs in any way from the one described in the notification may constitute a violation of Fish and Game Code section 1602.

*Your notification proposes work within Riverside Canal and an unnamed tributary of Temescal Wash, and ultimately the Santa Ana River, within Riverside County, California; latitude 33.8583 and longitude -117.5331. The project involves slope stabilization, bank repair, installation of an on-site storm drain, replacement of a culvert with headwall and 135 linear feet of riprap for energy dissipation. The project proposes 0.34 acres of temporary impacts and 0.58 acres of permanent impacts to resources subject to Fish and Game Code section 1600 et seq. You have proposed to implement standard best management practices to prevent sediment and pollutants from entering the downstream areas. You have proposed to mitigate through purchase of a total of 1.494 acres of ephemeral streambed enhancement at Riverside Corona Resources Conservation District.*

*Your project term ends on August 22, 2021.*

Also note that while you are entitled to complete the project without an Agreement, you are still responsible for complying with other applicable local, state, and federal laws.

These include, but are not limited to, Fish and Game Code sections 2080 *et seq.* (species listed as threatened or endangered, or a candidate for listing under the California Endangered Species Act); section 1908 (rare native plants); sections 3511, 4700, 5050, and 5515 (fully protected species); section 3503 (bird nests and eggs); section 3503.5 (birds of prey); section 5650 (water pollution); section 5652 (refuse disposal into water); section 5901 (fish passage); section 5937 (sufficient water for fish); and section 5948 (obstruction of stream).

Finally, if you decide to proceed with your project without an Agreement, you must have a copy of this letter and your notification with all attachments available at all times at the work site.

If you have questions regarding this letter, please contact Brandy Wood, Environmental Scientist, at 909-483-6319 or by email at Brandy.Wood@wildlife.ca.gov.

Sincerely,

For

Scott Wilson
Environmental Program Manager

ec: California Department of Fish and Wildlife

| *FOR DEPARTMENT USE ONLY* | | | | |
|---|---|---|---|---|
| *Date Received* | *Amount Received* | *Amount Due* | *Date Complete* | *Notification No.* |
| | *$* | *$* | | |
| *Assigned to:* | | | | |

# NOTIFICATION OF LAKE OR STREAMBED ALTERATION

**Complete EACH field, unless otherwise indicated, following the instructions and submit ALL required enclosures, attachments, and fee(s) to the CDFW regional or field office that serves the area where the project will occur. Attach additional pages to notification, if necessary.**

## 1. APPLICANT PROPOSING PROJECT

| | |
|---|---|
| Name | Emad Bolous |
| Business/Agency | Mari Girgis, LLC |
| Mailing Address | 4030 Birch Street, Suite 100 |
| City, State, Zip | Newport Beach, CA 92660 |
| Phone Number | 949-833-8813 |
| Email | ebolous@aol.com |

## 2. CONTACT PERSON (*Complete only if different from applicant.*)

| | |
|---|---|
| Name | Wade Caffrey |
| Business/Agency | VCS Environmental |
| Mailing Address | 30900 Rancho Viejo Road |
| City, State, Zip | San Juan Capistrano, CA 92675 |
| Phone Number | 949-489-2700 ext. 213 |
| Email | wcaffrey@vcsenvironmental.com |

While an applicant is legally responsible for complying with Fish and Game Code section 1602 et seq., an applicant may designate and authorize an agent (e.g., lawyer, consultant, or other individual) to act as a Designated Representative. The Designated Representative is authorized to sign the notification and any agreement on behalf of the Applicant.

**Do you authorize the Contact Person above to represent you as your Authorized Designated Representative?**

| | |
|---|---|
| ☑ Yes, I authorize. | ☐ No, I do not authorize. |

## 3. PROPERTY OWNER (*Complete only if different from applicant*)

| | |
|---|---|
| Name | Belaire HOA |
| Mailing Address | P.O. Box 77134 |
| City, State, Zip | Corona, CA 92877 |
| Phone Number | |
| Email | |

**4. PROJECT NAME AND AGREEMENT TERM**

| | | | | |
|---|---|---|---|---|
| A. Project Name | Monteolivo Sewer Line Project | | | |
| B. Agreement Term Requested | ☑ Regular (*5 years or less*)<br>☐ Long-term (*greater than 5 years)* | | | |
| C. Project Term | Beginning (*year*) | 2016 | Ending (*year*) | 2021 |

D. Seasonal Work Period

| Season(s)* | Start Date (*month/day*) | End Date (*month/day*) | E. Number of Work Days |
|---|---|---|---|
| 1 | 01/01 | 12/31 | 365 |
| 2 | 01/01 | 12/31 | 365 |
| 3 | 01/01 | 12/31 | 365 |
| 4 | 01/01 | 12/31 | 365 |
| 5 | 01/01 | 12/31 | 365 |

** Continue on additional page(s) if necessary*

**5. AGREEMENT TYPE**

Check the applicable box. If boxes B – F are checked, complete the specified attachment.

| | | |
|---|---|---|
| A. | ☑ Standard *(Most construction projects, excluding the categories listed below)* | |
| B. | ☐ Gravel/Sand/Rock Extraction (*Attachment A*) | *Mine I.D. Number:* _____ |
| C. | ☐ Timber Harvesting (*Attachment B*) | *THP Number:* _____ |
| D. | ☐ Water Diversion/Extraction/Impoundment (*Attachment C*) | *SWRCB Number:* _____ |
| E. | ☐ Routine Maintenance (*Attachment D*) | |
| F. | ☐ Cannabis Cultivation (*Attachment E*) | |
| G. | ☐ CDFW Grant Programs | *Agreement Number:* _____ |
| H. | ☐ Master | |
| I. | ☐ Master Timber Operations | |

## 6. FEES

See the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. ***Note: CDFW may not process this notification until the correct fee has been received.***

| | A. Project Name | B. Project Cost | C. Project Fee |
|---|---|---|---|
| 1 | Monteolivo Project | $325,000 | $4,460.50 |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| | | D. Base Fee *(if applicable)* | |
| | | **E. TOTAL FEE*** | $4,460.50 |

** Check, money order, and Visa or MasterCard (select Environmental Fees from Menu) payments are accepted.*

## 7. PRIOR NOTIFICATION AND ORDERS

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, CDFW for the project described in this notification?

☑ Yes (*Provide the information below*) ☐ No

| Applicant | Notification Number | Date |
|---|---|---|
| Nova Homes, Inc. | 1600-2014-0218-R6 | 04/16/2015 |

B. Is this notification being submitted in response to a court or administrative order or notice, or a notice of violation (NOV) issued by CDFW?

☑ Yes ☐ No (*Enclose a copy of the order, notice, or NOV. If the applicant was directed to notify CDFW verbally rather than in writing, identify the person who directed the applicant to submit this notification, the agency he or she represents, and describe the circumstances relating to the order.*)

| Name of person who directed notification | Agency |
|---|---|
| Claire Ingel | CDFW |

Describe circumstances relating to order

An off-site property adjacent to the existing Monteolivo Residential Development property was used to construct a sewer line for the development and surrounding communities, as well as decomission an existing sewage treatment pond per the Project's Conditions of Approval. Permits from the wildlife agencies were not acquired for the off-site property prior to impacts to jurisdictional features.

☐ *Continued on additional page(s)*

## 8. PROJECT LOCATION

A. Address or description of project location.
(*Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway.*)

The Project is located approximately 0.2 miles east of interstate 15 and one mile south of the State Route 91. The northwest portion of the proposed project is bisected by Laurel Canyon Way. The Project site is regionally accessible from Ontario Avenue and State Street to the south. A regional and vicinity map are attached as Figures 1 and 2.

☐ *Continued on additional page(s)*

| | |
|---|---|
| B. River, stream, or lake affected by the project. | Riverside Canal and unnamed drainage to Riverside Canal |
| C. What water body is the river, stream, or lake tributary to? | Temescal Wash |
| D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts? | ☐ Yes ☑ No ☐ Unknown |
| E. County | Riverside County |

| F. USGS 7.5 Minute Quad Map Name | G. Township | H. Range | I. Section | J. ¼ Section |
|---|---|---|---|---|
| Corona South, California | 3 South | 6 West | 32 | |
| | | | | |
| | | | | |

☐ *Continued on additional page(s)*

K. Meridian (check one) ☐ Humboldt ☐ Mt. Diablo ☑ San Bernardino

L. Assessor's Parcel Number(s)

| | |
|---|---|
| 107-080-026 | 107-080-036 (partial) |
| 107-080-034 (partial) | |

☐ *Continued on additional page(s)*

M. Geographic coordinates (*Provide the latitude and longitude coordinates for the property where the project(s) will take place. CDFW utilizes decimal degrees and WGS 84 datum. Access Google Maps Help if you need assistance in finding your coordinates.)*

| | | |
|---|---|---|
| Latitude/Longitude | *Latitude:* 33.8583 | *Longitude:* -117.5331 |
| | *Latitude:* 33.8616 | *Longitude:* -117.5329 |
| | *Latitude:* 33.8625 | *Longitude:* -117.5312 |
| | *Latitude:* 33.8610 | *Longitude:* -117.5321 |
| | *Latitude:* 33.8584 | *Longitude:* -117.5325 |

## 9. PROJECT CATEGORY

| WORK TYPE | NEW CONSTRUCTION | REPLACE EXISTING STRUCTURE | REPAIR-MAINTAIN-OPERATE EXISTING STRUCTURE |
|---|---|---|---|
| Bank stabilization – bioengineering/recontouring | ☑ | ☐ | ☐ |
| Bank stabilization – rip-rap/retaining wall/gabion | ☑ | ☑ | ☐ |
| Boat dock/pier | ☐ | ☐ | ☐ |
| Boat ramp | ☐ | ☐ | ☐ |
| Bridge | ☐ | ☐ | ☐ |
| Channel clearing/vegetation management | ☐ | ☐ | ☐ |
| Culvert | ☐ | ☑ | ☐ |
| Debris basin | ☐ | ☐ | ☐ |
| Dam | ☐ | ☐ | ☐ |
| Filling of wetland, river, stream, or lake | ☑ | ☐ | ☐ |
| Geotechnical survey | ☐ | ☐ | ☐ |
| Habitat enhancement – revegetation/mitigation | ☐ | ☐ | ☐ |
| Levee | ☐ | ☐ | ☐ |
| Low water crossing | ☐ | ☐ | ☐ |
| Road/trail | ☐ | ☐ | ☐ |
| Sediment removal: pond, stream, or marina | ☐ | ☐ | ☐ |
| flood control | ☐ | ☐ | ☐ |
| Storm drain outfall structure | ☐ | ☑ | ☐ |
| Temporary stream crossing | ☐ | ☐ | ☐ |
| Utility crossing: horizontal directional drilling | ☐ | ☐ | ☐ |
| jack/bore | ☐ | ☐ | ☐ |
| open trench | ☐ | ☐ | ☐ |
| Water diversion without facility | ☐ | ☐ | ☐ |
| Water diversion with facility | ☐ | ☐ | ☐ |
| Other *(specify)*: | ☐ | ☐ | ☐ |

**10. PROJECT DESCRIPTION**

A. Describe the project in detail. Include photographs of the project location and immediate surrounding area.

- Written description of all project activities with detailed step-by-step description of project implementation.
- Include any structures (e.g., rip-rap, culverts) that will be placed or modified in or near the stream, river, or lake, and any channel clearing.
- Specify volume, and dimensions of all materials and features (e.g., rip rap fields) that will be used or installed.
- If water will be diverted or drafted, specify the purpose or use and include Attachment C.
- Enclose diagrams, drawings, design plans, construction specifications, and maps that provide all of the following: site specific construction details; dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, stockpile areas, areas of temporary disturbance, and where the equipment/machinery will access the project area.
  - A helpful resource to assist in the development of quality PDF maps in Google Earth. See Using Google Earth to Map your Property (PDF).

This application is being submitted as an after-the-fact SAA Notification for the Monteolivo Sewer Line Project (Project).

The Monteolivo Residential Development Project obtained a CDFW Operation of Law dated April 16, 2015 (SAA #1600-2014-0218-R6) for impacts associated with grading for the construction of 103 single-family homes and associated on-site infrastructure.

The Project required two off-site improvements. The first was an off-site 8Žsewer line to be constructed in an access road between the Monteolivo site and the public sewer in Sherbourne Avenue. This line was not expected to impact waters of the State. However, heavy rains caused significant erosion and a landslide buried the access road. Consequently, the sewer line to be constructed was relocated in the field 20-feet easterly. In order to protect the sewer improvements and access road, the adjacent Riverside Canal and an unnamed drainage to the Riverside Canal had to be slope-stabilized. This included the replacement of the failed easterly bank in the Riverside Canal with un-grouted rip-rap and widening of the unnamed drainage.

The second improvement was not contemplated in the original 1600 application. In order to finish an on-site storm drain, replacement of an existing culvert, installation of a headwall, and installation of approximately 135 linear feet of riprap for energy dissipation occurred. These improvements occurred directly north of the residential development project site; within the off-site portion of the unnamed drainage.

Post-construction site photographs are attached as Appendix A.

☐ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

Construction equipment, including but not limited to dozers, excavators, and dump trucks were required for this work.

☐ *Continued on additional page(s)*

| | |
|---|---|
| C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B). | ☐ Yes ☑ No (*Skip to box 11*) |
| D. Will the project require work in the wetted portion of the channel? | ☐ Yes (*Enclose a plan to divert water around work site*)<br>☑ No |

## 11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

Permanent Impacts:
-0.017 acres of permanent impacts occurred to streambed waters of the State for placement of rip rap in the unnamed drainage.
-0.56 acres of permanent impacts occurred to riparian waters of the State for removal of riparian vegetation within the Riverside Canal and unnamed drainage.
Temporary Impacts:
-0.34 acres of temporary impacts occurred to streambed waters of the state for widening of the unnamed drainage and replacement of rip rap in the Riverside Canal

Note: The total acreage of streambed waters of the State within the unnamed drainage increased by 0.24 acres post-construction due to widening of the drainage. Impacts can be seen on Figure 3.

☐ *Continued on additional page(s)*

B. Will the project affect any vegetation? ☑ Yes (*Complete the tables below*) ☐ No *(Include aerial photo with date supporting this determination)*

| Vegetation Type | Temporary Impact | Permanent Impact |
|---|---|---|
| Disturbed | Linear feet: _____ Total area: 0.34 | Linear feet: _____ Total area: 0.02 |
| Riparian | Linear feet: _____ Total area: _____ | Linear feet: _____ Total area: 0.56 |

| Tree Species | Number of Trees to be Removed | Trunk Diameter (range) |
|---|---|---|
| Freemont cottonwood (Populus fremontii) | 2 | N/A |
| Goodding's willow (Salix goodingii) | 12 | N/A |
| arroyo willow (Salix lasiolepis) | 12 | N/A |
| blue elderberry (Sambucus nigra ssp. cerulea) | 12 | N/A |

*numbers approximate based on aerial review

☐ *Continued on additional page(s)*

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

☑ Yes *(List each species and/or describe the habitat below)* ☐ No ☐ Unknown

Least Bell's vireo (FE, SE) were observed adjacent to waters of the State impact areas after Project activities were complete. No known impacts to Least Bell's vireo occurred.

☐ *Continued on additional page(s)*

D. Identify the source(s) of information that supports a "yes" or "no" answer above in Box 11.C.

-CNDDB
-Observed adjacent to impact areas.

☐ *Continued on additional page(s)*

E. Has a biological study been completed for the project site?

☐ Yes (*Enclose the biological study*) ☑ No

*Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.*

F. Has one or more technical studies (e.g., engineering, hydrologic, geological, or geomorphological) been completed for the project or project site?

☑ Yes *(Enclose the study(ies))* ☐ No *Hydrology report included as Appendix B

*Note: One or more technical studies may be required to evaluate potential project impacts to a lake or streambed.*

G. Have fish or wildlife resources or waters of the state been mapped or delineated on the project site?

☑ Yes (*Enclose the mapped results*) ☐ No

*Note: Check "yes" if fish and wildlife resources or waters of the state on the project site have been mapped or delineated. "'Wildlife' means and includes all wild animals, birds, plants, fish, amphibians, reptiles and related ecological communities, including the habitat upon which the wildlife depends." (Fish & G. Code, § 89.5.) If "yes" is checked, submit the mapping or delineation. If the mapping or delineation is in digital format (e.g., GIS shape files or KMZ), you must submit the information in this format for CDFW to deem your notification complete. If "no" is checked, or the resolution of the mapping or delineation is insufficient, CDFW may request mapping or delineation (in digital or non-digital format), or higher resolution mapping or delineation for CDFW to deem the notification complete.*

**12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES**

A. Describe the techniques that will be used to prevent sediment, hazardous, or other deleterious materials from entering watercourses during and after construction.

Techniques used during construction to prevent sediment and pollutants from entering the watercourse included the use silt fencing, sandbags/straw wattles where appropriate and designating equipment staging locations outside of the drainage. Post construction, the drainages were slope-stabilized (which included the installation/replacement of rip rap) to prevent erosion.

☐ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

Vegetation removal only occurred in areas necessary to complete Project activities.

☐ *Continued on additional page(s)*

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

(1) The Project proposes to mitigate for permanent impacts to 0.017 acres of streambed waters of the State though purchase of mitigation at a 2:1 ratio for a total of 0.034 acres of credits.
(2) The Project proposes to mitigate for permanent impacts to 0.56 acres of riparian waters of the State through purchase of mitigation at a 2:1 ratio for a total of 1.12 acres of credits.
(3) The Project proposes to mitigate for temporary impacts to 0.34 acres of streambed waters of the State through purchase of mitigation at a 1:1 ratio for a total of 0.34 acres of credits.

*All credits purchased would be ephemeral enhancement through the Riverside-Corona Resource Conservation District*

☐ *Continued on additional page(s)*

## 13. PERMITS

List any local, State, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

| | | | |
|---|---|---|---|
| A. | USACE 404 NWP | ☑ Applied | ☐ Issued |
| B. | RWQCB 401 WQC | ☑ Applied | ☐ Issued |
| C. | MSHCP DBESP & Consistency Analysis - drafted for submittal | ☐ Applied | ☐ Issued |

D. Unknown whether ☐ local, ☐ State, or ☐ federal permit is needed for the project. (*Check each box that applies*)

☐ *Continued on additional page(s)*

## 14. ENVIRONMENTAL REVIEW

| | | | |
|---|---|---|---|
| A. Has a CEQA lead agency been determined? | ☑ Yes (*Complete boxes B, C, D, E, and F*) ☐ No (*Skip to box 14.G*) | | |
| B. CEQA Lead Agency | City of Corona | | |
| C. Contact Person | Sandra Yang | D. Phone Number | 951-736-2262 |

E. Has a draft or final document been prepared for the project pursuant to CEQA and/or NEPA?

☐ Yes (*Check the box below for each CEQA or NEPA document that has been prepared and enclose a copy of each.*)

☑ No (*Check the box below for each CEQA or NEPA document listed below that will be or is being prepared.*)

| | | |
|---|---|---|
| ☐ Notice of Exemption | ☑ Mitigated Negative Declaration | ☐ NEPA document (*type*): |
| ☑ Initial Study | ☐ Environmental Impact Report | |
| ☐ Negative Declaration | ☐ Notice of Determination *(Enclose)* | |
| ☐ THP/ NTMP | ☐ Mitigation, Monitoring, & Reporting Plan | |

F. State Clearinghouse Number (*if applicable*)

G. If the project described in this notification is not the "whole project" or action pursuant to CEQA, briefly describe the entire project (Cal. Code Regs., tit. 14 § 15378).

☐ *Continued on additional page(s)*

H. Has a CEQA filing fee been paid pursuant to Fish and Game Code section 711.4?

☐ Yes (*Enclose proof of payment*) ☑ No (*Briefly explain below the reason a CEQA filing fee has not been paid)*

*Note: The CEQA filing fee is in addition to the notification fee. If a CEQA filing fee is required, the Lake or Streambed Alteration Agreement may not be finalized until paid.*

An addendum to the IS/MND is being prepared and a NOD + fees will be paid.

**15. SITE INSPECTION**

Check one box only.

☐ In the event CDFW determines that a site inspection is necessary, I hereby authorize a CDFW representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant CDFW such entry.

☑ I request CDFW to first contact (*insert name*) Wade Caffrey - VCS Environmental at (*insert phone number or email address*) wcaffrey@vcsenvironmental.com to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay CDFW's determination as to whether a Lake or Streambed Alteration Agreement is required and/or CDFW's issuance of a draft agreement pursuant to this notification.

**16. DIGITAL FORMAT**

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?

☑ Yes (Please enclose the information via digital media with the completed notification form.)

☐ No

**17. SIGNATURE**

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, CDFW may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless CDFW has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

Emad Bolous
Signature of Applicant or Applicant's Authorized Representative

5/21/19
Date

Emad Bolous
Print Name




Prepared By:

VCS Environmental

Map Created: March 2019

Data Sources: ESRI

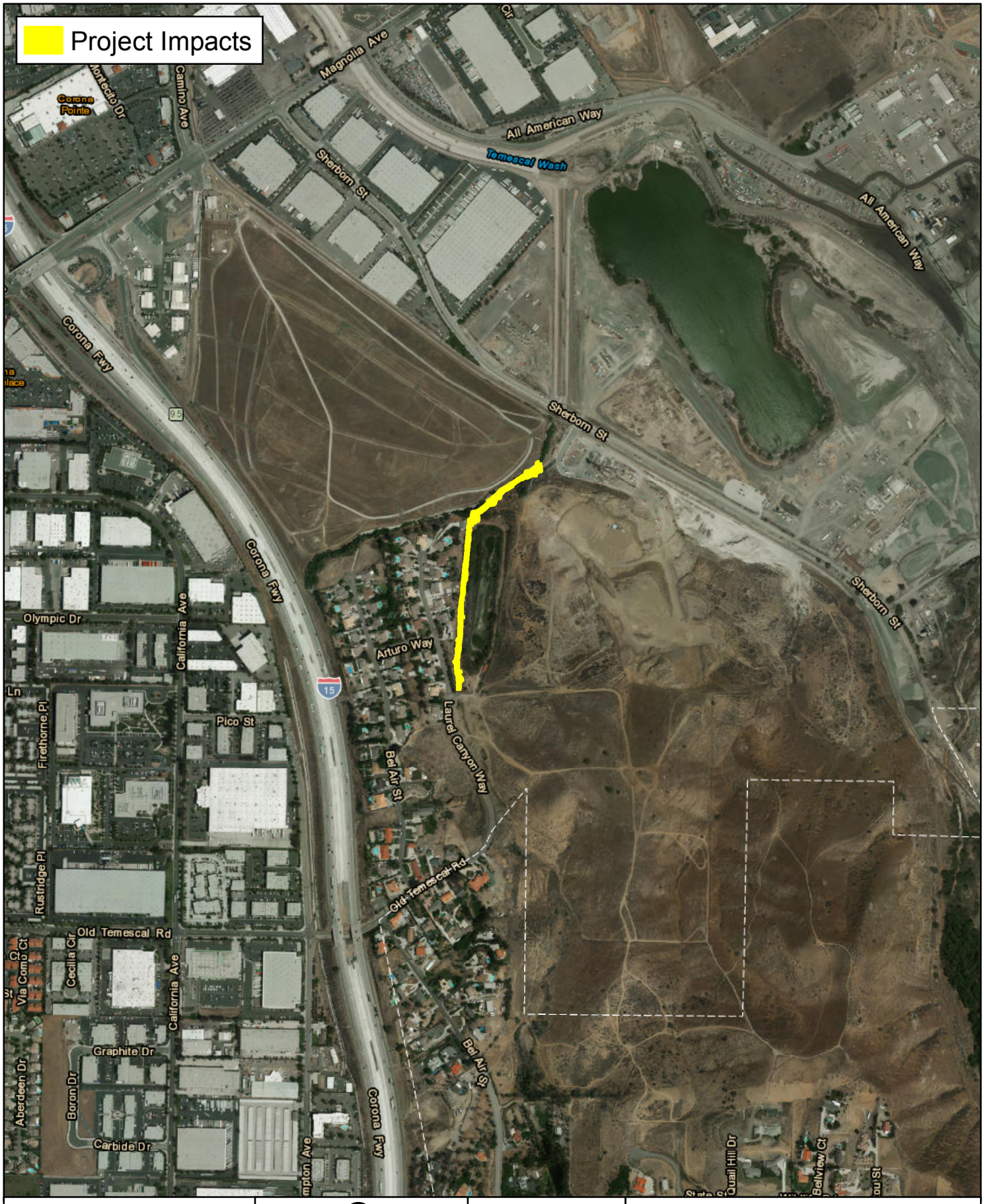
0 0.5 1 Miles

1 in = 2 miles

**Figure 1**

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Regional Map




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources:
ESRI

0 500 1,000 Feet
1 in = 800 feet

**Figure 2**

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Vicinity Map




Prepared By:
VCS Environmental

Map Created: March 2019
Data Sources:
Google Earth, LSA, VCS

0 100 200 ft
1 in = 200 feet

*Not including the created 0.24 acres of streambed WoS

Figure 3

**Mari Girgis, LLC**
**Monteolivo Sewer Line**

Jurisdictional Waters of the State



Photograph 1: *View of improvements to the unnamed drainage. Photograph taken May 3, 2017*



Photograph 2: *View of new culvert that includes two, five-foot diameter concrete culverts and a 20-foot wide headwall. Photograph taken May 3, 2017.*



Photograph 3: *View of habitat conditions at the confluence of the drainage and the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 4: *View of general habitat conditions along the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 5: *View of general habitat conditions along the Riverside Canal. Photograph taken May 3, 2017.*



Photograph 6: *View of grouted rip-rap on the northerly bank of the Riverside Canal and un-grouted rock rip-rap that was placed on the southerly bank as part of the sewer line project. Photograph taken May 3, 2017.*

**Appendix B**
RWQCB Notice of
Violation No. 332014-25

CALIFORNIA
Water Boards

GAVIN NEWSOM
GOVERNOR

JARED BLUMENFELD
SECRETARY FOR
ENVIRONMENTAL PROTECTION

# Santa Ana Regional Water Quality Control Board

August 15, 2019

**Certified Mail**
**Return Receipt Requested**

Mr. Tom Mungari
Nova Homes, Inc.
245 Fischer Drive, Unit A-8A
Costa Mesa, CA 92626

tom@novahomesinc.us

**NOTICE OF VIOLATIONS: VIOLATIONS OF CALIFORNIA WATER CODE SECTION 13376 AND CLEAN WATER ACT SECTIONS 301 AND 401 - THE MONTEOLIVO PROJECT, CITY OF CORONA, RIVERSIDE COUNTY (USACE FILE NO. NOT AVAILABLE) (SARWQCB WDID # 332014-25)**

Dear Mr. Mungari:

On March 4, 2015, the Santa Ana Regional Water Quality Control Board (Santa Ana Water Board) issued you, on behalf of Nova Homes, Inc. (Discharger), a Clean Water Act Section 401 Water Quality Standards Certification (Certification) for the above referenced project. The project, as proposed in the application for Certification, included permanent fill to a tributary to Temescal Creek, for a total of 0.34 acre of permanent impacts to Non-Wetland Waters of the United States (WOTUS). In addition, the Certification authorized temporary impacts to 0.08 acre of Wetland WOTUS and 0.32 acre of Non-Wetland WOTUS.

The discharge of fill was associated with the construction of a single-family home residential development. In issuing the Certification, the Santa Ana Water Board indicated that discharges of fill to waters of the State (WOTS) were also authorized under State Water Resources Control Board Order No. 2003-0017-DWQ, "Statewide General Waste Discharge Requirements for Dredged or Fill Discharges that Have Received State Water Quality Certification" (Order No. 2003-0017-DWQ). Order No. 2003-0017-DWQ requires compliance with all conditions in the Certification.

On May 23, 2019, the Santa Ana Water Board received a request (Request) from VCS Environmental, on behalf of the Discharger, to amend the March 4, 2015 Certification for the project. The Discharger requested that unauthorized additional temporary and

permanent discharges of fill to jurisdictional WOTUS and WOTS be certified under an amended Certification. These unauthorized discharges occurred during the construction of the residential development.

The additional discharges of fill were not authorized by the March 4, 2015 Certification or other Certifications. The discharges of unauthorized fill are a violation of California Water Code section 13376 and Clean Water Act sections 301 and 401.The additional discharge of fill to WOTUS and WOTS are associated with the construction of an off-site 8-inch sewer line, replacement of a culvert, and construction of a headwall and 135 linear feet of a riprap energy dissipating structure. The additional un-certified impacts are detailed in Tables 1 and 2 below.

Table 1. Impacts to WOTUS

| | Temporary | Permanent |
|---|---|---|
| Non-Wetland | 0.15 acre | 0.02 acre |
| Wetland | -- | -- |
| Total | 0.15 acre | 0.02 acre |

Table 2. Impacts to WOTS (excluding WOTUS)

| | Temporary | Permanent |
|---|---|---|
| Streambed | 0.34 acre | 0.017 acre |
| Riparian | -- | 0.56 acre |
| Total | 0.34 acre | 0.58 acre |

In the Request, the Discharger proposed to mitigate the additional impacts through the purchase of ephemeral enhancement mitigation credits from the Riverside-Corona Resource Conservation District at a 1:1 ratio for temporary impacts and 2:1 ratio for permanent impacts to WOTS (not including WOTUS) for a total of 1.49 acres of credits. It is noted that based on the ratios and impacts provided in the Request the proposed mitigation, based on the ratio provided, should be 1.69 acres of credits for all impacts. An Application Fee of $1,638.00 was also submitted with the Request.

The Santa Ana Water Board finds that the purchase of 1.69 acres of enhancement mitigation credits from a Santa Ana Water Board-approved mitigation bank or in-lieu fee program, in addition to recontouring the areas of temporary impact to pre-construction contours, would be acceptable to offset the additional impacts detailed in the Request. However, a copy of the receipt for the purchase of 1.69 acres of enhancement credits from a Santa Ana Water Board-approved mitigation bank or in-lieu fee program must be provided to the Santa Ana Water Board.

In addition, the Santa Ana Water Board requests that the full amount of the Project Fee be paid to the State Water Resources Control Board. The Application Fee of one thousand six hundred thirty-eight dollars ($1,638.00) was received with the application materials. However, a Project Fee must also be paid. The Project Fee, based on

1.09 acres of discharge to all WOTS (including WOTUS), is fourteen thousand one hundred fifty-five dollars ($14,155.00). The full Project Fee must be submitted to the Santa Ana Water Board for processing.

Past approvals from the Santa Ana Water Board are not in effect until the payment of associated fees and purchase of mitigation credits. Performance of any further work described in the Certification, prior to payment of the fees and purchase of mitigation credits, is unlawful and may result in imposition of penalties via Water Code section 13385 and other statutes, as applicable.

The Santa Ana Water Board will issue an amended Certification for the Monteolivo Project with the following conditions that are listed below. In addition, the conditions of this Notice of Violations will be met if the following are completed by September 20, 2019:

1. Provide proof of Mitigation Credit purchases to Santa Ana Water Board staff;

2. Submit a check for fourteen thousand one hundred fifty-five dollars ($14,155.00) made out to the State Water Resources Control Board. Send the check to this Santa Ana Water Board office with reference to SARWQCB WDID # 332014-25; and

4. All mitigation requirements and conditions of the original certification are completed.

If the above conditions are not met, there may be further enforcement actions taken.

If you have any questions regarding this matter, please contact Jason Bill at (951) 782-3295 (Jason.Bill@waterboards.ca.gov) or Dave Woelfel at (951) 782-7960 (David.Woefel@waterboards.ca.gov).

Sincerely,

Jayne Joy
Assistant Executive Officer
Santa Ana Regional Water Quality Control Board

Enclosure: March 4, 2015 Certification for SARWQCB WDID # 332014-25

cc (w/o enclosure):

U.S. Army Corps of Engineers, Los Angeles Office – James Mace – James.E.Mace@usace.army.mil
U.S. Environmental Protection Agency, Region 9 – Wetlands Section –
Megan Fitzgerald – Fitzgerald.Megan@epa.gov
Melissa Scianni – Scianni.Melissa@epa.gov
California Department of Fish and Wildlife – Jeff Brandt – Jeff.Brandt@wildlife.ca.gov
State Water Resources Control Board, Office of Enforcement –
Daniel Kippen, Esq. – Dan.Kippen@waterboards.ca.gov
State Water Resources Control Board, Division of Water Quality – Water Quality Certification Unit – Stateboard401.Stateboard401@waterboards.ca.gov
VCS Environmental – Wade Caffrey – wcaffrey@vcsenvironmental.com

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Mr. Tom Mungari
Nova Homes, Inc.
245 Fischer Drive, Unit A-8A
Costa Mesa, CA 92626

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Santa Ana Regional Water Quality Control Board

March 4, 2015

Tom Mungari
Nova Homes, Inc.
245 Fischer Drive, Unit A-8A
Costa Mesa, CA 92626

tom@novahomesinc.us

**CLEAN WATER ACT SECTION 401 WATER QUALITY STANDARDS CERTIFICATION FOR THE MONTEOLIVO PROJECT, CITY OF CORONA, RIVERSIDE COUNTY (ACOE CORPS FILE NO. N/A) (SARWQCB PROJECT NO. 332014-25)**

Dear Mr. Mungari,

On October 20, 2014, we received an application for Clean Water Act Section 401 Water Quality Standards Certification ("Certification") from the City of Corona Public Works Department for a residential development project in the City of Corona, Riverside County. A letter detailing revisions from the original application to the proposed project and proposed mitigation was received on December 19, 2004. The project will consist of the construction of 106 single-family residential lots, associated roadways and infrastructure, occupying 61 acres of project land. Additionally, a mitigation/conservation area for the creation/restoration of riparian/streambed habitat will be created. On October 20, 2014, the applicant submitted a check for $1,201.00, with the Certification application materials. On March 2, 2015 another check for an additional $30,531.00, was received, which satisfies this project's fee requirement for consideration of a 401 Certification. This fee amount was determined using the Dredge and Fill Fee Calculator on the State Water Resources Control Board (SWRCB) web site, which is based on the most current iteration of California Code of Regulations, Division 3, Chapter 9, Article 1, section 2200 (a) (3). This letter responds to your request for certification that the proposed project, described in your application and summarized below, will comply with State water quality standards outlined in the Water Quality Control Plan for the Santa Ana River Basin (1995) (Basin Plan) and subsequent Basin Plan amendments:

Project Description: The proposed project includes the permanent realignment of an unnamed tributary of Temescal Creek Reach 2 that flows parallel to Laurel Canyon Way for the length of the project site. The realigned Temescal Creek tributary's channel bottom and banks will be lined with ungrouted riprap for a length of 951 feet. The channel will be trapezoidal in shape

with a five-foot wide bed and three to one side slopes. One road crossing with a culvert that leads into the development will be constructed over the realigned drainage. Additionally, a 3.68 acre Mitigation Basin will be constructed within the project site. A portion of the mitigation basin will be graded to restore 0.08 acres to jurisdictional wetlands.

The work will take place within an unsectioned area of the El Sobrante Land Grant, of the U.S. Geological Survey *Corona South* 7.5 minute topographic quadrangle maps (UTM Zone 11 450906.26 Easting 3746309.23 Northing).

Receiving water: Unnamed tributary of Temescal Creek Reach 2, Temescal Creek Reaches 1-2 and Upper Santa Ana River Reach 3, which have present or potential beneficial uses, including: agricultural supply (AGR), groundwater recharge (GWR), water contact recreation (REC1), non-contact water recreation (REC2), warm freshwater habitat (WARM), Rare, Threatened or Endangered Species (RARE), and wildlife habitat (WILD).

Fill area:

| | | |
|---|---|---|
| Temporary Impact to Wetland Waters of the US | 0.08 acre | linear feet N/A |
| Permanent Impact to Non-Wetland Waters of the US | 0.34 acre | 2,533 linear feet |
| Temporary Impact to Non-Wetland Waters of the US | 0.32 acre | 787 linear feet |

Dredge/Fill volume: N/A

Federal permit: U.S. Army Corps of Engineers Nationwide Permit No. 29

You have proposed to mitigate water quality impacts as described in your Certification application. The proposed mitigation is summarized below:

Onsite Water Quality Standards Mitigation Proposed:

- Standard water quality related best management practices (BMPs) will be employed during construction activities.
- Temporary impacts to both Wetland and Non-Wetland Waters of the United States will be mitigated by creating a 3.68 acre On-Site Mitigation Basin. Of the 3.68 acres, at least 0.08 acres will be restored to Wetland Waters.

Offsite Water Quality Standards Mitigation Proposed:

- The applicant will mitigate the project's impacts offsite through the acquisition of in-lieu fee program mitigation credits from the Riverside-Corona Resource Conservation District, for the restoration of 0.76 acres of non-wetlands/riparian habitat.
- The applicant will mitigate the project's impacts offsite through the acquisition of in-lieu fee program mitigation credits from the Santa Ana Watershed Association by enhancing 1.52 acres within the watershed.

Should the proposed project impact state- or federally-listed endangered species or their habitat, implementation of measures identified in consultation with U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife will ensure those impacts are mitigated to an acceptable level. Appropriate BMPs will be implemented to reduce construction-related impacts to Waters of the State.

This Water Quality Certification is subject to the acquisition of all local, regional, state, and federal permits and approvals as required by law. Failure to meet any conditions contained herein, or any conditions contained in any other permit or approval for this project issued by the State of California, or any subdivision thereof, may result in appropriate enforcement action, including imposition of administrative civil liability.

Pursuant to California Code of Regulations, Title 14, Chapter 3, Section 15096, as a responsible agency, the Regional Board is required to consider an EIR or Negative Declaration prepared by the lead agency in determining whether to approve a project. A responsible agency has responsibility for mitigating and avoiding only the direct and indirect environmental effects of those parts of the project which it decides to carry out, finance, or approve. Further, the responsible agency must make findings as required by Sections 15091 and, if necessary, 15093, for each and every significant impact of the project.

As required by Section 15096, the Regional Board has considered the Mitigated Negative Declaration (MND) prepared for the proposed project and filed with the Riverside County Clerk and Recorder by the City of Corona on September 3, 2014, and information provided subsequently in the applicant's application, in approving this Certification. More specifically, the Regional Board has considered those sections of the MND relating to water quality. Based on the mitigation proposed in the MND, and the conditions set forth in this Certification, impacts to water quality will be reduced to a less than significant level and beneficial uses will be protected. Thus, the Regional Board independently finds that changes or alterations have been required in, or incorporated into the project, which avoid or mitigate impacts to water quality to a less than significant level.

**This 401 Certification is contingent upon the execution of the following conditions:**

1) The applicant must comply with the requirements of the applicable Clean Water Act section 404 permit.

2) Applicant shall ensure that all fees associated with this project shall be paid to each respective agency prior to conducting any on-site construction activities.

3) A copy of this Certification and any subsequent amendments must be maintained on site for the duration of work as a denoted element of any project Storm Water Pollution Prevention Plan (SWPPP), Water Quality Management Plan (WQMP) and/or Habitat Mitigation and Management Plan (HMMP).

4) Proposed on-site and off-site mitigation shall be timely implemented. Materials documenting the purchase of necessary mitigation credits shall be provided to this office prior to the discharge of fill to, or the dredging or excavation of material from, waters of the United States or Waters of the State of California.

5) A HMMP for the onsite mitigation shall be provided to this office for approval prior to the discharge of fill to, or the dredging or excavation of material from, waters of United States or Waters of the State of California.

6) The applicant shall complete the post-construction restoration of temporary impacts to waters of the U.S. within 30 days following completion of construction activities. Upon consideration of a written request, this period may be extended by Regional Board authorization to accommodate proper planting times. If restoration is not initiated within one year of impacts, additional mitigation may be required to offset temporal loss of waters of the U.S.

7) Prior to construction activities, the project proponent shall delineate the work area with brightly colored fencing or other methods to ensure both temporary and permanent impacts to Waters of the United States and Wasters of the State of California do not exceed the limits authorized in this certification.

8) All materials generated from construction activities associated with this project shall be managed appropriately. This shall include identifying all potential pollution sources within the scope of work of this project, and incorporating all necessary pollution prevention BMPs as they relate to each potential pollution source identified. Additionally no materials maybe stored within waters of the United States or Waters of the State of California.

9) The project proponent shall utilize BMPs during project construction to minimize the controllable discharges of sediment and other wastes to drainage systems or other waters of the state and of the United States.

10) Substances resulting from project-related activities that could be harmful to aquatic life, including, but not limited to, petroleum lubricants and fuels, cured and uncured cements, epoxies, paints and other protective coating materials, portland cement concrete or asphalt concrete, and washings and cuttings thereof, shall not be discharged to soils or waters of the state. All waste concrete shall be removed.

11) Motorized equipment shall not be maintained or parked within or near any stream crossing, channel or lake margin in such a manner that petroleum products or other pollutants from the equipment may enter these areas under any flow conditions. Vehicles shall not be driven or equipment operated in waters of the state on-site, except as necessary to complete the proposed project. No equipment shall be operated in areas of flowing water.

12) This Water Quality Certification is subject to the acquisition of all local, regional, state, and federal permits and approvals as required by law. Failure to meet any conditions contained herein or any the conditions contained in any other permit or approval issued by the State of California or any subdivision thereof may result in the revocation of this Certification and civil or criminal liability.

13) Best management practices to stabilize disturbed soils must include the use of native plant species whenever feasible.

14) Applicant shall ensure that all elements of the approved WQMP are fully implemented to address all identified pollutants and hydrologic conditions of concern resulting from the project.

15) Applicant shall follow all procedures and policies specified within the project's HMMP.

16) Construction de-watering discharges, including temporary stream diversions necessary for project construction may be regulated under Regional Board Order No. R8-2009-0003, General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (De Minimus) Threat to Water Quality. For more information, please review Order No. R8-2009-0003 at www.waterboards.ca.gov/santaana/

17) Prior to any grading for the project in riparian areas or wetlands that are slated to be impacted, functional assessments of these areas shall be conducted using the California Rapid Assessment Method, February 2012 (CRAM). Similarly, wetland and riparian habitat mitigation sites shall be assessed periodically with CRAM, beginning with the end of the first growing season following the initial planting of the mitigation site. Mitigation site

assessments shall be conducted annually, during the period from October through December, until success criteria are met for consecutive years. This information shall be reported to http://www.californiawetlands.net/tracker/

Under California Water Code, Section 1058, and Pursuant to 23 CCR §3860, the following shall be included as conditions of all water quality certification actions:

(a) Every certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section §13330 of the Water Code and Article 6 (commencing with Section 3867) of this Chapter.

(b) Certification is not intended and shall not be construed to apply to any activity involving a hydroelectric facility and requiring a FERC license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to Subsection §3855(b) of this Chapter and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

(c) Certification is conditioned upon total payment of any fee required under this Chapter and owed by the applicant.

If the above stated conditions are changed, any of the criteria or conditions as previously described are not met, or new information becomes available that indicates a water quality problem, the Regional Board may require the applicant to submit a report of waste discharge and obtain Waste Discharge Requirements.

In the event of any violation or threatened violation of the conditions of this certification, the holder of any permit or license subject to this certification shall be subject to any remedies, penalties, process or sanctions as provided for under state law. For purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification. Violations of the conditions of this certification may subject the applicant to civil liability pursuant to Water Code section 13350 and/or 13385.

This letter constitutes a Water Quality Standards Certification issued pursuant to Clean Water Act Section 401. I hereby issue an order certifying that any discharge from the referenced project will comply with the applicable provisions of Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act, and with other applicable requirements of State law.

This discharge is also regulated under State Water Resources Control Board Order No. 2003-0017-DWQ (Order No. 2003-0017-DWQ), "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received Water Quality Certification" which requires compliance with all conditions of this Water Quality Standards Certification. Order No. 2003-0017-DWQ is available at: www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0017.pdf

Should there be any questions, please contact Jason Bill at (951) 782-3295 or Marc Brown at (951) 321-4584.

Sincerely,

Kurt V. Berchtold
Executive Officer
Santa Ana Regional Water Quality Control Board

cc (via electronic mail):
LSA Associates, Inc. – Denise Woodward – denise.woodward@lsa-assoc.com
U. S. Army Corps of Engineers, Los Angeles Office - James Mace
CA Department of Fish and Wildlife – Kim Freeburn-Marquez
State Water Resources Control Board, Office of Chief Counsel-David Rice
State Water Resources Control Board DWQ -Water Quality Certification Unit
U.S. EPA -Supervisor of the Wetlands Regulatory Office WTR-8

# Appendix C
**U**SACE Non-Notifying
NWP #12

VCS Environmental
EXPERT SOLUTIONS | CEQA-NEPA . Biology . Regulatory

# Memorandum

Date: March 10, 2020

To: Miriam Yemane, U.S. Army Corps of Engineers

From: Wade Caffrey, VCS Environmental

Subject: Monteolivo Offsite Sewer Line Project: After-the-Fact Non-Notifying Nationwide Permit #12

The purpose of this memorandum is to provide the United States Army Corps of Engineers (USACE) with documentation that the Monteolivo Offsite Sewer Line Project has proceeded under a Non-notifying Nationwide Permit (NWP) #12 for temporary and permanent impacts to Waters of the United States. This notification is being submitted by VCS Environmental on behalf of the applicant, Mari Girgis, LLC. The requirements to submit a notification under NWP #12 are as follows:

> "The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to or along a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials."

The Monteolivo Offsite Sewer Line Project is located in the City of Corona, Riverside County, California. The Project constructed an underground sewer line off-site for the Monteolivo Residential Development Project (NWP Permit No. SPL-2014-00649-JEM) beneath an existing access road. In addition, an existing culvert was replaced and a headwall was installed at an off-site storm drain outlet. Impacts to waters of the U.S. included the widening, slope stabilization, and replacement of an existing culvert at an unnamed drainage.

Approximately 0.15 acre (1,200 linear feet) of temporary impacts occurred to the unnamed drainage (non-wetland waters of the U.S.) for slope stabilization of the adjacent access road and culvert replacement. The temporarily impacted features were returned to their pre-project

contours. In addition, 0.02 acre (135 linear feet) of permanent impacts to non-wetland waters of the U.S. occurred for placement of rip-rap within the unnamed drainage. None of these impacts are known to have occurred within a special aquatic site, including wetlands as defined in the 404(b)(1) Guidelines.

A section 1600 Operation of Law (No. 1600-2019-0139-R6) and Section 401 Notice of Violation (No. 33-2014-25) have been issued for impacts to both waters of the U.S. and waters of the State, both of which are included for your reference.

A notification to the USACE for this Project is not necessary because permanent loss of waters of the U.S. did not exceed 1/10-acre or 500 feet. In addition, the Project site did not involve mechanized land clearing in a forested wetland for the utility line right-of-way and the access road was not constructed within the jurisdictional waters. Furthermore, a Section 10 permit is not required because the impacted waters are non-navigable waters. VCS was not involved with the project when impacts occurred, however, the Applicant has stated that no impacts to Section 7 or Section 106 resources are known to have occurred.

Please contact me at wcaffrey@vcsenvironmental.com or 949.489.2700 extension 213 should you have any questions or comments.

Enclosures (2):

- 1600 Op-Law No. 1600-2019-0139-R6
- 401 NOV No. 332014-25

# Appendix D
Photopages



Photo 1. View to the southwest, concrete outlet into the unnamed draiange



Photo 2. View to the north of the unnamed drainage (left) and access road (right).



Photo 3. View to the northwest of the Riverside Canal.



Photo 4. View to the east of the water quality pond.

U.S. Fish and Wildlife Service
Palm Springs Fish and Wildlife Office
777 East Tahquitz Canyon Way, Suite 208
Palm Springs, California 92262
760-322-2070
FAX 760-322-4648

California Department of Fish and Wildlife
Inland Deserts Region
3602 Inland Empire Blvd., Suite C-220
Ontario, California 91764
909-484-0167
FAX 909-481-2945

In Reply Refer To:
FWS/CDFW-WRIV-14B0024-21CPA0067

April 26, 2021
*Sent by email*

Senior Planner Sandra Yang
Community Development Department
City of Corona
400 South Vicentia Avenue
Corona, CA 92882

Subject: MSHCP DBESP to Remedy Unauthorized Impacts to Endangered Least Bell's Vireo Habitat from the City of Corona's Monteolivo Water Quality Basin and Sewer Line Project (Plan 14-066U) and the Monteolivo Residential Development Project (TTM 37895)

Dear Ms. Yang:

The U.S. Fish and Wildlife Service (Service) and the California Department of Fish and Wildlife (CDFW), hereafter referred to jointly as The Wildlife Agencies, received a proposed Determination of Biologically Equivalent or Superior Preservation (DBESP) for the Monteolivo Water Quality Basin and Sewer Line Project (Project) from the City of Corona (City) on February 25, 2021. The proposed DBESP was prepared to evaluate the Project's consistency with the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Work on the Project site that affected the riparian and riverine resources on-site began in 2016 without completion of MSHCP procedures for effects to riparian Riverine resources. We also received a DBESP for the Project in May of 2018, from a different author (LSA 2018). The Wildlife Agencies are providing the following comments as they relate to the Project's consistency with MSHCP Section 6.1.2 (Protection of Riparian/Riverine and Vernal Pool Resources).

Project Location

The Project is a condition of the Monteolivo Residential Development. It is located 0.2 miles east of Interstate 15 and one mile south of State Route 91. The Project site is bounded by the proposed Monteolivo Residential Development to the south, the Bel Air residential community to the west, and agricultural and surface mining areas to the east and north. The Project site outside of the MSHCP Criteria Area, Cores, Linkages, and Public/Quasi-Public Lands.

The Project site and the Monteolivo Residential Development are located in the Santa Ana River watershed. The unnamed drainage on the Project site, known as Laurel Canyon Arroyo, flows from south to north cross the Project site and into the Riverside Canal, which discharges into Temescal Creek, which is tributary to the Santa Ana River.

MSHCP Implementation

As stated above, work on the Project began in 2016, without MSHCP implementation. After discussion site and visits the Wildlife Agencies received a DBESP for Project effects to riparian and riverine resources in May 2018. With the City's consent and based on our understanding that a Joint

Project Review (JPR) was being prepared for the Project, we withheld comment on the 2018 DBESP, pending the JPR. The City withdrew the JPR from Regional Conservation Authority (RCA) review in 2020. And we received a new DBESP in February 2021, as stated above. The 2018 and 2021 DBESPs presented differing assessments of Project effects to the pre-construction extent of riparian and riverine resources.

*2021 DBESP*

The 2021 DBESP states that the Project resulted in 0.917 acres of impacts to MSHCP riparian/riverine habitats associated with the Laurel Canyon Arroyo and the Riverside Canal. The 2021 DBESP excluded the removal of riparian and marsh vegetation everywhere else on the Project site as being non-MSHCP riparian vegetation, asserting that riparian and marsh vegetation was sustained by effluent.

However, the continued survival of the remaining riparian woodland, as well as the ongoing recolonization of riparian woodland and reappearance of patches of marsh vegetation in the central and southern parts of the former pond area, are evidence of a shallow water table in Project area and that remaining riparian vegetation and the recolonizing riparian and marsh vegetation, are being sustained by natural local groundwater. Thus, the riparian habitats in the vicinity of the pond were and are MSHCP Section 6.1.2 resources. The former open water habitat in the pond is the only pond-associated habitat that did not persist after the delivery of sewage effluent was discontinued.

*2018 DBESP*

The 2018 DBESP took a very different approach to calculating the Project's impacts to MSHCP riparian/riverine habitats. The 2018 DBESP acknowledged all of the riparian vegetation on the Project site – including the riparian woodland encircling the pond - as being MSHCP riparian habitat. However, the 2018 DBESP counted only areas of woody riparian vegetation which were completely removed by the Project and failed to subsequently resprout or recolonize as being impacted by Project construction. It also presented the Project effects to the Laurel Canyon Arroyo riparian/riverine habitats positive (LSA 2018, Table A), because it was widened. The 2018 DBESP identified 1.34 acres of Project-related impacts to MSHCP Riparian vegetation.

*Wildlife Agencies Assessment*

We have evaluated the Project's impacts to the pre-construction extent of MSHCP riparian/riverine habitats on the Project site. We factored in all of the information provided in both the 2018 proposed DBESP, the 2021 proposed DBESP, CDFW's visit to the site while the Project clearing was underway, and a review of aerial imagery of the Project site from 2006 – 2019. We excluded the open water area of the former sewage pond from our assessment of MSHCP riparian/riverine habitat based on the (1) the assertion in the 2021 DBESP that this habitat existed entirely due to the delivery of effluent and (2) the fact that the open water habitat largely failed to reappear post-construction, when only groundwater and precipitation runoff were available. We included the pond's riparian woodland in our assessment of MSHCP riparian habitat because the remnant riparian woodland has persisted without the artificial water source (effluent), and because of the regrowth of riparian vegetation in the southern and central areas of the former pond, despite the absence of water inputs

from effluent.

Based on our assessment of the information available to us, the Wildlife Agencies have estimated that the Project site contained 4.8 acres of MSHCP riparian/riverine habitats prior to construction of the Project (Map 1, attached). The Project impacted 2.7 acres of MSHCP riparian/riverine habitats (Map 2).

Project Impacts to Occupied Least Bell's Vireo Habitat

Least Bell's vireo occupied the riparian vegetation throughout the Project site prior to construction, and, thus, wherever the Project removed riparian vegetation, impacts to vireo habitat also occurred, regardless of the water source involved. Both the 2018 and the 2021 DBESPs acknowledge that the California Natural Diversity Database has records documenting least Bell's vireos within the Project site in 2006, 2010, and 2014.

The 2021 DBESP states that the Project had no impacts on least Bell's vireos (VCS 2020), based on the presence of vireos in the remnant northern strip of vireo habitat in May 2017, as observed by LSA Associates (LSA 2018). We do not find this conclusion supportable, because the presence of vireo in the remnant riparian woodland, is not evidence that vireo did not occupy the contiguous suitable habitat which was removed. Suitable habitat was removed from around the southern half of the former pond, Laurel Canyon Arroyo, the Riverside Canal, and between the Canal and the original pond (LSA 2018 Figure 5 and Figure 7).

The 2018 DBESP documented vireos continuing to use a remnant strip of riparian woodland surrounding the northern half of the former pond, as well as the extreme northeastern end of the Riverside Canal within the Project Study Area (LSA 2018, Figure 7). The 2018 DBESP did not offer mitigation to offset the Project's elimination of occupied vireo habitat, loss of suitable habitat or reduction in the number vireo breeding pairs on the Project site.

Based on the information available, the Wildlife Agencies have estimated that the Project site contained 4.4 acres of occupied least Bell's vireo habitat (riparian woodland) prior to construction and 2.3 of those acres were removed. Impacts to least Bell's vireos and their habitat should be avoided as much as possible. When avoidance is not feasible, impacts to occupied habitat are to be offset to a level that is "biologically equivalent or superior to avoidance". The City has not proposed the conservation of the remnant patches of vireo habitat on the Project site.

Mitigation Proposal

The 2021 DBESP proposes to mitigate the reported 0.917 acres of Project impacts to MSHCP riparian/riverine habitats in 2016 by purchasing 1.49 acres of mitigation credits from the Riverside-Corona Resource Conservation District's In-Lieu Fee Program (RCRCD ILFP) for Enhancement treatment to be applied to ephemeral wash habitat. We have several concerns with this mitigation proposal.

The actual impacts to riparian habitat were 2.7 acres (2.3 of which were occupied vireo habitat), yet the 2021 DBESP proposes to provide only 1.49 acres of mitigation. The mitigation proposal does not identify the location where the mitigation would take place. Information necessary to understanding the proposal was not provided: 1) a description and quantification of the habitat in the ephemeral

wash and the nature of the treatment to achieve ecological uplift; 2) least Bell's vireo occupancy and the number of breeding pairs present; and 3)the anticipated post-treatment habitat condition of the mitigation site in relationship to the riparian structure needed to support nesting vireo. The impacts to the vireo habitat were carried out in 2016, and almost five years have gone by since the vireo habitat was removed, but the 2021 DBESP provides no mitigation to offset the temporal loss of vireo habitat. CDFW is not signatory to the RCRCD ILFP, so if the ILFP is to be used, specific information regarding funding and outcomes needs to be provided, similar to information provided for permittee-responsible mitigation.

Please revise the DBESP to provide mitigation for impacts to 2.7 acres of MSHCP riparian/riverine habitats, including at least 2.3 acres of least Bell's vireo nesting habitat. The mitigation site should contain at least two breeding pairs of least Bell's vireos at the time that the mitigation site reaches its performance standards. Additional mitigation should be provided to offset the temporal loss of vireo habitat since Project impacts have occurred (almost five years of temporal loss as of this writing). The City as the MSHCP permittee, should ensure that either an existing block of vireo territories is conserved, or vireo nesting habitat is created (including occupancy by vireo breeding pairs) on a site that will be managed for the benefit of vireo and riparian riverine resources. If an existing block of high quality occupied vireo habitat will not be preserved, a Habitat Mitigation and Monitoring Plan (HMMP) should be pre pared to detail the pre-mitigation condition of the proposed mitigation site, the methods to provide the expected ecological lift on the site, performance standards for the mitigation, and long-term protection of the site through a conservation easement or similar durable realty instrument.

Summary

The Wildlife Agencies do not agree that the proposed DBESP (VCS 2020) provides mitigation that would be biologically equivalent or superior to the avoidance of impacts to the original 4.4 acres of occupied least Bell's vireo habitat on the Project site, for the reasons explained above. We request a meeting to discuss the assessment of riparian riverine resources and vireo habitat on the Project site and offsetting measures. The revised DBESP can be provided electronically to both the Service (via james_thiede@fws.gov) and CDFW (via R6LSAReporting@wildlife.ca.gov with a cc to heather.pert@wildlife.ca.gov) after the meeting requested below

We appreciate the opportunity to provide comments on this DBESP and look forward to continuing to work with the City on this Project. Please contact please contact James Thiede of the Service at james_thiede@fws.gov , or Eric Chan of CDFW at eric.chan@wildlife.ca.gov or (909) 945-3294 to arrange a meeting.

Sincerely,

KARIN CLEARY-ROSE Digitally signed by KARIN CLEARY-ROSE Date: 2021.04.26 23:32:35 -07'00'

for
Rollie White
Assistant Field Supervisor
U.S. Fish and Wildlife Service

DocuSigned by: Heather Pert DF423498814B441...

for
Scott Wilson
Environmental Program Manager
California Department of Fish and Wildlife

References

LSA 2018 [LSA Associates, Inc.]. 2018. Determination of Biologically Equivalent or Superior Preservation (DBESP) for the Monteolivo Water Quality Basin and Sewer Line Project. April 2018. 26 pages. Riverside, California.

VCS 2020 [VCS Environmental]. 2020. Determination of Biologically Equivalent or Superior Preservation (DBESP) for the Monteolivo Sewer Line Project. March 2020, revised August 2020. 58 pages. California.

**Map 1. Pre-Construction Riparian/Riverine Habitats on the Monteolivo WQBSL Project Site.**



**Map 2. WQBSL Project Impacts to MSHCP Riparian/Riverine Habitats**



VCS Environmental
EXPERTS IN STRATEGIC SOLUTIONS

# Memorandum

Date: June 1, 2021

To: Sandra Yang

From: Wade Caffrey, VCS Environmental

Subject: Response to Comments Received on April 26, 2021 for the Monteolivo Sewer Line Project (Plan 14-066U) MSHCP DBESP [FWS/CDFW-WRIV-14B0024-21CPA0067]

On behalf of the Mari Girgis, LLC (Project Proponent), VCS Environmental has prepared this document for the Monteolivo Sewer Line Project (Project) in response to a letter received from the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW), hereafter referred to jointly as the Wildlife Agencies. The purpose of this response to comments letter is to address the issues raised in the April 26, 2021 comment letter received from the Wildlife Agencies in their assessment that the proposed Determination of Biologically Equivalent or Superior Preservation (DBESP) does not provide mitigation that would be biologically equivalent or superior to the avoidance of impacts from the Project. Additionally, this response to comments intends to provide evidence that the proposed DBESP does provide biologically equivalent or superior habitat for MSHCP resources.

The following comments were received from the wildlife agencies and have been addressed below:

1. *The 2021 DBESP states that the Project resulted in 0.917 acres of impacts to MSHCP riparian/riverine habitats associated with the Laurel Canyon Arroyo and the Riverside Canal. The 2021 DBESP excluded the removal of riparian and marsh vegetation everywhere else on the Project site as being non-MSHCP riparian vegetation, asserting that riparian and marsh vegetation was sustained by effluent. However, the continued survival of the remaining riparian woodland, as well as the ongoing recolonization of riparian woodland and reappearance of patches of marsh vegetation in the central and southern parts of the former pond area, are evidence of a shallow water table in the Project area and that remaining riparian vegetation and the recolonizing riparian and marsh vegetation, are being sustained by natural local groundwater. Thus, the riparian habitats in the vicinity of the pond were and are MSHCP Section 6.1.2 resources.*

The MSHCP Section 6.1.2 states that Riparian/Riverine Areas are "Lands which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from a nearby freshwater source; or areas with freshwater flow during all or a portion of the year." Additionally, the MSHCP states that this does not include "wetlands created for the purpose of providing wetlands habitat or resulting from human actions to create open waters or from the alteration of natural stream courses."

The sewage treatment pond was a manmade pond, sustained by effluent from nearby urban development, that was designed to allow raw sewage to percolate. Prior to the Sewer Line Project, the pond did not receive any freshwater flows. Therefore, this pond was not considered to be MSHCP Riparian/Riverine at the time of impacts. Please note, the Sewer Line Project connected the pond to the adjacent Monteolivo Development. Therefore, it now receives freshwater runoff from that site, which likely contributes to the ongoing recolonization of riparian vegetation.

Additionally, on September 25, 2019, an application for a Streambed Alteration Agreement went Operation of Law which included 0.34 acres of temporary impacts and 0.58 acres of permanent impacts to resources subject to Fish and Game Code section 1600 et seq. The sewage treatment pond present on the Project site and the riparian vegetation associated with it were determined to not be a jurisdictional water of the U.S. or water of the State due to its use as an isolated waste treatment facility. VCS had coordinated this with Jeff Brandt of CDFW in June of 2019. It is our understanding from CDFW that MSHCP Section 6.1.2 resources typically do not differ significantly from resources subject to Fish and Game Code section 1600 et seq. and that compensatory mitigation would be consistent between the MSHCP and 1600 approvals.

2. *Based on our assessment of the information available to us, the Wildlife Agencies have estimated that the Project site contained 4.8 acres of MSHCP riparian/riverine habitats prior to construction of the Project. The Project impacted 2.7 acres of MSHCP riparian/riverine habitats.*

The methodology to delineate the acres of MSHCP Riparian/Riverine Resources on the Project site is consistent with the MSHCP definition outlined in the response to comment #1 above. Please note, meetings with the wildlife agencies in 2013 determined that the pond was not a jurisdictional feature. Specifically, the project proponent met with representatives from CDFW, USFWS, USACE and the RWQCB on June 12, 2013 and the sewage pond conversion was not considered to be subject to regulatory permits or the MSHCP process.

3. *The 2018 DBESP did not offer mitigation to offset the Projects elimination of occupied vireo habitat, loss of suitable habitat or reduction in the number of vireo breeding pairs on the Project site.*

The revised 2021 DBESP states that least Bell's vireo were observed adjacent to impact areas before and after project activities. No known impacts to least Bell's vireo occurred during project activities and least Bell's vireo continues to use and occupy the area surrounding the project site. No evidence is available that would show there was a reduction in the number of vireo breeding pairs on the Project site following Project activities. In addition, removal of the sewage treatment pond is considered to be a net benefit for wildlife species due to the removal of the toxic substances that would be present. No mitigation for least Bell's vireo, aside from removal of sewage from the pond that occurred during project implementation, is proposed.

4. *Based on the information available, the Wildlife Agencies have estimated that the Project site contained 4.4 acres of occupied least Bell's vireo habitat (riparian woodland) prior to the construction and 2.3 of those acres were removed...The City has not proposed the conservation of the remnant patches of vireo habitat on the Project site.*

No conservation of the vireo habitat is proposed because the habitat is not located on land owned by either the City or the Project Proponent. The habitat is located on land zoned as single-family residential and is owned by the adjacent HOA for the Bel Air community. The southern portion of the pond that was transformed into a water quality treatment plant will be maintained in perpetuity by the Monteolivo Development HOA as required by the Project's WQMP.

5. *The actual impacts to riparian habitats were 2.7 acres (2.3 of which were occupied vireo habitat), yet the 2021 DBESP proposes to provide only 1.49 acres of mitigation.*

The Project proposes to mitigate for 0.577 acres of permanent impacts and 0.34 acres of temporary impacts to MSHCP Riparian/Riverine Resources, consistent with the methodology identified in response to comment #1. The CDFW Operation of Law Proposes mitigation for 0.34 acres of temporary impacts and 0.58 acres of permanent impacts to Waters of the State. As also noted in response to comment #1, it is our understanding that MSHCP Section 6.1.2 resources align with CDFW 1600 resources as evidenced by the equivalent reported impacts. The MSHCP section 6.1.2 states "The CDFG shall continue to work closely with the Corps, USFWS, and local jurisdictions to ensure that the CFG Code Section 1600 et seq. agreements are consistent with the mitigation required for Covered Species." We believe the impacts to MSHCP riparian/riverine habitats to be consistent with the impacts listed in the CDFW Operation of Law.

6. *The mitigation proposal does not identify the location where the mitigation would take place. Information necessary to understanding the proposal was not provided:*

a. *A description and quantification of the habitat in the ephemeral wash and the nature of the treatment to achieve ecological uplift;*
b. *Least Bell's vireo occupancy and the number of breeding pairs present;*
c. *The anticipated post-treatment habitat condition of the mitigation site in relationship to the riparian structure needed to support nesting vireo.*

The mitigation proposed in the DBESP is consistent with the mitigation proposed and approved by CDFW in the 1600 Operation of Law. Mitigation credits were proposed to be purchased from the Riverside-Corona Resource Conservation District. As stated above, there's no evidence of impacts to least Bell's vireo, therefore, no mitigation is proposed. The removal of the sewage treatment pond is considered to be a net benefit for wildlife species, due to the removal of the toxic substances that would be present.

7. *The impacts to the vireo habitat were carried out in 2016 and almost five years have gone by since the vireo habitat was removed, but the 2021 DBESP provides no mitigation to offset the temporal loss of vireo habitat. CDFW is not signatory to the RCRCD ILFP, so if the ILFP is to be used, specific information regarding funding and outcomes needs to be provided, similar to information provided for permittee-responsible mitigation.*

The mitigation proposed in the DBESP is consistent with the mitigation required by the 1600 Operation of Law. Both the 2021 DBESP and 1600 Operation of Law propose the purchase of 1.494 acres of ephemeral streambed enhancement at RCRCD.

8. *Please revise the DBESP to provide mitigation for impacts to 2.7 acres of MSHCP riparian/riverine habitats, including at least 2.3 acres of least Bell's vireo nesting habitat. The mitigation site should contain at least two breeding pairs of least Bell's vireos at the time that the mitigation site reaches its performance standards. Additional mitigation should be provided to offset the temporal loss of vireo habitat since Project impacts have occurred (almost five years of temporal loss as of this writing).*

The mitigation proposed in the DBESP is consistent with the mitigation proposed in the 1600 Operation of Law. No known impacts to vireo occurred and therefore no mitigation for vireo is proposed. The removal of the sewage treatment pond is considered to be a net benefit for wildlife species, due to the removal of the toxic substances that would otherwise be present. No mitigation for least Bell's vireo, aside from removal of sewage from the pond that occurred during project implementation, is proposed.

9. *The city as the MSHCP permittee, should ensure that either an existing block of vireo territories is conserved, or vireo nesting habitat is created (including occupancy by vireo breeding pairs) on a site that will be managed for the benefit of vireo and riparian riverine*

> *resources. If an existing block of high quality occupied vireo habitat will not be preserved, a Habitat Mitigation and Monitoring Plan (HMMP) should be prepared to detail the pre-mitigation condition of the proposed mitigation site, the methods to provide the expected ecological lift on the site, performance standards for the mitigation, and long-term protection of the site through a conservation easement or similar durable realty instrument.*

As stated in the 2021 DBESP, no known impacts to vireo occurred and therefore no mitigation for vireo is proposed. The removal of the sewage treatment pond is considered to be a net benefit for wildlife species, due to the removal of the toxic substances that would otherwise be present. The mitigation proposed in the DBESP is consistent with the mitigation proposed in the 1600 Operation of Law.

When the Operation of Law was issued, the resource agencies did not require an HMMP for In Lieu Fee Programs. This is a new requirement and is not appropriate to delay the issuance of the MSHCP clearance. At most, please allow review and approval of a streamlined HMMP by CDFW prior to grading.

Please contact me at 949-489-2770 x213 or wcaffrey@vcsenvironmental.com if you have any additional questions or comments.

U.S. Fish and Wildlife Service
Palm Springs Fish and Wildlife Office
777 East Tahquitz Canyon Way, Suite 208
Palm Springs, California 92262
760-322-2070
FAX 760-322-4648

California Department of Fish and Wildlife
Inland Deserts Region
3602 Inland Empire Blvd., Suite C-220
Ontario, California 91764
909-484-0167
FAX 909-481-2945

In Reply Refer To:
FWS/CDFW-WRIV-14B0024-21CPA0110

August 24, 2021
*Sent by email*

Senior Planner Sandra Yang
Community Development Department
City of Corona
400 South Vicentia Avenue
Corona, CA 92882

Subject: Response to Wildlife Agencies' comments on the MSHCP DBESP to Remedy Unauthorized Impacts to Endangered Least Bell's Vireo Habitat from the City of Corona's Monteolivo Water Quality Basin and Sewer Line Project (Plan 14-066U) and the Monteolivo Residential Development Project (TTM 37895)

Dear Ms. Yang:

The California Department of Fish and Wildlife (CDFW) and the United States Fish and Wildlife Service (USFWS), collectively the Wildlife Agencies, have reviewed your applicant's the response to the April 26, 2021 Wildlife Agencies comments on the Monteolivo Water Quality Basin and Sewer Line Project (Project) retroactive Determination of Biologically Equivalent or Superior Preservation (DBESP) received on June 23, 2021 (hereafter referenced as June 2021 Response). The Wildlife Agencies are providing the following additional comments on the June 2021 Response as they relate to the Project's consistency with the Protection of Riparian, Riverine, and Vernal Pool Resources (Section 6.1.2 of the MSHCP).

Riparian/Riverine Delineation

As discussed in the Wildlife Agency comment letter, the jurisdictional delineation does not adequately represent the extent of the riparian/riverine resources on the Project site. The June 2021 Response states that the area is human created and not subject to the MSHCP, citing MSHCP Section 6.1.2 text. However, after review of aerial imagery, including the attached 1960 image), the Wildlife Agencies have concluded that the ponds were constructed within the course of a natural stream and tributary to Temescal Wash. This observation supports the position stated in the April 2021 Wildlife Agency comment letter that the area is supported by natural local groundwater, shallow enough to sustain and support riparian vegetation. Based on our review, the Wildlife Agencies do not concur that the riparian habitat within the vicinity of the ponds should be exempt from the delineation of MSHCP Section 6.1.2 resources.

The June 2021 Response also asserted that on June 12, 2013, CDFW and USFWS representatives determined that the pond was not a "jurisdictional feature". The Wildlife Agencies do not have any record that supports this statement. Please provide written correspondence from the Wildlife Agencies documenting that determination.

Project Impacts to Occupied Least Bell's Vireo Habitat

The Wildlife Agencies do not concur with the assertion in the June 2021 Response that "No known impacts to least Bell's vireo occurred during Project activities". Project activities resulted in the removal of known occupied least Bell's vireo habitat, in an area with extensive documentation of nesting least Bell's vireo. The California Natural Diversity Database contains records documenting least Bell's vireo within the Project site in 2006, 2010, and 2014; additionally, the Santa Ana Watershed Association has mapped least Bell's vireo territories within the Project site in 2015 and 2017. The removal of suitable habitat resulted in a reduction of available least Bell's vireo breeding and feeding habitat; resulting in increased competition for space, changes to site fidelity, and a decreased carrying capacity of the site to support breeding pairs in the nesting season.

As requested in the April 2021 Wildlife Agency comment letter, please revise the DBESP to identify mitigation that is equivalent or superior to avoidance of 2.7 acres of MSHCP riparian/riverine habitats (the amount impacted by Project activities), including at least 2.3 acres of least Bell's vireo nesting habitat. The mitigation site should contain at least two breeding pairs of least Bell's vireos at the time that the mitigation site reaches its performance standards.

Additional mitigation should be provided to offset the temporal loss of vireo habitat during the 3-year period of regrowth after Project impacts occurred. The City of Corona, as the MSHCP permittee, should ensure that either an existing area of occupied vireo habitat is conserved, or vireo nesting habitat is created (including occupancy by vireo breeding pairs) on a site that will be managed for the benefit of vireo and riparian riverine resources. If an existing area of high-quality occupied vireo habitat will not be preserved, a Habitat Mitigation and Monitoring Plan (HMMP) should be prepared to detail the pre-mitigation condition of the proposed mitigation site, the methods to provide the expected ecological lift on the mitigation site, performance standards for the mitigation, and long-term protection of the site through a conservation easement or similar durable realty instrument.

Finally, the Wildlife Agencies would like to remind the Project that although the Wildlife Agencies strive for consistency between CDFW's Lake and Streamed Alteration Program and Section 6.1.2 of the MSHCP, they are entirely separate programs; determinations and decisions made in respect to both programs are exclusive of each other.

As stated in our April 2021 comment letter, the Wildlife Agencies reiterate that the DBESP (VCS 2020) needs to be revised to provide mitigation that is biologically equivalent or superior to the avoidance of impacts to the riparian and riverine resources, including the occupied least Bell's vireo habitat, present on-site prior to disturbance, for the reasons explained above.

We appreciate the opportunity to address your applicant's response to our comments on Monteolivo DBESP and look forward to continuing to work with the City of Corona on this Project. The revised DBESP can be provided electronically to both the Service (via james_thiede@fws.gov) and CDFW (via R6MSHCP@wildlife.ca.gov with a cc to eric.chan@wildlife.ca.gov). We can also be available for a meeting if preferred.

Sincerely,

KARIN CLEARY-ROSE Digitally signed by KARIN CLEARY-ROSE Date: 2021.08.24 18:36:01 -07'00'

for
Rollie White
Assistant Field Supervisor
U.S. Fish and Wildlife Service

DocuSigned by: Heather Pert DF423498814B441...

for
Scott Wilson
Environmental Program Manager
California Department of Fish and Wildlife

Attachment: 1960 Image UCSB Aerial Photography Library:
(https://mil.library.ucsb.edu/ap_images/c-23870/c-23870_2578.tif)

Literature Cited

VCS 2020 [VCS Environmental]. 2020. Determination of Biologically Equivalent or Superior Preservation (DBESP) for the Monteolivo Sewer Line Project. March 2020, revised August 2020. 58 pages. California.

VCS Environmental
EXPERTS IN STRATEGIC SOLUTIONS

# Memorandum

Date: September 29, 2021

To: Sandra Yang, City of Corona

From: Wade Caffrey, VCS Environmental

Subject: Response to MSHCP DBESP Comments

We have reviewed the U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife (Wildlife Agencies) comments on the Determination of Biologically Equivalent or Superior Preservation (DBESP) for the Monteolivo Water Quality Basin and Sewer Line Project (Project) and have prepared this memorandum in response.

The comments primarily focus on the inclusion of a sewage pond adjacent to the identified MSHCP resources (the unnamed drainage and Riverside canal) as part of MSHCP jurisdiction. The connection of the Bel Air Community sewer lines, and thereby the decommissioning of the sewage pond, was required by the City of Corona as stated within the greater Monteolivo Development Conditions of Approval (Appendix A, Conditions 42-45). As this requirement is in the existing Conditions of Approval, additional CEQA review is not required, and therefore does not warrant additional MSHCP review. As stated in the 2020 DBESP, impacts to the unnamed drainage and the Riverside canal were not anticipated and therefore this MSHCP After the Fact and associated CEQA review is intended to address the unnamed drainage and Riverside Canal only.

Furthermore, we've identified additional points from each of the Wildlife Agencies comments below and then have provided responses to those points:

1. **The removal of suitable habitat resulted in take of LBV. A mitigation site with two breeding pairs plus additional mitigation for temporal loss should be provided.**

It is agreed that LBV were observed adjacent to impact areas before and after project activities. However, the information provided has not changed our findings: we still maintain that no known impacts to LBV occurred during project activities and LBV continue to use and occupy the area surrounding the project site. According to the Section 10 of the Endangered Species Act, "take" is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any threatened or endangered species. The USFWS' Memorandum to Regional Directors 1-8 (dated 4/26/2018 [Appendix B]) provides the following explanation regarding "harm" in the context of habitat modification:

*"In order to find that habitat modification constitutes a taking of listed species under the definition of 'harm', all aspects of the harm definition must be triggered. The questions that should be asked before a*

*determination is made that an action involving habitat modification is likely to result in take are: 1) Is the modification of habitat significant? 2) If so, does that modification also significantly impair an essential behavior pattern of a listed species? 3) and, is the significant modification of the habitat, with a significant impairment of an essential behavior pattern, likely to result in the actual killing or injury of wildlife? All three components of the definition are necessary to meet the regulatory definition of 'harm' as a form of take through habitat modification under section 9, with the actual killing or injury of wildlife as the most significant component of the definition."*

LBV pairs continued to return to the Project area following impacts, indicating behavior patterns of LBV were not significantly impaired. Therefore, based on the above definition, 'harm' to LBV did not occur. In addition, no LBV were known to be directly harmed by the sewer line installation activities.

In addition, the USFWS Habitat Conservation Planning and Incidental Take Permit Processing Handbook states that "if incidental take of ESA-listed species is not anticipated from a landowner or project proponent's activities, an incidental take permit is not needed or appropriate," and that seeking an incidental take permit is "a voluntary action by an applicant."

Note, the SAWA report does not show the precise location of the surveys and it is not clear that the Project is within the survey limits (refer to Appendix C for reference). If more precise information is available, please provide.

2. **MSHCP and CDFW strive for consistency, however, they are exclusive of each other.**

Understood, however, because recent approval has been provided by CDFW, we would appreciate this being taken into consideration.

Please feel free to contact me with any questions at wcaffrey@vcsenvironmental.com or 858.353.7946

**Appendices:**

- Appendix A: Conditions of Approval
- Appendix B: USFWS Memorandum to Regional Directors 1-8
- Appendix C: Least Bell's Vireo Survey Sites in the Santa Ana Watershed

# Appendix A
# Conditions of Approval

**CITY OF CORONA**
400 South Vicentia Avenue
Corona, CA 92882
(951) 736-2262

## Conditions Of Approval For Project TTM 36533

**Applicant:** ARMSTRONG & BROOKS CONSULTING
1350 CHASE DRIVE
CORONA CA 92881

**Phone:** 951-372-8400

**Location:** LAUREL CANYON AND OLD TEMESCAL RD

**Application Date:** 08/06/2013

### Fire Department:

1FR-001 Provide plans for two (2) all weather surface access ways to be approved by the Fire Prevention Manager and construct the access way(s) to accommodate 70,000 lbs GVW during all phases of construction.

1FR-002 Cul-de-sac(s) shall not exceed five hundred (500) feet in length unless otherwise approved by the Board of Zoning and Adjustment.

1FR-003 Cul-de-sac(s) shall be aligned to provide line of sight to the terminus unless otherwise approved by the Board of Zoning and Adjustment.

1FR-004 Street and drive grades shall not exceed 10% unless approved by the Fire Chief and City Engineer.

1FR-005 A "Knox Padlock" shall be provided for gate(s) in this project. Applications for "Knox Padlock(s)" are available at the City Hall Fire Department counter.

1FR-006 A minimum fire flow of 1500 gpm shall be provided.

1FR-007 Fire hydrants are to be spaced a maximum 300 feet apart.

1FR-008 A fire facilities fee of $231.00 per acre is required per Corona Municipal Code Section 3.36.030 and must be paid prior to building permit issuance.

1FR-009 Groves and weed abatement shall be maintained so as not to pose a fire hazard until time of development.

1FR-010 Residential Fire Sprinklers shall be installed per 2010 California Fire Code, 2010 California Residential Code, and NFPA 13.

1FR-011 The blasting study and fuel modification shall be approved by the Fire Marshal prior to the issuance of a grading permit.

### Community Development Department:

1PL-001 The project shall comply with all applicable requirements of the Corona Municipal Code (CMC), and all ordinances, if any, including the payment of all required fees.

1PL-002 The applicant or his successor in interest shall comply with the mitigation measures established in the Initial Study and Mitigated Negative Declaration for CZ13-003 and TTM 36533.



EXHIBIT B

1PL-003 To the fullest extent permitted by law, the applicant shall defend, indemnify and hold the City of Corona and its directors, officials, officers, employees, volunteers and agents free and harmless from any and all claims, demands, causes of action, proceedings, costs, expenses, liabilities, losses, damages or injuries of any kind, in law or equity, in any manner arising out of, pertaining to, or incident to any attack against or attempt to challenge, set aside, void or annul any approval, decision or other action of the City of Corona, whether such approval, decision or other action was by its City Council, Planning Commission or other board, director, official, officer, employee, volunteer or agent. The Applicant's obligations hereunder shall include, without limitation, the payment of any and all damages, consultant and expert fees, and attorney's fees and other related costs and expenses. The City shall have the right to retain such legal counsel as the City deems necessary and appropriate. Nothing herein shall be construed to require City to defend any attack against or attempt to challenge, set aside, void or annul any such City approval, decision or other action. If at any time Applicant chooses not to defend (or continue to defend) any attack against or attempt to challenge, set aside, void or annul any such City approval, decision or other action, the City may choose, in its sole discretion, to defend or not defend any such action. In the event that the City decides not to defend or continue the defense, Applicant shall be obligated to reimburse City for any and all costs, fees, penalties or damages associated with dismissing the action or proceeding. If at any time both the Applicant and the City choose not to defend (or continue to defend) any action noted herein, all subject City approvals, decisions or other actions shall be null and void. The Applicant shall be required to enter into any reimbursement agreement deemed necessary by the City to effectuate the terms of this condition.

1PL-004 During grading on site, dust suppression measures shall be implemented. These shall include frequent watering of fill material, early paving, and frequent cleaning of haul roads.

1PL-005 Construction adjacent to existing residential development shall be limited to the hours of 7:00 a.m. to 6:00 p.m.

1PL-006 Prior to the issuance of grading permits, the applicant shall submit for review and implement a vector control program. This program shall also provide for continued monitoring and relocation during the grading process. A final report upon completion shall be submitted to the Community Development Department.

1PL-007 If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission must be contacted within 24 hours. The Native American Heritage Commission must then immediately identify the "most likely descendant(s)" of receiving notification of the discovery. The most likely descendant(s) shall then make recommendations within 48 hours, and engage in consultations concerning the treatment of the remains as provided in Public Resources Code 5097.98.

1PL-008 The applicant shall provide irrigation and landscaping where off-site grading occurs per the city's LMD slope standards or fuel modification plan and shall be maintained by the respective HOA until such time it is developed by the property owner.

1PL-009 Temporary perimeter fencing shall be constructed at the southerly terminus of "B" Street at Shadow Valley Way prior to the issuance of a grading permit. Upon completion of grading, a permanent fence/gate shall be constructed with a Knox Lock or Box to restrict vehicular traffic with the exception of emergency vehicles or during an emergency.

1PL-010 Access to State Street via Shadow Valley Way shall be restricted to emergency vehicles. Residential ingress and egress from State Street via Shadow Valley Way is prohibited in perpetuity.

1PL-011 Construction traffic access to the project site shall be restricted to Old Temescal Road and Laurel Canyon Way. Construction traffic, staging and ingress and egress shall be prohibited from State Street.

1PL-012 The developer shall, at its own expense, acquire the off-site easement over APN 107-080-012, for the purposes of a Fuel Modification Zone, necessary off-site grading, and drainage as required by the proposed/submitted tentative tract map (TTM 36533) design. In case the developer is unable to obtain the required off-site easement, said map and conceptual plans shall be redesigned to provide the Fuel Modification Zone on-site and resubmitted for approval by the City, along with any fees required for the City's review of such resubmitted map and plans.

1PL-013 This project site is subject to the MSHCP fee for residential developments with a density less than 8.0 residential units per acre. The fee is the effective rate that is in effect at the time building permits are issued for the project. The entire fee is payable with the issuance of the first building permit.

**Public Works Department:**

**GENERAL CONDITIONS**

1. The developer shall comply with the State of California Subdivision Map Act and all applicable City ordinances and resolutions.

2. Prior to final map recordation or issuance of grading permit, the applicant shall demonstrate to the satisfaction of the Public Works Director that the proposed subdivision will not unreasonably interfere with the use of any easement holder of the property.

3. All improvement and grading plans shall be drawn on twenty-four (24) inch by thirty-six (36) inch Mylar with permanent black ink only and wet-signed by a registered civil engineer or other registered/licensed professional as required.

4. The submitted tentative tract map and conceptual improvement plans shall correctly show all existing easements, traveled ways, and drainage courses. Any omission or misrepresentation of these documents may require said tentative tract map and plans to be resubmitted for further consideration and pay additional applicable fees.

5. The tentative tract shall be recorded as one final tract map, and shall be developed as one tract. Financial security shall be provided for all improvements within the tract prior to final tract map approval.

6. In the event that off-site right-of-way or easements are required, the developer is required to secure such right-of-way or easements at no cost to the City.

7. Prior to final map recordation or approval of any off-site grading, the developer shall, at its own expense, acquire from the vested property owner, the off-site easement over APN 107-080-012, for the purposes of a Fuel Modification Zone, necessary off-site grading, and drainage as required by the proposed/submitted tentative tract map (TTM 36533) design. In case the developer is unable to obtain the required off-site easement, said map and conceptual plans shall be redesigned to provide the Fuel Modification Zone on-site and resubmitted for approval by the City, along with any fees required for the City's review of such resubmitted map and plans.

8. All existing and new utilities adjacent to and on-site shall be placed underground in accordance with City of Corona ordinances.

9. Prior to issuance of a Certificate of Occupancy, the developer shall cause the engineer of record to submit project base line work for all layers in AutoCAD DXF format on Compact Disc (CD) to the Public Works Department. If the required files are unavailable, the developer shall pay a scanning fee to cover the cost of scanning the as-built plans.

10. The developer shall monitor, supervise and control all construction and construction related activities to prevent them from causing a public nuisance including, but not limited to, insuring strict adherence to the following:

    (a) Removal of spoils, debris or other construction material deposited on any public street no later than the end of each working day.

    (b) Construction operations, including building related activities and deliveries, shall be restricted to Monday through Saturday from 7:00 a.m. to 8:00 p.m., excluding holidays, and from 10:00 a.m. to 6:00 p.m. on Sundays and holidays, in accordance with City Municipal Code 15.04.060, unless otherwise extended or shortened by the Public Works Director or Building Official.

    (c) The construction site shall accommodate the parking of all motor vehicles used by persons working at or providing deliveries to the site. Violation of any condition or restriction or prohibition set forth in these conditions shall subject the owner, applicant, developer or contractor(s) to remedies as noted in the City Municipal Code. In addition, the Public Works Director or Building Official may suspend all construction related activities for violation of any condition, restriction or prohibition set forth in these conditions until such time as it has been determined that all operations and activities are in conformance with these conditions.

11. Prior to final map recordation, the developer shall ensure that a homeowner's association is established for the purpose of maintaining all private streets, common areas and private utilities. The association documents, including any necessary Covenants, Conditions and Restrictions (CC&R's), shall be subject to the review and approval from the Public Works Department and shall be recorded concurrently. The developer shall post a deposit to cover the "full cost" review fees.

12. Prior to final map recordation, the developer shall finish the construction or post security guaranteeing the construction of all public improvements. Said improvements shall include, but are not limited to, the following:

    (a) All missing or deficient street facilities along Laurel Canyon Way and/or as required by the approved Traffic Impact Study.
    (b) All required drainage facilities.
    (c) All required grading, including erosion control.
    (d) All required sewer, water and reclaimed water facilities.
    (e) All required landscaping and/or park facilities.
    (f) All under grounding of overhead utilities, except for cables greater than 32k volts.

**GRADING**

13. All the grading design criteria shall be per City of Corona standards, Corona Municipal Code Title 15 Chapter 15.36 and City Council Ordinance Number 2568, unless otherwise approved by the Public Works Director.

14. Prior to approval of grading plans, the applicant shall submit two (2) copies of a final soils and geologic report prepared by a Registered Engineer to the Public Works Department Land Development Section. The report shall address the soil's stability and geological conditions of the site. If applicable, the report shall also address: deep seated and surficial stability of existing natural slopes; modified natural slopes which are subject to fuel zones; manufactured slopes and stability along proposed daylight lines; minimum required setbacks from structures; locations and length of proposed bench drains, sub-drains or french drains; and any other applicable data necessary to adequately analyze the proposed development.

15. Prior to approval of grading plans, erosion control plans and notes shall be submitted and approved by the Public Works Department Land Development Section.

16. No grading shall take place until all improvement plans are substantially complete and appropriate clearance letters from state and federal agencies (USACE, CDFW, USFW) are provided to the City unless otherwise approved by the Public Works Director.

(a) Mass grading may be allowed, pending receipt of clearance letters and per an approved mass grading plan, prior to improvement plans being substantially complete and as approved by the Public Works Director. No offsite grading shall take place until necessary off-site easements are acquired as specified in these conditions.

17. Prior to approval of grading plans, the applicant shall obtain a General Construction Activity Storm Water Permit from the State Water Resources Control Board in compliance with National Pollutant Discharge Elimination System (NPDES) requirements. Proof of filing a Notice of Intent (NOI) will be required by the City. The WDID # shall be displayed on the title sheet of the grading plans.

18. Prior to approval of grading plans, the applicant shall comply with the Federal Clean Water Act and shall prepare a Storm Water Pollution Prevention Plan (SWPPP). A copy of the SWPPP shall be provided to the Public Works Department Land Development Section. Additionally, the SWPPP shall be available at the project site for review at all times.

19. Prior to issuance of grading permit or construction of any improvements, a letter will be required from a qualified botanist, plant taxonomist or field biologist specializing in native plants, stating that an investigation and/or eradication of scale broom weed (Lepidospartum Squamatum) has been completed.

20. Prior to the issuance of a grading permit the developer shall submit recorded slope easements or written letters of permission from adjacent landowners in all areas where grading is proposed to take place outside of the project boundaries.

21. Prior to issuance of building permits, the civil engineer of record and soils engineer of record for the approved grading plans shall submit pad certifications and compaction test reports for the subject lots where building permits are requested.

22. Prior to release of grading security, the developer shall cause the civil engineer of record for the approved grading plans to submit a set of as-built grading plans that includes Water Quality Control facilities.

23. Prior to map recordation or issuance of a grading permit, whichever occurs first, the developer may be required to obtain a Section 1601/1603 permit from the California Department of Fish and Wildlife, a Section 401/404 permit from the United States Army Corps of Engineers, or provide verification that the project is exempt from permit requirements.

**NPDES/WQMP**

24. All City of Corona NPDES permit requirements for NPDES and Water Quality Management Plans (WQMP) shall be met per Corona Municipal Code Title 13 Chapter 13.27 and City Council Ordinance Numbers 2291 and 2828 unless otherwise approved by the Public Works Director.

25. Prior to the issuance of a grading permit, a final WQMP, in substantial conformance with the approved Preliminary WQMP, shall be submitted to the Public Works Land Development Section for approval. Upon its final approval, the applicant shall submit one copy on a CD-ROM in PDF format.

26. Prior to the issuance of the first Certificate of Occupancy, the applicant shall record Covenants, Conditions and Restrictions (CC&R's) to inform future property owners to implement the approved WQMP.

27. Prior to issuance of the first Certificate of Occupancy, the applicant shall provide proof of notification to the future homeowners and/or occupants of all non-structural BMPs and educational and training requirements for said BMPs as directed in the approved WQMP.

28. Prior to issuance of the first Certificate of Occupancy, the applicant shall ensure all structural post construction BMPs identified in the approved project specific Final WQMP are constructed and operational.

**DRAINAGE**

29. All the drainage design criteria shall be per City of Corona standards and the Riverside County Flood Control and Water Conservation District standards unless otherwise approved by the Public Works Director.

30. Prior to recordation or approval of any improvement plans, the applicant shall submit a detailed hydrology study. Said study shall include the existing, interim and the ultimate proposed hydrologic conditions including key elevations, drainage patterns and proposed locations and sizes of all existing and proposed drainage devices. The hydrology study shall present a full breakdown of all the runoff generated on- and off-site for the 10- and 100-year storm events.

31. Prior to approval, the improvement plans submitted by the applicant shall address the following:

    (a) The project shall be designed to accept and properly convey all on- and off-site drainage flowing on or through the site.
    (b) The project drainage system design shall protect downstream properties from any damage caused by alteration of drainage patterns such as concentration or diversion of flow.
    (c) All lots shall drain toward the street. Residential lot drainage to the street shall be by side yard swales independent of adjacent lots or by an underground piping system.

32. Prior to final map recordation, the applicant shall construct or guarantee the construction of required drainage facilities on or off site.

**STREETS**

33. Street design criteria and cross sections shall be per City of Corona standards, approved Specific Plan design guidelines and the State of California Department of Transportation Highway Design Manual unless otherwise approved by the Public Works Director.

34. Prior to final map recordation, the applicant shall offer for dedication all required street rights-of-way along Laurel Canyon Way. Said dedication shall continue in force until the City accepts or abandons such offers. All dedications shall be free of all encumbrances and approved by the Public Works Director.

35. Prior to final map recordation, the applicant shall release and relinquish all vehicular access rights to the City of Corona along Laurel Canyon Way except at approved intersections.

36. Prior to final map recordation or approval, the improvement plans submitted by the applicant shall include the following:

    (a) All local and/or major arterial highways' vertical and horizontal alignments shall be approved by the Director of the Public Works Department.
    (b) All driveways shall conform to the applicable City of Corona standards and shall be shown on the street improvement plans, unless otherwise approved by the Public Works Director.
    (c) All street intersections shall be at ninety (90) degrees or as approved by the Public Works Director.
    (d) All reverse curves shall have a minimum tangent of fifty (50) feet in length.
    (e) Under grounding of existing and proposed utility lines.
    (f) Street lights.

37. Prior to approval of improvement plans, the applicant shall improve all the streets contiguous to the project to half width plus ten (10) additional feet, full structural section, unless otherwise approved by the Public Works Director.

38. Prior to acceptance of public improvements, the Public Works Director may determine that aggregate slurry, as defined in the Standard Specifications for Public Works Construction, may be required one year after acceptance of public street(s) by the City if the condition of the street(s) warrant its application. All striping shall be replaced in kind. The applicant is the sole responsible party for the maintenance of all the improvements until said acceptance takes place.

39. Prior to recordation of the final map, all street names shall be approved by the Public Works Director.

40. The developer shall comply with the approved traffic impact study recommendations including, but not limited to:

    (a) Install dedicated left turn pockets at the intersection of Old Temescal Road and Compton Avenue along the east leg of Old Temescal Road and south leg of Compton Avenue.
    (b) Install traffic calming striping and parking restrictions along Old Temescal Road east of Compton Avenue.
    (c) Install pedestrian crosswalk, with pedestrian activated solar-powered flashing crosswalk signage and equipment.
    (d) Pay fair share costs (9.55%) for the traffic signal at the intersection of Rimpau Avenue and Old Temescal Road.

41. Prior to recordation of the final map, the developer shall pay fair share fees to the Public Works Department Land Development Section as determined by the approved Traffic Impact Study for the cost of future improvements in accordance with City standards. These improvements shall include, but are not limited to:

    (a) Fair share costs (9.55%) for the traffic signal at the intersection of Rimpau Avenue and Old Temescal Road

**SEWER AND WATER**

42. All the sewer and water design criteria shall be per City of Corona Department of Water and Power standards and Riverside County Department of Health Services Standards unless otherwise approved by the General Manager of the Department of Water and Power or his official designee.

43. Prior to recordation or approval of improvement plans, when applicable, the applicant shall submit detailed sewer, water and reclaimed studies, prepared by a registered civil engineer, which shall be submitted to the Public Works Department Land Development Section for review and approval. The study shall analyze the existing and proposed sewer and water facilities. Results of the system analysis may require special construction for the sewer and water systems, such as upsizing downstream sewer lines, installing pressure regulators, booster pumps, special material for pipeline construction, backwater valves and construction of other appurtenances as necessary to serve the proposed development. Effects of the proposed development, engineering analysis and special construction requirements shall be submitted for review and approval by the Public Works Department and the Department of Water and Power.

44. Prior to final map recordation, the developer shall construct or guarantee the construction of the replacement or rehabilitation of the deficient sewer lines in accordance with DWP standards within the Bel Air Communities and shall construct the necessary facilities required to connect the existing community into the public sewer system as required by the General Manager. All replacements of deficient sewer facilities shall, be completed prior to the first building permit issued for TTM 36533

45. Prior to final map recordation or building permit issuance or whichever comes first, the developer shall construct or guarantee the construction of an 8-inch VCP sewer line from Sherborn Avenue (point of connection on Sherborn, LLC property approximately 300 feet-s'ly of Sherborn Ave. per City of Corona DWG. No. 03-144S) to the project's northerly boundary per City of Corona Department of Water and Power Standard Plans and Specifications. This facility shall be completed and in operation prior to the issuance of the first building permit for TTM 36533.

46. Prior to the issuance of the first building permit, the developer shall transfer the ownership rights of the existing sewer lines in the Bel Air Communities, excluding the onsite sewer treatment facilities to the City of Corona.

47. Prior to the issuance of the first building permit, the developer shall purchase the sewer capacity for the existing 56 single family homes within the Bel Air Communities.

48. All landscape lots to be maintained by the HOA / CFD shall be planted with a California Friendly Plant pallet and shall be provided a separate reclaimed landscape water service.

49. Prior to final map recordation or building permit issuance or whichever comes first, the developer shall construct or guarantee the construction of an 8-inch DIP reclaimed waterline from "A" Street to Compton Avenue per City of Corona Department of Water and Power Standard Plans and Specifications.

50. Prior to final map recordation or building permit issuance or whichever comes first, the developer shall construct or guarantee the construction of an 8-inch DIP potable waterline from "A" Street to Compton Avenue per City of Corona Department of Water and Power Standard Plans and Specifications.

51. Prior to final map recordation or building permit issuance or whichever comes first, the developer shall construct or guarantee the construction of an 8-inch DIP potable waterline in "A thru H" Street/Circle per City of Corona Department of Water and Power Standard Plans and Specifications. The applicant shall provide two points of connection to the public water system for "H" Circle.

52. Prior to final map recordation or building permit issuance or whichever comes first, the developer shall construct or guarantee the construction of an 8-inch VCP sewer line in "A thru H" Street/Circle per City of Corona Department of Water and Power Standard Plans and Specifications.

53. The minimum easement width shall be 20 feet for one utility and 30 feet for more than one public utility facility. All public water and sewer facilities shall be provided a minimum 20 foot wide paved access road unless otherwise approved by the General Manager.

54. Prior to issuance of any building permits, including model home permits, a domestic water and fire flow system shall be approved by the Public Works Department and constructed by the developer, to the satisfaction of the Public Works Director and Fire Chief.

55. Prior to final map recordation or building permit issuance or whichever comes first, the developer shall construct or guarantee the construction of all public water and sewer facilities required to serve the development per City of Corona Department of Water and Power Standard Plans and Specifications.

56. Prior to improvement plans approval, the applicant shall ensure that all water meters, fire hydrants or other water appurtenances shall not be located within a drive aisle or path of travel.

57. Prior to map recordation the developer shall pay the Quimby Fees.

58. Prior to final map recordation, the developer shall construct or guarantee the construction of the parkway landscaping per City of Corona Department of Water and Power Standard Plans and Specifications.

**SPECIAL DISTRICTS**

59. Prior to final map recordation, the applicant shall annex this project into the City of Corona Community Facilities District (CFD 2001-1) for the purpose of maintaining public landscaping within master planned street right-of-way and/or CFD/LMD easements and into the Lighting Maintenance District (LMD 84-1) for the purpose of maintaining public street lighting. All assessable parcels therein shall be subject to annual CFD/LMD charges (special taxes or assessments) for operations and capital improvements. The developer shall be responsible for all costs incurred during annexation into CFD 2001-1 and LMD 84-1.

    (a) Please be aware that the annexation process requires three (3) months or more to complete and shall be completed prior to final map recordation.
    (b) No building permits shall be issued prior to final map recordation.

60. Prior to final map recordation the applicant shall prepare a disclosure statement indicating that the property is within Community Facilities District (CFD 2001-1) and Lighting Maintenance District (LMD 84-1) and will be subject to an annual levy. The disclosure statement is subject to the review and approval of the Public Works Department and shall be recorded concurrently with the final map.

61. Prior to recordation, the applicant shall submit for approval all proposed parkway, slope maintenance, and/or landscaping easements to be granted to the Community Facilities District or Landscape Maintenance District, as specified on the tentative map or Conditions of Approval. Said information shall be submitted to the Public Works Department Special Districts Section for approval.

62. Prior to issuance of a Certificate of Occupancy, all proposed parkway, slope maintenance, and/or median landscaping specified in the tentative map or in these Conditions of Approval shall be constructed.

63. Prior to the issuance of a Certificate of Occupancy, any damage to existing landscape easement areas due to project construction shall be repaired or replaced by the developer, or developer's successors in interest, at no cost to the City of Corona.

**FEES AND CREDITS**

64. Prior to map recordation or issuance of a building permit as applicable, the developer shall pay all development fees, including but not limited to Development Impact Fees (DIF) per City Municipal Code 16.23 and Transportation Uniform Mitigation Fees (TUMF) per City Municipal Code 16.21. Said fees shall be collected at the rate in effect at the time of fee collection as specified by the current City Council fee resolutions and ordinances.

65. Prior to recordation of the final map, the developer shall pay fair share fees as specified in these conditions of approval.

# Appendix B
# USFWS Memorandum

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington, D.C. 20240

In Reply Refer To:
FWS/AES/067974

APR 2 6 2018

Memorandum

To: Regional Directors 1-8

From: Principal Deputy Director

Subject: Guidance on trigger for an incidental take permit under section 10 (a)(1)(B) of the Endangered Species Act where occupied habitat or potentially occupied habitat is being modified.

The U.S. Fish and Wildlife Service (Service) Field and Regional personnel often provide critical technical assistance to private parties who may take actions affecting listed species, and who may decide to invest significant resources to prepare an incidental take permit application pursuant to ESA Section 10(a)(1)(B). It is vital that Service staff apply correct and consistent interpretations of ESA statutory and regulatory provisions.

It is also vital that Service staff recognize that whether to apply for a section 10(a)(1)(B) permit is a decision of the applicant. Service staff can and should advise non-federal parties on the law, our regulations and guidance, and the potential for take of listed species incidental to their activities, but it is not appropriate to use mandatory language (e.g., a permit is "required") in the course of that communication. The HCP process is applicant driven, and that includes the threshold determination of whether to develop an HCP and apply for a permit. That threshold determination ultimately rests with the project proponent. Project proponents can take Service input into account and proceed in a number of ways, based upon their own risk assessment. They may proceed (at their own risk) as planned without a permit, modify their project and proceed without a permit, or prepare and submit a permit application. The biological, legal, and economic risk assessment regarding whether to seek a permit belongs with the private party determining how to proceed[1].

After consultation with the Solicitor's Office, I am providing guidance on how one determines whether a project is likely to result in "take" of a listed species as it relates to habitat modification. Further, I am requiring that : 1) the Assistant Director – Ecological Services post this memorandum and the attached questionnaire on the Headquarters Endangered Species web page; and 2) that Service regional and field staff include direction to that web site

[1] However, once a project proponent has decided to apply for a permit, the structure and scope of the HCP and associated permit are subject to negotiation between the permittee and the Service.

(www.fws.gov/endangered/esa-library/pdf/Guidance-on-When-to-Seek-an-Incidental-Take-Permit.pdf) when project proponents seek information about whether their action needs an incidental take permit under section 10 (a)(1)(B). By operating in a consistent manner, with clear standards, we can reduce conflict, minimize public frustration and increase government efficiency.

Simply put, as set out below, a section 10 (a)(1)(B) incidental take permit is only needed in situations where a non-federal project is likely to result in "take" of a listed species of fish or wildlife. That is, the requirement for an incidental take permit, as set forth in section 10 (a)(1)(B) of the ESA and its accompanying regulations, is only activated when non-Federal activities are likely to result in the take of listed wildlife.[2] As discussed in more detail below, habitat modification, in and of itself, does not necessarily constitute take. Chapter 3 of the Fish and Wildlife Service's Habitat Conservation Plan Handbook (Handbook) sets out the pre-application process and plainly states that if take is not anticipated then an incidental take permit is not needed. Further, it explains that an incidental take permit is only needed if a non-federal party's activity is "in an area where ESA-listed species are known to occur and where their activity or activities are reasonably certain to result in incidental take." The Handbook clarifies that the standard for determining if activities are likely to result in incidental take is whether that take is "reasonably certain to occur." In addition, the Handbook directs that the Service should avoid "processing applications submitted purely 'as insurance' when take of ESA –listed species is not anticipated." (*See Handbook, Chapter 3 "Phase 1:Pre-Application")*

An essential component of analysis needed to determine whether an incidental take permit (ITP) is needed is an understanding of what constitutes take under the ESA. The ESA defines "take" as: to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or to attempt to engage in any such conduct. 16 U.S. C. 1542(b). The ESA's take definition has been supplemented by the Service with regulatory definitions of the terms "harm" and "harass".

The terms "harm" and "harass" have been redefined several times. In July 1975, the Service proposed "harass" to be defined as an act that "either actually or potentially harms wildlife by killing or injuring it, or by annoying it to such an extent as to cause serious disruption in essential behavior patterns, such as feeding, breeding, or sheltering. Significant environment modification or degradation which has such effects is included in the meaning of harass." 40 F.R. 28712 (July 8, 1975). After notice and comment on the proposed definition, the Service reworked the definition of harass (as well as the definition of harm) and redefined the Service's regulatory definition of "harass" as follows: "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding feeding or sheltering." 50 C.F.R. §17.3.

[2] Listed plants are not included in the ESA's prohibition on take of listed species.

The preamble to the final rule explicitly stated that the Service moved the concept of environmental modification or degradation from "harass" to the term "harm." 40 F.R. 44412 (Sept. 26, 1975). Specifically, the preamble explained that the "concept of environmental damage being considered a 'taking' has been retained, but it now found in a new definition of 'harm.'" In addition, the Service chose to modify the definition of "harass" by "restricting its application to acts or omissions which are done 'intentionally or negligently.'" The preamble explained that this change – to have "harass" only apply to intentional or negligent actions – was made as otherwise under the proposed language, harass would have "applied to any action, regardless of intent or negligence." Harass, therefore, is not a form of take permitted under section 10(a)(1)(B), which applies to taking "incidental to, but not the purpose of, the carrying out of an otherwise lawful activity."

Take in the form of "harm" is particularly significant and relevant to section 10 ITPs because it can be manifested in the form of habitat modification, a common component of non-Federal activities. As discussed above, the term "harm" has also been redefined several times, always with the intention to clarify that "harm" relates to activities that are likely to result in the actual death or injury of listed species. In 1975, the Secretary issued a regulation that defined "harm" to mean an act that "actually injures or kills wildlife, including acts which annoy it to such an extent as to significantly disrupt essential behavior patterns, which include but are not limited to, breeding, feeding or sheltering," and which include "significant environmental modification or degradation which has such effects." This regulation's preamble noted that "harm" was "expressly limited to those actions causing actual death or injury to a protected species of fish and/or wildlife. The actual consequences of such an action upon a listed species is paramount." *See*, 40 F.R. 44,413 (Sept. 26, 1975).

In 1981, the Secretary established the current regulatory definition of "harm" because of concerns that the prior regulatory definition was being interpreted to bar habitat modification even when there was no resulting injury to species. The regulatory definition of "harm" was modified to read: "Harm in the definition of 'take' in the Act means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering." 50 C.F.R. §17.3. Some commenters on the rule asserted that habitat modification alone could be a "take" under section 9; the Service's response in the preamble was that "in the opinion of the Service Congress expressed no such intent." Further, the preamble explained that the use of the word "actually" clarifies that a "standard of actual adverse effects applies to section 9 taking" and that it was clear that "habitat modification or degradation, standing alone, is not a taking pursuant to section 9." It went on to emphasize that "modification must be *significant*, must *significantly impair essential* behavior patterns, and must result in *actual* injury" (emphasis in original). Finally, the preamble discussed the specific choice to use the word "impair" rather than "disrupt" in the phrase "significantly impair essential behavior patterns" to "limit harm to situations where a behavioral pattern was adversely affected

and not simply disturbed on a temporary basis with no consequent injury to the protected species." *See*, 46 FR 54,748 (Nov. 4, 1981).

The validity of the regulatory definition of "harm" as applied to habitat modification faced a facial challenge, which eventually reached the Supreme Court in *Babbitt v. Sweet Home Chapter of Communities For a Greater Oregon*, 515 U.S. 687, 115 S. Ct. 2407 (1995). The Supreme Court upheld the regulatory definition of "harm" and emphasized that while "harm" could result from habitat modification "every term in the regulation's definition of 'harm' is subservient to the phrase 'an act which actually kills or injures.'"

After the Supreme Court's decision, the 9th Circuit also analyzed the definition of "harm" and agreed that harming a species may be indirectly caused by habitat modification but concluded that habitat modification in and of itself does not constitute harm unless it "actually kills or injures wildlife." *Defenders of Wildlife v. Bernal*, 204 F.3d 920 (9th Cir. 1999). The *Bernal* court highlighted the Supreme Court's emphasis that every term in the definition of harm is "subservient to the phrase 'an act which actually kills or injures wildlife.'" In a later case, the 9th Circuit again tackled the definition of "harm" and held that, while the harm could be prospective, the "mere potential for harm, however, is insufficient."[3] *Arizona Cattle Growers' Association v. Fish and Wildlife Service*, 273 F.3d 1229 (9th Cir.2001). The *Arizona Cattle Growers'* Court opined that without evidence that a take would likely occur, a finding of take based on habitat modification alone would impose conditions on otherwise lawful use of land and such an action by the Service would be arbitrary and capricious.

The law is clear, then, that in order to find that habitat modification constitutes a taking of listed species under the definition of "harm", all aspects of the harm definition must be triggered. The questions that should be asked before a determination is made that an action involving habitat modification is likely to result in take are:

1. Is the modification of habitat significant?
2. If so, does that modification also significantly impair an essential behavior pattern of a listed species?
3. And, is the significant modification of the habitat, with a significant impairment of an essential behavior pattern, likely to result in the actual killing or injury of wildlife?

All three components of the definition are necessary to meet the regulatory definition of "harm" as a form of take through habitat modification under section 9, with the "actual killing or injury of wildlife" as the most significant component of the definition.

In summary, potential applicants should be advised that an ITP is only needed when an activity (or the results of the activity) is likely to result in the take of listed wildlife and that it is the

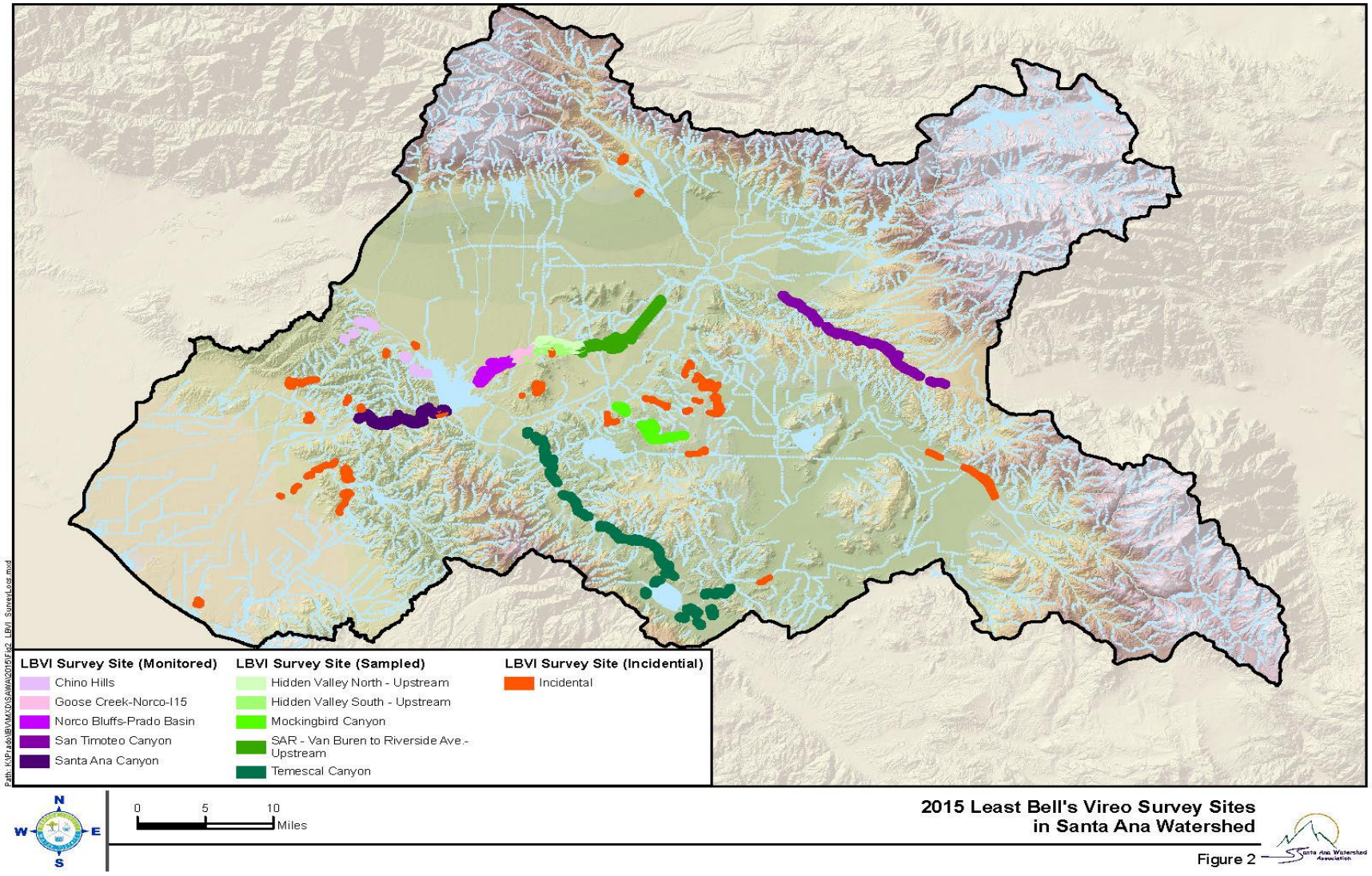
[3] The impact on a species may be prospective but it still must hit all the components of the definition of "harm" and must be reasonably certain to occur.

potential applicant's decision whether to apply for an ITP. If an applicant seeks technical assistance from the Service, a careful examination of what constitutes take (using guidance from this document, the attached questionnaire, and the HCP Handbook) should be central to the discussion as to whether an ITP is needed. Further, it should be noted that habitat modification, in and of itself, does not constitute take unless all three components of the definition of "harm" are met.

Please ensure that each non-Federal party who seeks information about a section 10(a)(1)(B) permit is directed to this memorandum and questionnaire as posted on the Service's Endangered Species webpage (www.fws.gov/endangered/esa-library/pdf/Guidance-on-When-to-Seek-an-Incidental-Take-Permit.pdf).

# Appendix C
# LBV Sites

## Least Bell's Vireo Survey Sites in the Santa Ana Watershed



# APPENDIX C

Traffic Impact Analysis

# MONTE OLIVO (NORTHERN PORTION) TRAFFIC ANALYSIS

City of Corona

June 13, 2023

Traffic Engineering ● Transportation Planning ● Parking ● Noise & Vibration
Air Quality ● Global Climate Change ● Health Risk Assessment

# MONTE OLIVO (NORTHERN PORTION) TRAFFIC ANALYSIS

City of Corona

June 13, 2023

*prepared by*

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19-0185

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# EXECUTIVE SUMMARY

The purpose of this Traffic Analysis is to provide an assessment of traffic operations resulting from development of the proposed Monte Olivo (Northern Portion) project and to identify improvements necessary to address traffic deficiency. This report analyzes traffic operations for the anticipated project opening year in Year 2025 traffic conditions.

Although this is a technical report, effort has been made to write the report clearly and concisely. A glossary is provided in Appendix A to assist the reader with terms related to transportation engineering.

## PROJECT DESCRIPTION

The project site is located east of the I-15 Freeway between Laurel Canyon Way and State Street in the City of Corona. The northern portion of project site, which is located within the City of Corona, is proposed to be developed with 103 dwelling units of single-family detached housing. The southern portion of the project site, which is located within the County of Riverside, is being processed separately from this portion. For the purpose of this analysis, the southern portion will be considered as a future phase of the overall site in the cumulative traffic conditions that could be potentially developed with 38 dwelling units of single-family detached housing.

The sole primary access for the project site is a stop-controlled full access driveway at Laurel Canyon Way with a private gate. The project will also provide a secondary access road through the southern portion of the Monte Olivo site which will create a stop-controlled driveway on State Street that aligns with Bel Air Street for project residents only with a private gate which is not open to the public.

The proposed project (northern portion of the site) is anticipated to be constructed and fully operational by year 2025.

## EXISTING CONDITIONS

The study intersections currently operate within acceptable Levels of Service during the peak hours for Existing traffic conditions, except for the following study intersection that is projected to operate at deficient Levels of Service (see Table 1):

- State Street/Ontario Avenue– #9 (PM peak hour)

A traffic signal appears to currently be warranted at the following study intersections based upon the California Manual on Uniform Traffic Control Devices (2014) for Existing conditions:

- State Street/Ontario Avenue– #9

## PROJECT TRIPS

The proposed project is forecast to generate a total of approximately 971 daily vehicle trips, including 73 vehicle trips during the morning peak hour and 97 vehicle trips during the evening peak hour.

## FORECAST OPERATIONS

Existing Plus Project Conditions: The study intersections are projected to operate within acceptable Levels of Service during the peak hours for Existing Plus Project traffic conditions, except for the following study intersection that is projected to operate at deficient Levels of Service (see Table 4):

- State Street/Ontario Avenue– #9 (PM peak hour)

For Existing Plus Project conditions, the following improvements are recommended to address the deficient intersections:

- State Street/Ontario Avenue – #9
  - Install traffic signal

Opening Year (2025) Without Project Conditions: The study intersections are projected to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2025) Without Project traffic conditions, except for the following study intersection that is projected to operate at deficient Levels of Service (see Table 5):

- State Street/Ontario Avenue – #9 (PM peak hour)

Opening Year (2025) With Project Conditions: The study intersections are projected to operate within acceptable Levels of Service during the peak hours for Opening Year (2025) With Project traffic conditions, except for the following study intersection that is projected to operate at deficient Levels of Service (see Table 6):

- State Street/Ontario Avenue – #9 (AM & PM peak hours)

For Opening Year (2025) With Project conditions, the following improvements are recommended to address the deficient intersection:

- State Street/Ontario Avenue – #9
  - Install traffic signal

Since this is a degradation of traffic level of service for the already deficient intersection during the Existing and/or "Without Project" conditions, the project applicant is responsible for its fair share of fees to an applicable program for the recommended improvements. The intersection currently satisfies the traffic signal warrant based on Existing traffic conditions.

## RECOMMENDED IMPROVEMENTS FOR INTERSECTIONS

The following off-site improvements are recommended to address the Level of Service deficiency, for Existing Plus Project conditions:

- State Street/Ontario Avenue – #9
  - Install traffic signal

Since this is a degradation of traffic level of service for the already deficient intersection during the Existing and "Without Project" conditions, the project applicant is responsible for its fair share of fees to an applicable program for the recommended improvements. The intersection currently satisfy the traffic signal warrant based on Existing conditions. Figure 28 shows the recommended intersection improvements.

The project's fair share percentages of identified deficient intersections are approximately 30.0% to 100.0% for both Northern and Southern Portions. The fair share calculations are intended only for the discussion purposes of this traffic impact analysis, and do not imply any legal responsibility or formula for contributions or improvements.

## ROADWAY LINK ANALYSIS RESULTS

The study roadway links are projected to function at Level of Service "C" or better for Opening Year (2025) With Project conditions, except for the following roadway links which will operate at LOS "D" with existing roadway width:

- Rimpau Avenue, from Magnolia Avenue to California Avenue
- Magnolia Avenue, from El Sobrante Road to I-15 Southbound Ramps
- Ontario Avenue, from Compton Avenue to I-15 Southbound Ramps

Since the City of Corona will be improving and widening Ontario Avenue from California Avenue to State Street, no additional improvements are recommended for Ontario Avenue. The study intersections along Rimpau Avenue and Magnolia Avenue are projected to operate at acceptable Level of Service "D" or better, therefore, no additional improvements are recommended for Rimpau Avenue and Magnolia Avenue.

## VMT ANALYSIS RESULTS

Using on the WRCOG VMT Screening Tool, the project site is located within a low VMT generating Traffic Analysis Zone (TAZ). Per the City of Corona guidelines, it is presumed to be less than significant VMT impact for projects located in low VMT generating model TAZ. These TAZs generate total daily VMT/SP that is less than the baseline level for the City/jurisdiction.

Per the secondary screening step, the proposed project land use is consistent to the City of Corona General Plan land use destination. The proposed project site is also located within half-mile of a bus stop and within one-mile of employment and shopping destinations. Based on the screening steps, the project is anticipated to generate less than significant VMT impact and no additional improvements are recommended.

## SAFETY REVIEW

MUTCD states that when a speed limit within a speed zone is posted, it should be within 5 mph of the 85th-percentile speed of free-flowing traffic. Since the speed difference between the 85th percentile speed (39 mph) and the current posted speed limit (35 mph) is within 5 mph, the current posted speed limit of 35 mph is considered appropriate and reasonable.

Since the southbound direction of State Street is going downhill where vehicles tends to travel at higher speeds, it recommended that an additional speed limit sign be installed on the southbound direction south of Smerber Road to warn the motorists to slow down and adhere to appropriate speed.

Another option is replace the existing speed limit on the southbound direction south of Marlin Way with a radar speed sign which more visible and illuminated. This location of State Street is near the vertical crest of State Street and has a steep grade than other segments of State Street where a radar speed sign may be beneficial to warn motorists to reduce vehicular speed.

Adequate sight distances can be provided as long as any landscaping near the northeast and southeast corners of the curb returns at the driveway on State Street do not obstruct drivers' views.

Since State Street appears to be relatively safe with no recent vehicular crash, there should be no major safety concerns regarding sight distance and speed factors.

It is unnecessary to implement lane width reduction on State Street because vehicular speed does not appear to be a safety issue due to lack of recent vehicular crashes and there is adequate sight distance for the proposed project driveway. Other speed reduction strategies such as installing additional speed limit signs and radar speed signs should be considered prior to lane width reduction.

The County may consider installing new street lighting that would improve nighttime visibility, but it may also result in increased vehicular speed on State Street when motorists have better visibility at night.

# 1. INTRODUCTION

This section describes the purpose of this traffic analysis, project location, proposed development, and study area. Figure 1 shows the project location map and Figure 2 illustrates the project site plan.

## PURPOSE AND OBJECTIVES

The purpose of this traffic analysis is to provide an assessment of traffic operations resulting from development of the proposed Monte Olivo (Northern Portion) project and to identify improvements necessary to address traffic deficiency. This report analyzes traffic impacts for the anticipated project opening year in 2025.

Although this is a technical traffic analysis, every effort has been made to write the report clearly and concisely. To assist the reader with those terms unique to transportation engineering, a glossary of terms is provided in Appendix A.

## PROJECT DESCRIPTION

The project site is located east of the I-15 Freeway between Laurel Canyon Way and State Street in the City of Corona. The northern portion of project site, which is located within the City of Corona, is proposed to be developed with 103 dwelling units of single-family detached housing. The southern portion of the project site, which is located within the County of Riverside, being processed separately from this portion. For the purpose of this analysis, the southern portion will be considered as a future phase of the overall site in the cumulative traffic conditions that could be potentially developed with 38 dwelling units of single-family detached housing.

The sole primary access for the project site is a stop-controlled full access driveway at Laurel Canyon Way with a private gate. The project will also provide a secondary access road through the southern portion of the Monte Olivo site which will create a stop-controlled driveway on State Street that aligns with Bel Air Street for project residents only with a private gate which is not open to the public.

The proposed project is anticipated to be constructed and fully operational by year 2025.

## STUDY AREA INTERSECTIONS

Based on the study intersections identified in the approved scoping agreement (Appendix B), the study area consists of the following study intersections within the County of Riverside, Caltrans and City of Corona jurisdictions:

| Study Intersections[1] | Jurisdiction |
|---|---|
| 1. Rimpau Avenue (NS) at Magnolia Avenue (EW) | City of Corona |
| 2. Rimpau Avenue (NS) at California Avenue (EW) | City of Corona |
| 3. Rimpau Avenue (NS) at Olympic Drive (EW) | City of Corona |
| 4. Rimpau Avenue (NS) at Old Temescal Road (EW) | City of Corona |
| 5. California Avenue (NS) at Old Temescal Road (EW) | City of Corona |
| 6. Compton Avenue (NS) at Old Temescal Road (EW) | City of Corona |
| 7. Laurel Canyon Way (NS) at Project Driveway (EW) | City of Corona |
| 8. State Street (NS) at Bel Air Street/Project Driveway (EW) | County of Riverside |
| 9. State Street (NS) at Ontario Avenue (EW) | County of Riverside |

[1] (NS) = north-south roadway; (EW) = east-west roadway

| Study Intersections[1] | Jurisdiction |
|---|---|
| 10. I-15 Southbound Ramps (NS) at Ontario Avenue (EW) | Caltrans |
| 11. I-15 Northbound Ramps (NS) at Ontario Avenue (EW) | Caltrans |
| 12. California Avenue (NS) at Ontario Avenue (EW) | City of Corona |
| 13. El Sobrante Road (NS) at Magnolia Avenue (EW) | City of Corona |
| 14. I-15 Southbound Ramps (NS) at Magnolia Avenue (EW) | Caltrans |
| 15. I-15 Northbound Ramps (NS) at Magnolia Avenue (EW) | Caltrans |
| 16. Compton Avenue (NS) at Ontario Avenue (EW) | City of Corona |

## STUDY AREA ROADWAY LINKS

Based on the study intersections identified in the approved scoping agreement (Appendix B), the study area consists of the following study roadway links:

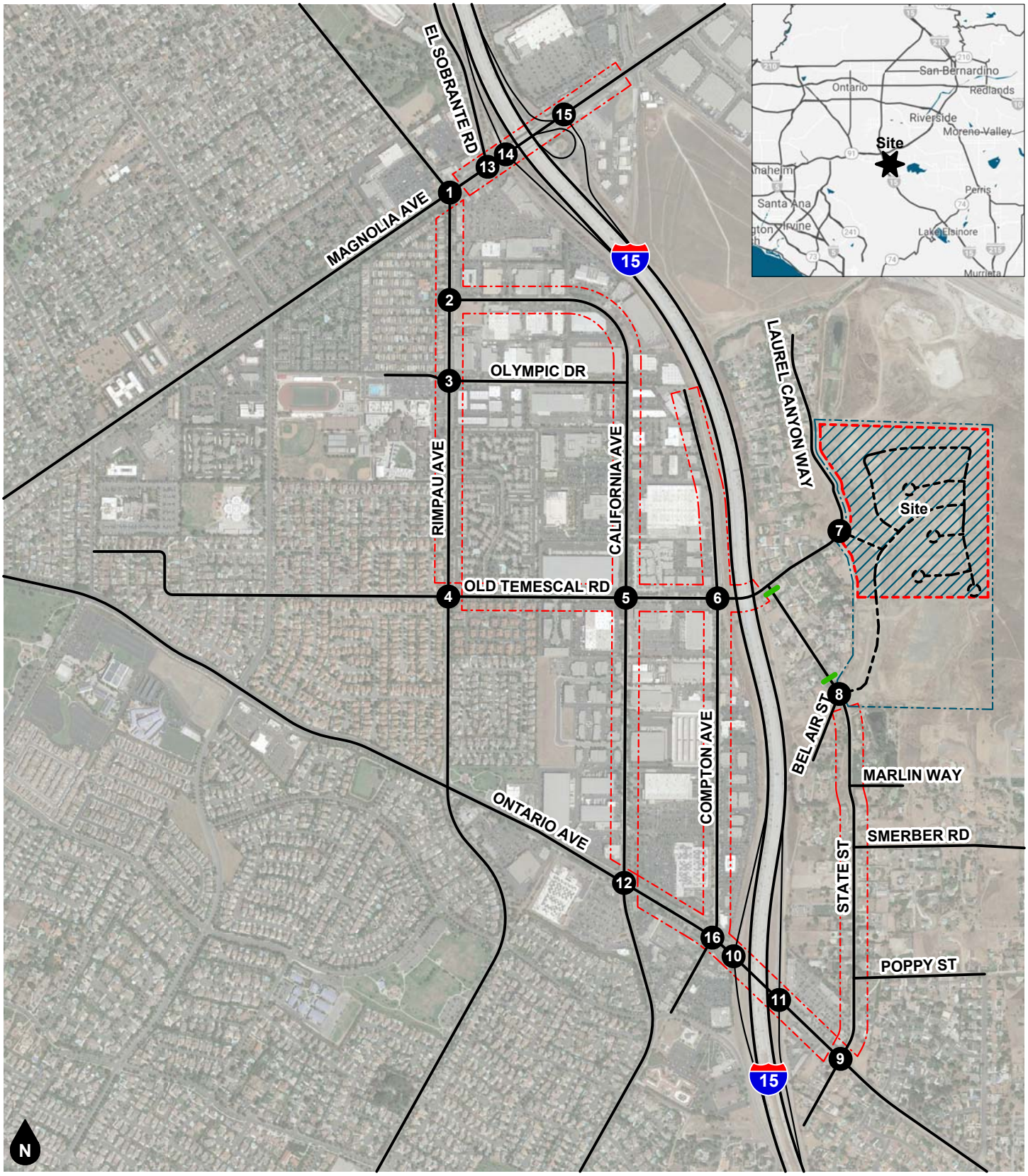
- Compton Avenue, north of Old Temescal Road
- Compton Avenue, Old Temescal Road to Ontario Avenue
- State Street, Bel Air Street to Ontario Avenue
- Old Temescal Road, Rimpau Avenue to California Avenue
- Old Temescal Road, California Avenue to Compton Avenue
- Old Temescal Road, Compton Avenue to Bel Air Street
- Ontario Avenue, California Avenue to Compton Avenue
- Ontario Avenue, I-15 Northbound Ramps to State Street
- Rimpau Avenue, Magnolia Avenue to California Avenue
- Rimpau Avenue, California Avenue to Olympic Drive
- Rimpau Avenue, Olympic Drive to Old Temescal Road
- Magnolia Avenue, Rimpau Avenue to El Sobrante Road

## ANALYSIS SCENARIOS

The following scenarios are analyzed during typical weekday morning and evening peak hour conditions:

- Existing Conditions
- Existing Plus Project Conditions
- Opening Year (2025) Without Project Conditions
- Opening Year (2025) With Project Conditions

Since the proposed project is consistent to the City's General Plan Land Use classification, a long-range 2040 traffic analysis is not required for the proposed project. The project zoning is ER (Estate Residential 1 to 3 dwelling units per acre). The project land area is approximately 57 acres and the project is proposing to develop 103 dwelling units of single-family detached housing, which will be approximately 1.8 dwelling units per acre.




Legend

- # Study Intersection
- Community Gate
- Study Roadway Segment

**Figure 1**
**Project Location Map**

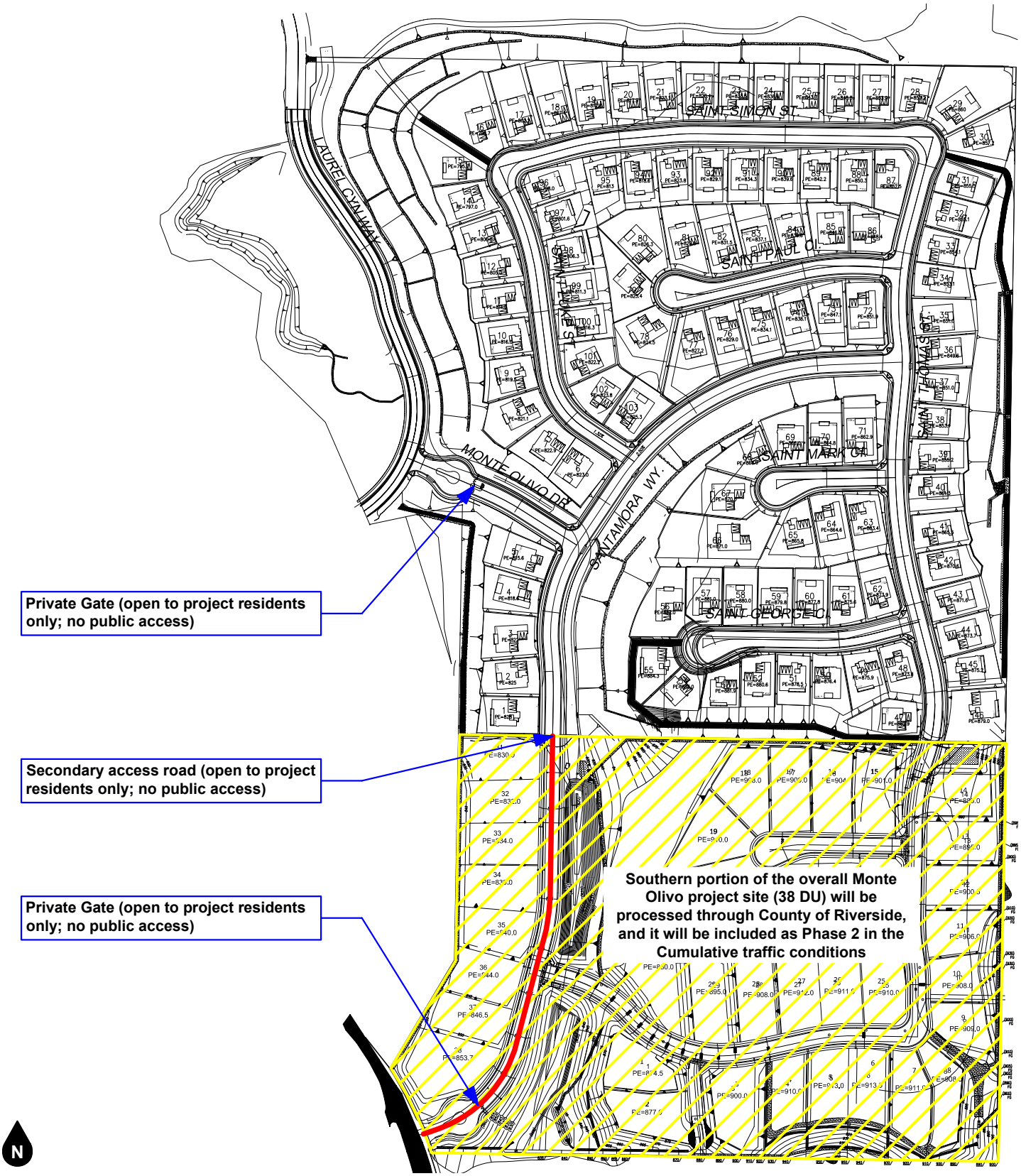



**Figure 2**
**Site Plan**

# 2. METHODOLOGY

This section discusses the analysis methodologies used to assess transportation facility performance as adopted by the respective jurisdictional agencies.

## INTERSECTION DELAY ANALYSIS METHODOLOGY

The technique used to assess the performance of intersections is known as the intersection delay methodology based on the procedures contained in the Highway Capacity Manual (Transportation Research Board, 6th Edition). The methodology considers the traffic volume and distribution of movements, traffic composition, geometric characteristics, and signalization details to calculate the average control delay per vehicle and corresponding Level of Service. Control delay is defined as the portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign) and includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay. The intersection control delay is then correlated to Level of Service based on the following thresholds:

| Level of Service | Intersection Control Delay (Seconds / Vehicle) | |
|---|---|---|
| | Signalized Intersection | Unsignalized Intersection |
| A | ≤ 10.0 | ≤ 10.0 |
| B | > 10.0 to ≤ 20.0 | > 10.0 to ≤ 15.0 |
| C | > 20.0 to ≤ 35.0 | > 15.0 to ≤ 25.0 |
| D | > 35.0 to ≤ 55.0 | > 25.0 to ≤ 35.0 |
| E | > 55.0 to ≤ 80.0 | > 35.0 to ≤ 50.0 |
| F | > 80.0 | > 50.0 |

Source: Transportation Research Board, Highway Capacity Manual (6th Edition).

Level of Service is used to qualitatively describe the performance of a roadway facility, ranging from Level of Service A (free-flow conditions) to Level of Service F (extreme congestion and system failure). At intersections with traffic signal or all way stop control, Level of Service is determined by the average control delay for the overall intersection. At intersections with cross street stop control (i.e., one- or two-way stop control), Level of Service is determined by the average control delay for the worst individual movement (or movements sharing a single lane).

Intersection delay analysis was performed using the Vistro (Version 6.00-00) software. Saturation flow rates of 1,800 vehicles per hour of green for through and right turn lanes and 1,700 vehicles per lane for single left turn lanes, 1,600 vehicles per lane for dual left turn lanes, and 1,500 vehicles per lane for triple left turn lanes have been assumed for the capacity analysis. Measured peak hour factors have been applied for existing and near-term conditions.

## PERFORMANCE STANDARDS

City of Corona. The City of Corona has established Level of Service D as the minimum acceptable Level of Service.

County of Riverside. The definition of an intersection deficiency has been obtained from the County of Riverside General Plan. The General Plan states that peak hour intersection operations of Level of Service C or better are generally acceptable along all County maintained roads and conventional state highways. As an exception, Level of Service D may be allowed in Community Development areas, only at intersections of any

combination of Secondary Highways, Major Highways, Arterial Highways, Urban Arterial Highways, Expressways, conventional state highways or freeway ramp intersections.

California Department of Transportation. As stated in the Guide for the Preparation of Traffic Impact Studies (State of California, 2002), "California Department of Transportation endeavors to maintain a target LOS [Level of Service] at the transition between LOS "C" and LOS "D" on State highway facilities". The California Department of Transportation acknowledges this may not always be feasible and recommends consultation with the California Department of Transportation to determine the appropriate target Level of Service. For consistency with local requirements, this analysis defines Level of Service D as the minimum acceptable Level of Service for State Highway facilities.

## THRESHOLDS OF SIGNIFICANCE

The identification of deficient operations is a requirement of the California Environmental Quality Act. The County of Riverside General Plan and Circulation Element have been adopted in accordance with California Environmental Quality Act requirements, and any roadway improvements within the County of Riverside that are consistent with these documents are not considered deficient, so long as the project contributes its "fair share" funding for improvements.

A traffic deficiency is considered significant if the project both: (i) contributes measurable traffic to and (ii) substantially and adversely changes the Level of Service at any off-site location projected to experience deficient operations (Level of Service E or F) under foreseeable cumulative conditions, where feasible improvements consistent with the County of Riverside General Plan cannot be constructed.

## ROADWAY LINK CAPACITY ANALYSIS METHODOLOGY

The road link capacity analysis is assessed based on the theoretical 24-hour average daily traffic (ADT) capacity for roadways in terms of volume over capacity ratios. The roadway link daily traffic capacity are shown as the maximum allowed under "Estimated 24 Hour Traffic (ADT)" in the "City of Corona Street Design Table" for a particular street classification. In accordance with the City's General Plan, Riverside County roadways located with the City's Sphere of Influence shall be maintained at Level of Service "C" or better per the "Riverside County Level of Service Criteria". Appendix C shows the roadway link daily traffic capacity included in the City of Corona Traffic Impact Study Guidelines.

# 3. EXISTING CONDITIONS

## EXISTING ROADWAY SYSTEM

Figure 3 identifies the lane geometry and intersection traffic controls for Existing conditions based on a field survey of the study area. Regional access to the project site is provided by the I-15 Freeway located just south of the project site. Key roadways providing local circulation include Rimpau Avenue, California Avenue, Compton Avenue, Old Temescal Road, Laurel Canyon Way, Ontario Avenue and State Street.

## GENERAL PLAN CONTEXT

Figure 4 shows the City of Corona General Plan Circulation Element roadway classifications map. This figure shows the nature and extent of arterial and collector highways that are needed to adequately serve the ultimate development depicted by the Land Use Element of the General Plan. The City of Corona standard roadway cross-sections are illustrated on Figure 5.

## TRANSIT SERVICE

Figure 6 shows Existing public transit facilities and routes in the project vicinity.

## BICYCLE FACILITIES

The City of Corona bike paths are illustrated on Figure 7.

## EXISTING ROADWAY VOLUMES

Figure 8 shows the Existing 2022 average daily traffic volumes. Some 2017 traffic volumes provided by City of Corona have been factored up to Year 2022 conditions with annual growth rate of 2% over 5 years or a total growth factor of 10%. For locations where 24-hour roadway link traffic counts were not available, the Existing average daily traffic volumes have been factored from peak hour intersection turning movement volumes using the following formula for each intersection leg:

Evening Peak Hour (Approach Volume + Exit Volume) x 12[2] = Leg Volume.

The peak hour to daily volume factor was derived based on a comparison of the existing evening peak hour intersection turning movement volumes with sample 24-hour roadway segment volume counts collected in the study area. This is a conservative estimate and may over-estimate the average daily traffic volumes.

Existing peak hour traffic conditions are based upon morning peak period and evening peak period intersection turning movement counts obtained in November 2022 and April 2023 during typical weekday conditions. The weekday morning peak period was counted between 7:00 AM and 9:00 AM, and the weekday evening peak period was counted between 4:00 PM and 6:00 PM. The actual peak hour within the peak period is the four consecutive 15 minute periods with the highest total volume when all movements are added together. Thus, the weekday evening peak hour at one intersection may be 4:45 PM to 5:45 PM if those four consecutive 15 minute periods have the highest combined volume. Intersection turning movement count worksheets are provided in Appendix D.

Figure 9 and Figure 10 show the Existing morning peak hour and evening peak hour intersection turning movement volumes.

[2] Source: Approximate average evening peak hour K factor based on a comparison of the existing peak hour intersection turning movement counts with the roadway segment daily traffic volume data.

## EXISTING LEVEL OF SERVICE

The intersection Levels of Service for Existing conditions have been calculated and are shown in Table 1. Existing intersection Level of Service worksheets are provided in Appendix E.

As shown in Table 1, the study intersections currently operate within acceptable Levels of Service during the peak hours for Existing conditions, except for the following study intersection that is projected to operate at deficient Levels of Service (E or F):

- State Street/Ontario Avenue – #9 (AM & PM peak hours)

## EXISTING TRAFFIC SIGNAL WARRANT ANALYSIS

A traffic signal appears to currently be warranted at the following study intersection based upon the California Manual on Uniform Traffic Control Devices (2014), peak hour volume warrant (Warrant 3), for Existing conditions:

- State Street/Ontario Avenue – #9

Traffic signal warrant analysis worksheets are provided in Appendix F.

**Table 1**
**Existing Intersection Levels of Service**

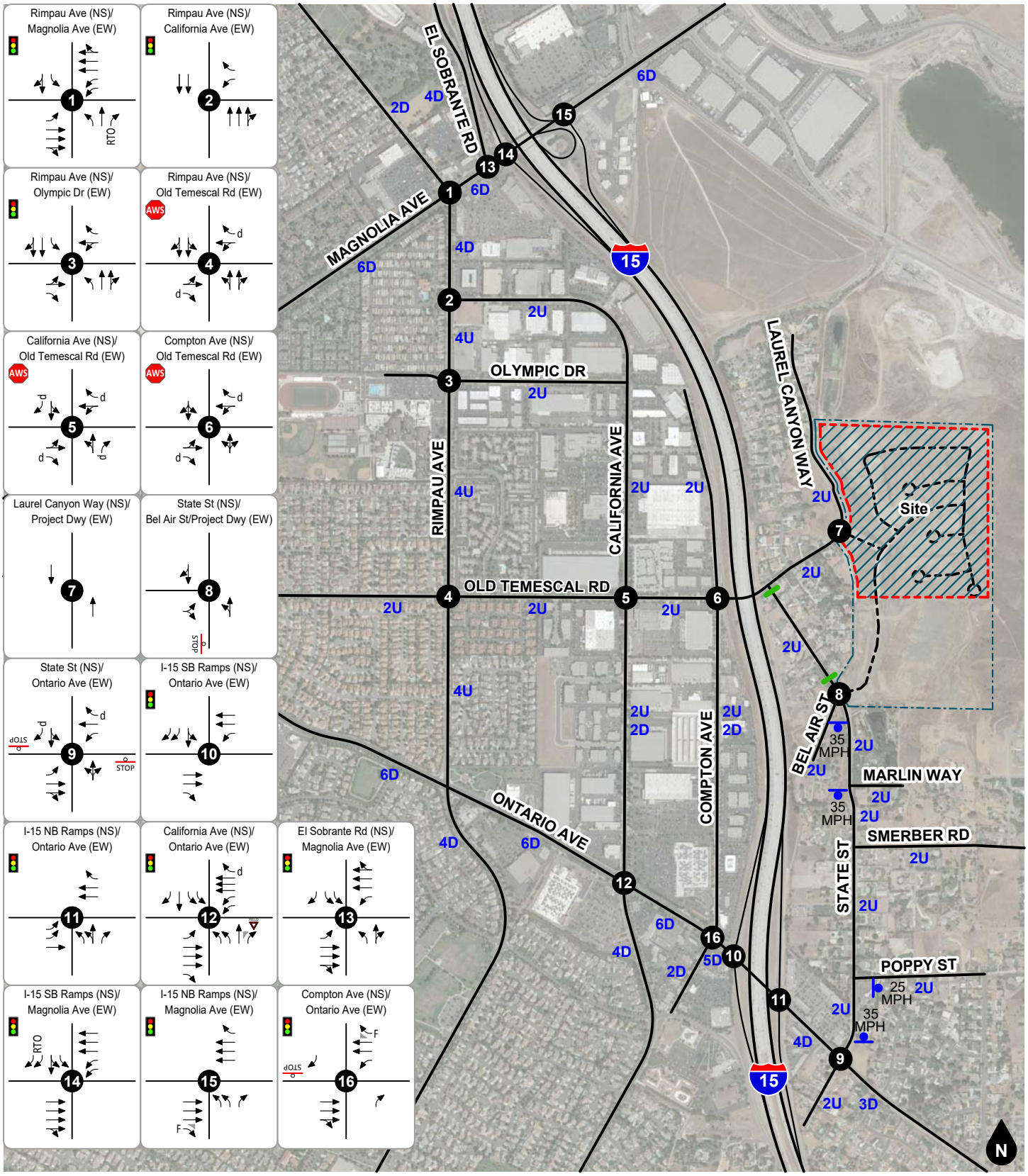
| Study Intersection | Traffic Control[1] | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|---|
| | | Delay[2] | LOS[3] | Delay[2] | LOS[3] |
| 1. Rimpau Ave at Magnolia Ave | TS | 24.8 | C | 30.1 | C |
| 2. Rimpau Ave at California Ave | TS | 6.2 | A | 10.6 | B |
| 3. Rimpau Ave at Olympic Dr | TS | 19.8 | B | 16.6 | B |
| 4. Rimpau Ave at Old Temescal Rd | AWS | 16.2 | C | 14.7 | B |
| 5. California Ave at Old Temescal Rd | AWS | 11.8 | B | 13.1 | B |
| 6. Compton Ave at Old Temescal Rd | AWS | 9.9 | A | 8.3 | A |
| 8. State St at Bel Air St/Project Dwy | CSS | 8.4 | A | 8.4 | A |
| 9. State St at Ontario Ave | CSS | 29.1 | D | 42.3 | E |
| 10. I-15 SB Ramps at Ontario Ave | TS | 20.3 | C | 16.0 | B |
| 11. I-15 NB Ramps at Ontario Ave | TS | 17.7 | B | 16.0 | B |
| 12. California Ave at Ontario Ave | TS | 21.2 | C | 24.0 | C |
| 13. El Sobrante Rd at Magnolia Ave | TS | 38.6 | D | 42.3 | D |
| 14. I-15 SB Ramps at Magnolia Ave | TS | 26.5 | C | 36.1 | D |
| 15. I-15 NB Ramps at Magnolia Ave | TS | 12.0 | B | 10.7 | B |
| 16. Compton Ave at Ontario Ave | TS | 22.4 | C | 16.4 | B |

Notes:

(1) TS = Traffic Signal; CSS = Cross Street Stop; AWS = All-Way Stop

(2) Delay is shown in seconds/vehicle. For intersections with traffic signal, all way stop control, or roundabout, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service




Legend

- Traffic Signal
- AWS All Way Stop
- STOP Stop Sign
- #D #-Lane Divided Roadway
- #U #-Lane Undivided Roadway
- Existing Lane
- RTO Right Turn Overlap
- F Free Right Turn Lane
- d De Facto Right Turn Lane
- Speed Limit Sign
- YIELD Yield Sign

**Figure 3**
**Existing Lane Geometry and Intersection Traffic Controls**

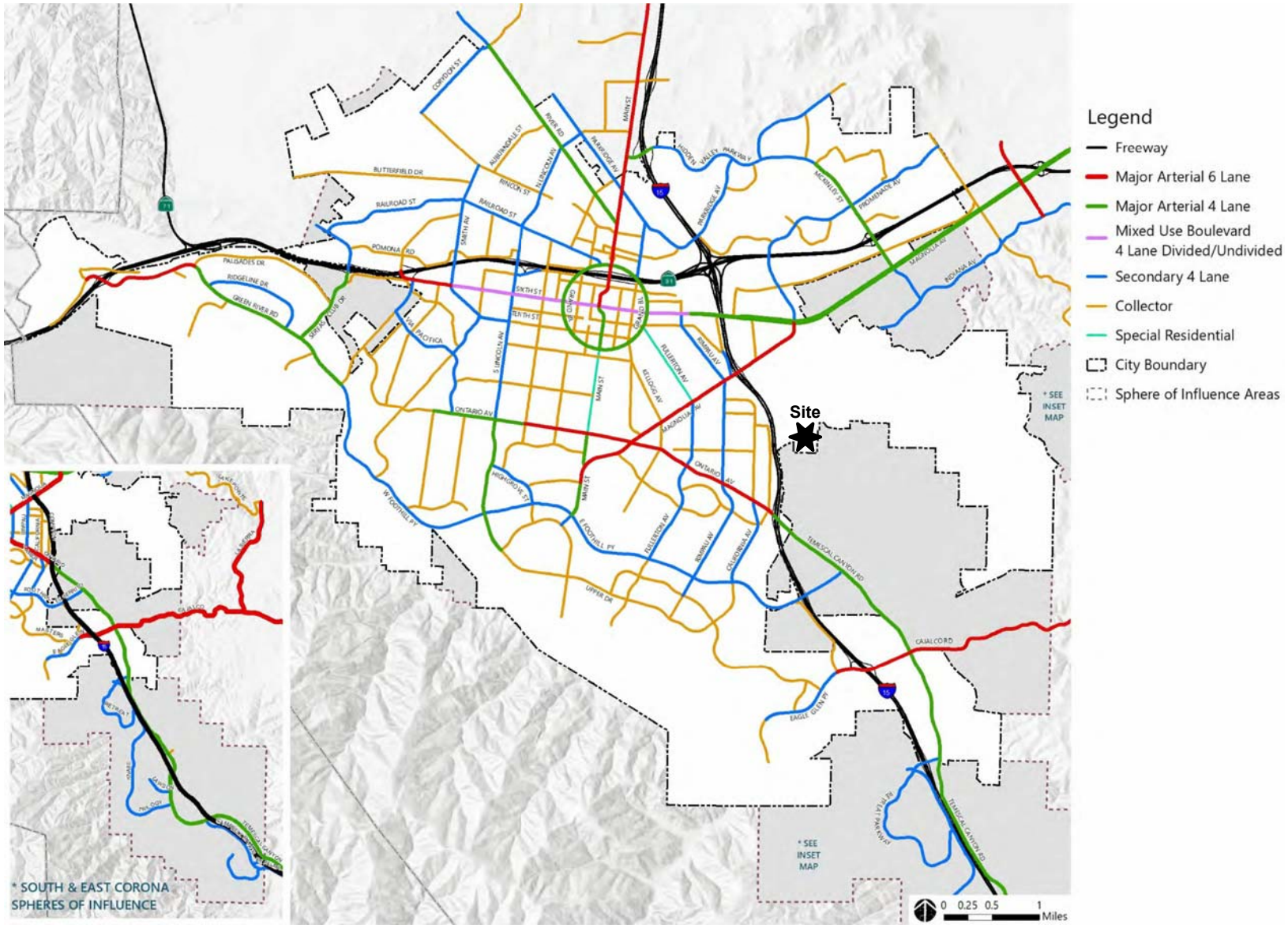
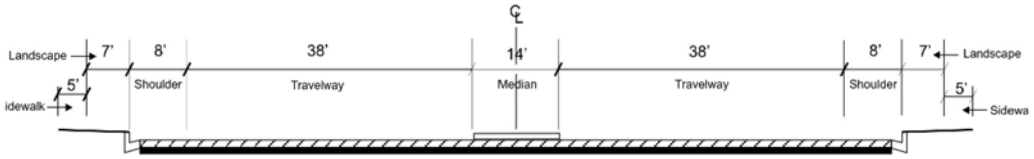
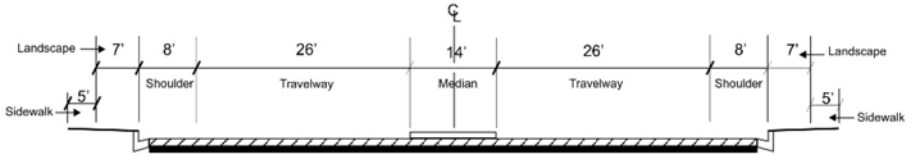



**Figure 4**
**City of Corona General Plan Circulation Element**

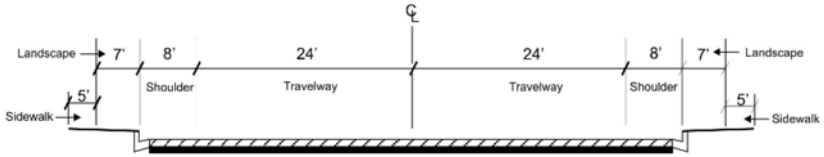
Source: City of Corona



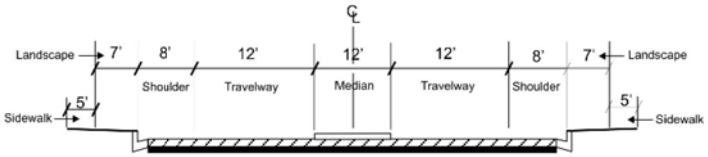

**Major Arterial (6 lanes)**
**R.W. 130**
**Roadway 106**



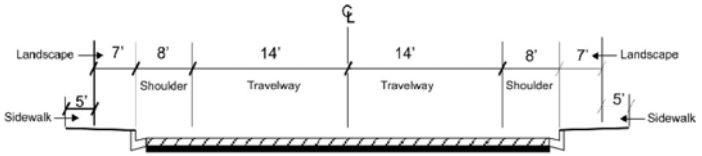

**Major Arterial (4 lanes)**
**R.W. 106**
**Roadway 82**



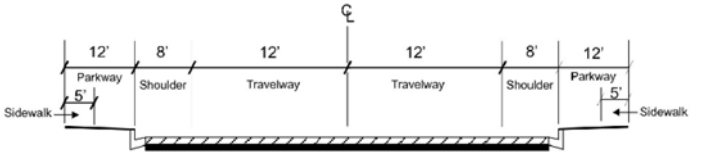

**Secondary (4 lanes)**
**R.W. 88**
**Roadway 64**



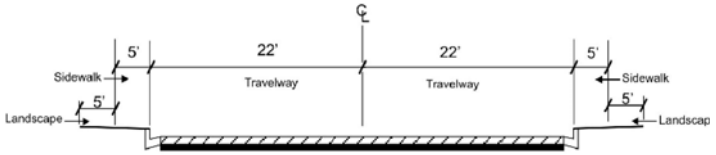

**Divided Collector (2 lanes)**
**R.W. 76**
**Roadway 52**



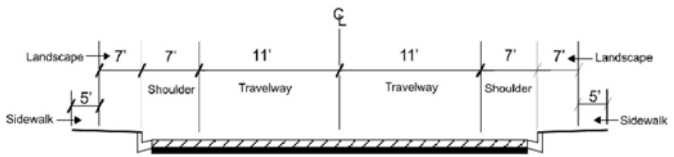

**Collector (2 lanes)**
**R.W. 68**
**Roadway 44**




**Local Street**
**R.W. 64**
**Roadway 40**
**Note: See local residential street Planning Policy 6.1.10**




**Local Industrial**
**R.W. 64**
**Roadway 44**




**Cul-De-Sac**
**R.W. 60**
**Roadway 36**

**Figure 5**
**City of Corona General Plan Roadway Cross-Sections**

Source: City of Corona

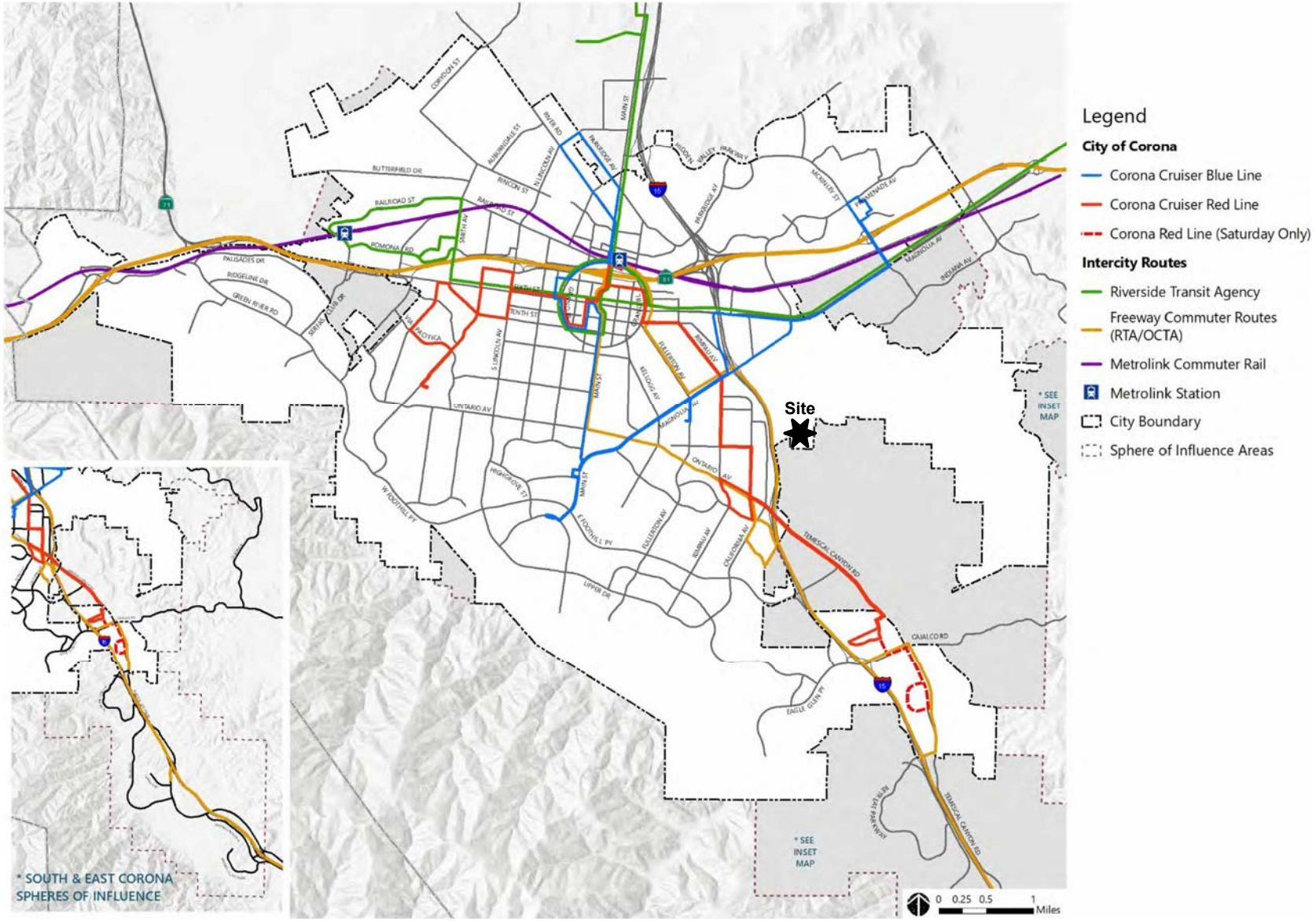



**Figure 6**
**Existing Transit Routes**

Source: City of Corona

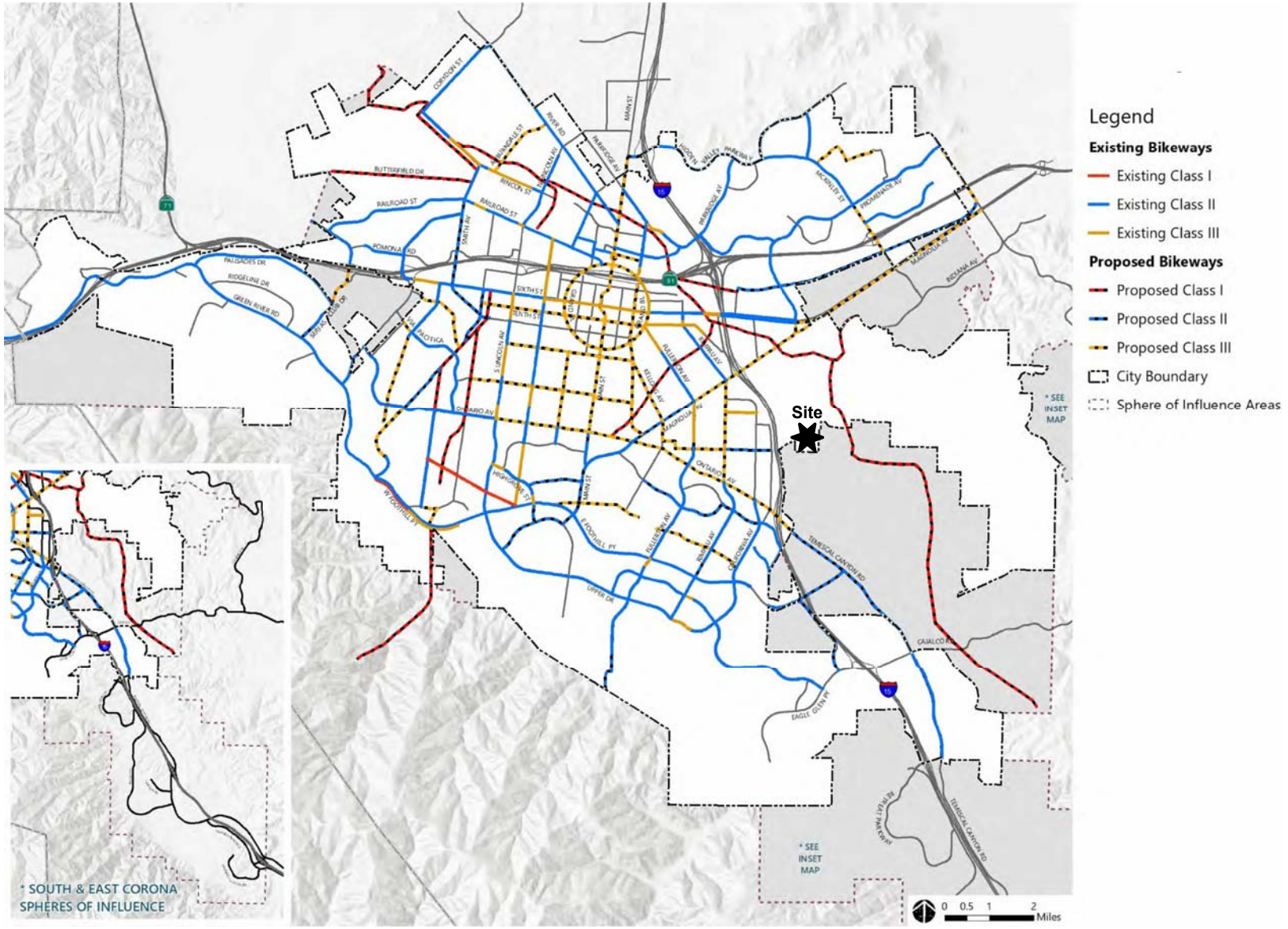



**Figure 7**
**City of Corona General Plan Bike Routes**

Source: City of Corona

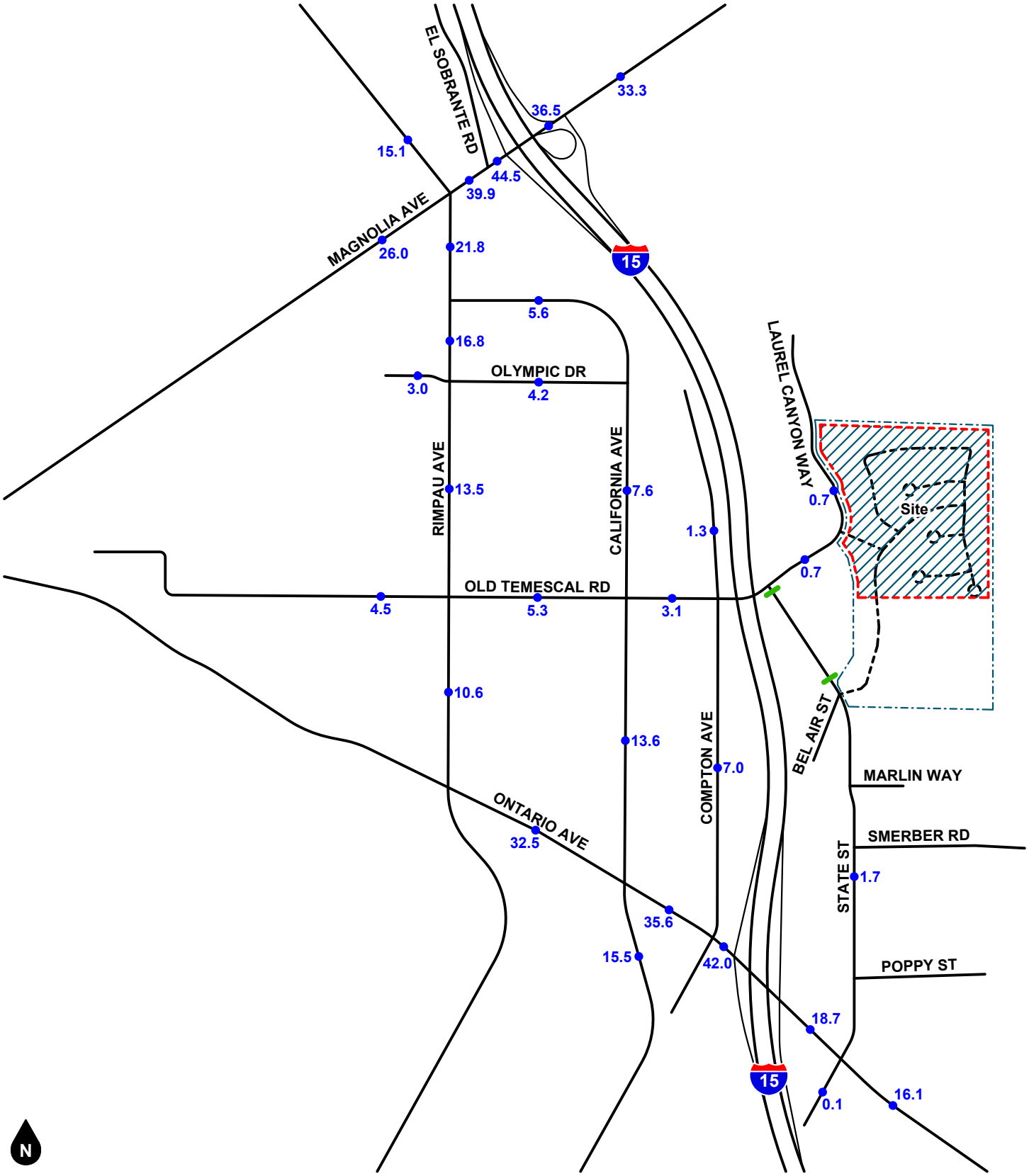
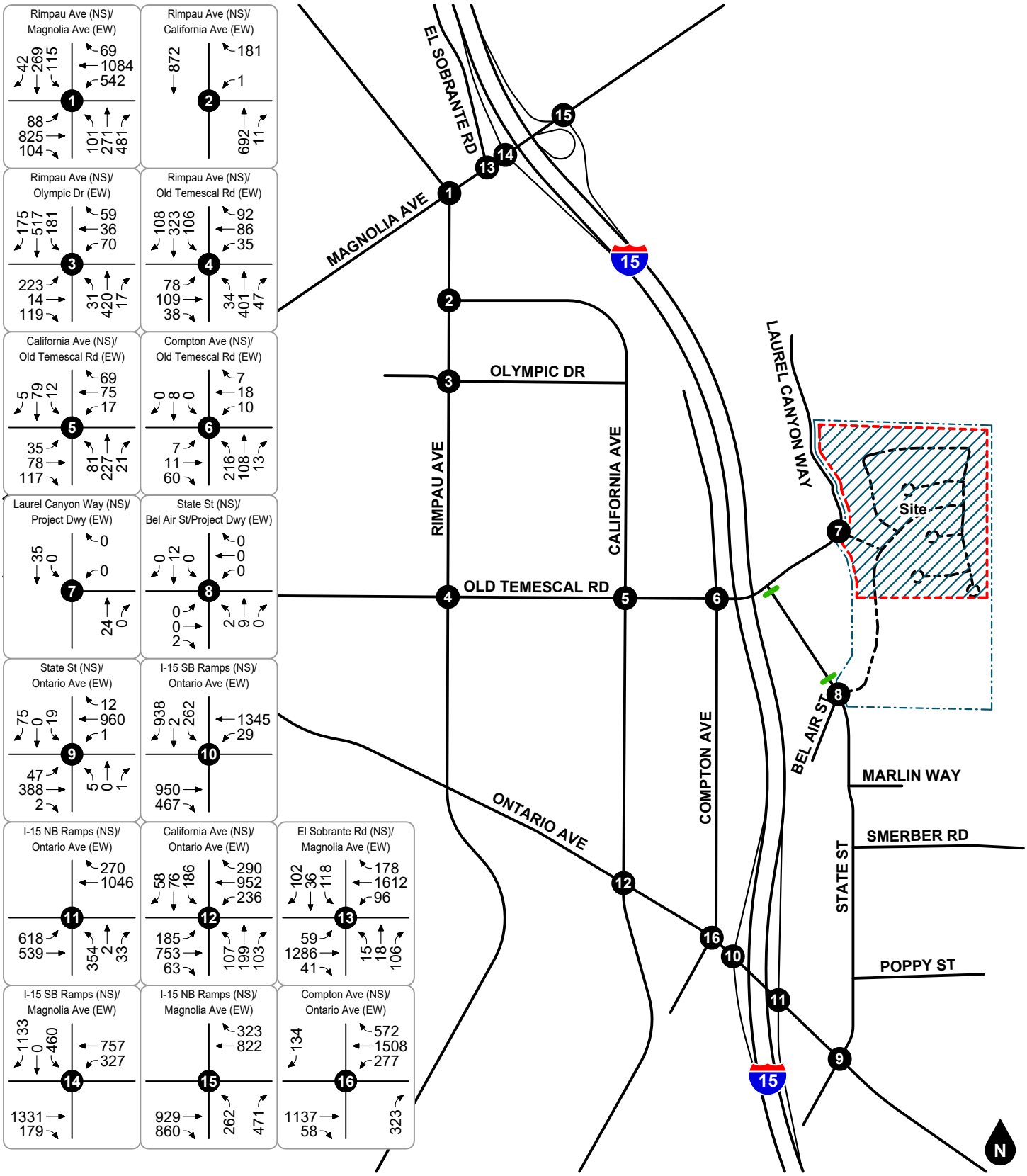


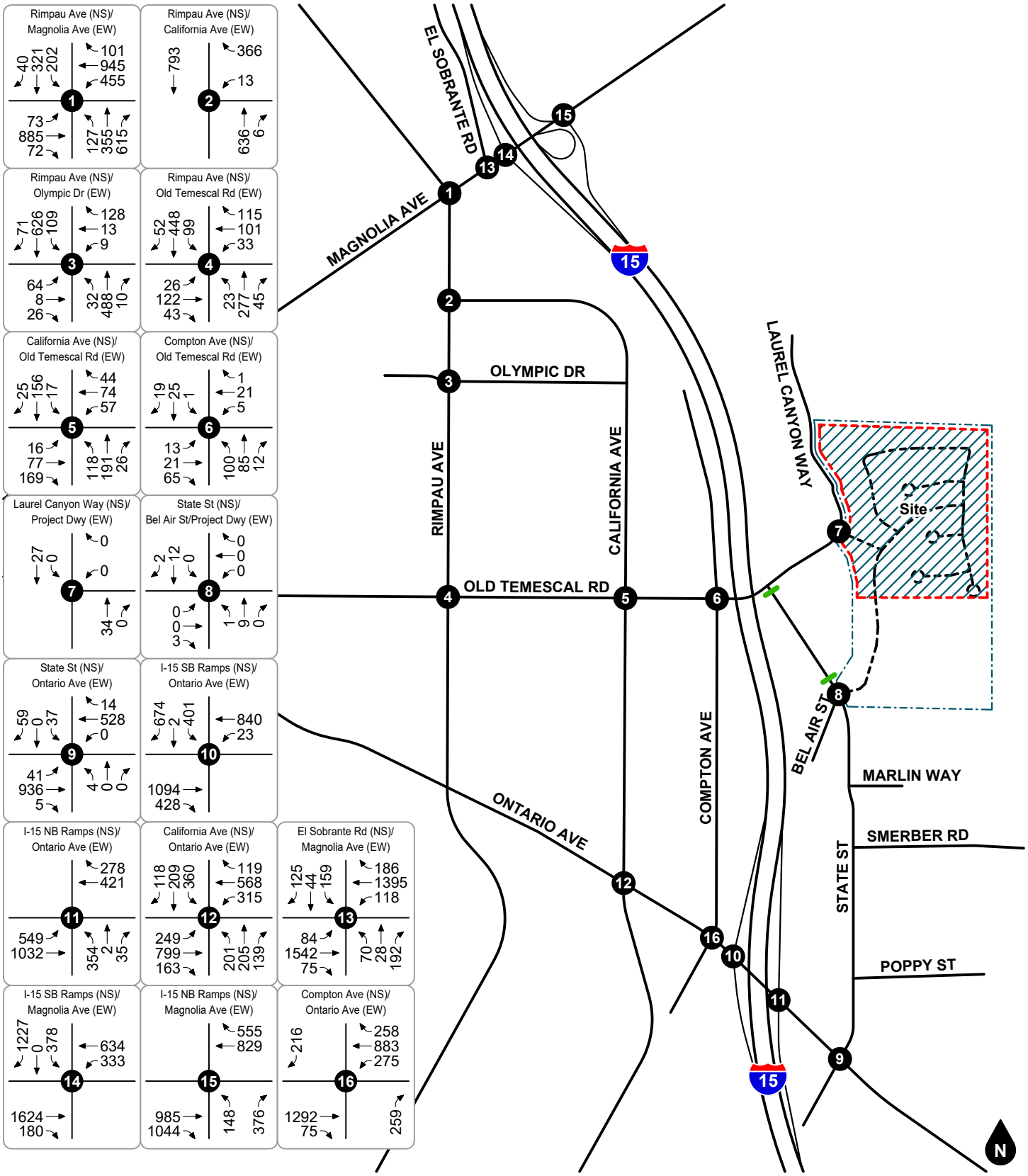

**Figure 8**
**Existing Average Daily Traffic Volumes**




Legend

# Study Intersection

**Figure 9**
**Existing AM Peak Hour Intersection Turning Movement Volumes**




Legend

(#) Study Intersection

**Figure 10**
**Existing PM Peak Hour Intersection Turning Movement Volumes**

# 4. PROJECT TRIP FORECASTS

This section describes how project trip generation, trip distribution, and trip assignment forecasts were developed. The forecast project volumes are illustrated on figures contained in this section.

## PROJECT TRIP GENERATION

Table 2 shows the project trip generation based upon trip generation rates obtained from the Institute of Transportation Engineers, Trip Generation Manual, 11th Edition, 2021. Trip generation rates were determined for daily trips, morning peak hour inbound and outbound trips, and evening peak hour inbound and outbound trips for the proposed land uses. The number of trips forecast to be generated by the proposed project are determined by multiplying the trip generation rates by the land use quantities.

The project site is located east of the I-15 Freeway between Laurel Canyon Way and State Street in the City of Corona. The northern portion of project site, which is located within the City of Corona, is proposed to be developed with 103 dwelling units of single-family detached housing. The southern portion of the project site, which is located within the County of Riverside, is being processed separately from this portion. For the purpose of this analysis, the southern portion will be considered as a future phase of the overall site in the cumulative traffic conditions that could be potentially developed with 38 dwelling units of single-family detached housing.

The sole primary access for the project site is a stop-controlled full access driveway at Laurel Canyon Way with a private gate. The project will also provide a secondary access road through the southern portion of the Monte Olivo site which will create a stop-controlled driveway on State Street that aligns with Bel Air Street for project residents only with a private gate which is not open to the public.

As shown in Table 2, the proposed project is forecast to generate a total of approximately 971 daily vehicle trips, including 73 vehicle trips during the morning peak hour and 97 vehicle trips during the evening peak hour.

## PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Figure 11 shows the forecast directional outbound and inbound distribution patterns for the project generated trips. The project trip distribution patterns are based on review of existing volume data, surrounding land uses, designated truck routes, and the local and regional roadway facilities in the project vicinity.

Based on the identified project trip generation and distributions, project average daily traffic volumes have been calculated and shown on Figure 12. Project morning and evening peak hour intersection turning movement volumes expected from the project are depicted on Figure 13 and Figure 14, respectively.

## PROJECT DESIGN FEATURES

This analysis assumes the following improvements will be constructed by the project to provide project site access:

**Project Driveway at Laurel Canyon Way (Intersection #7)**

- Install a westbound stop sign with a private gate.
- Provide a westbound shared left-right lane.

**Project Driveway at State Street (Intersection #8 – Opposite Bel Air Street)**

- Install a westbound stop sign with a private gate.
- Provide a westbound shared left-right lane.

The project should provide a secondary access road through the southern portion of the site which will create a stop-controlled secondary access driveway on State Street that aligns with Bel Air Street for project residents only with a private gate which is not open to the public.

## Table 2
## Project Trip Generation

| Trip Generation Rates | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Project | | | | AM Peak | | | PM Peak | | | Daily |
| No. | Land Use | Code[1] | Units[2] | In % | Out % | Total | In % | Out % | Total | |
| 1 | Single-Family Detached Housing | ITE 210 | DU | 26% | 74% | 0.70 | 63% | 37% | 0.94 | 9.43 |

| Trips Generated | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Project | | | AM Peak | | | PM Peak | | | Weekday Daily |
| No. | Land Use | Quantity[2] | In | Out | Total | In | Out | Total | |
| | Phase 1 (Northern Portion) | | | | | | | | |
| 1 | Single-Family Detached Housing | 103 DU | 19 | 54 | 73 | 61 | 36 | 97 | 971 |
| | Phase 2 (Southern Portion) | | | | | | | | |
| 2 | Single-Family Detached Housing | 38 DU | 7 | 20 | 27 | 22 | 13 | 35 | 358 |

Notes:

(1) ITE = Institute of Transportation Engineers, Trip Generation Manual, 11th Edition, 2021; XXX = Land Use Code

(2) DU = Dwelling Units

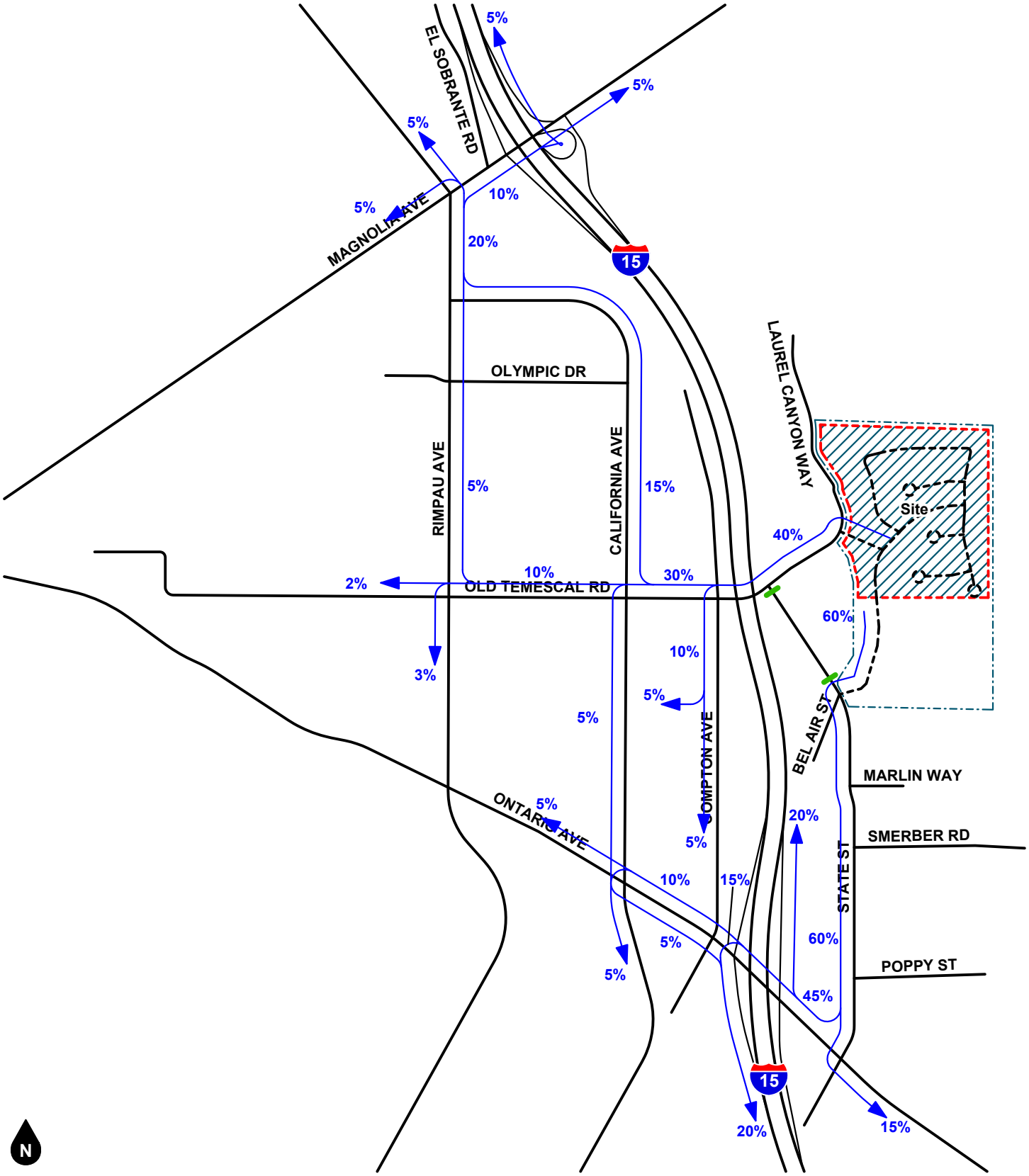
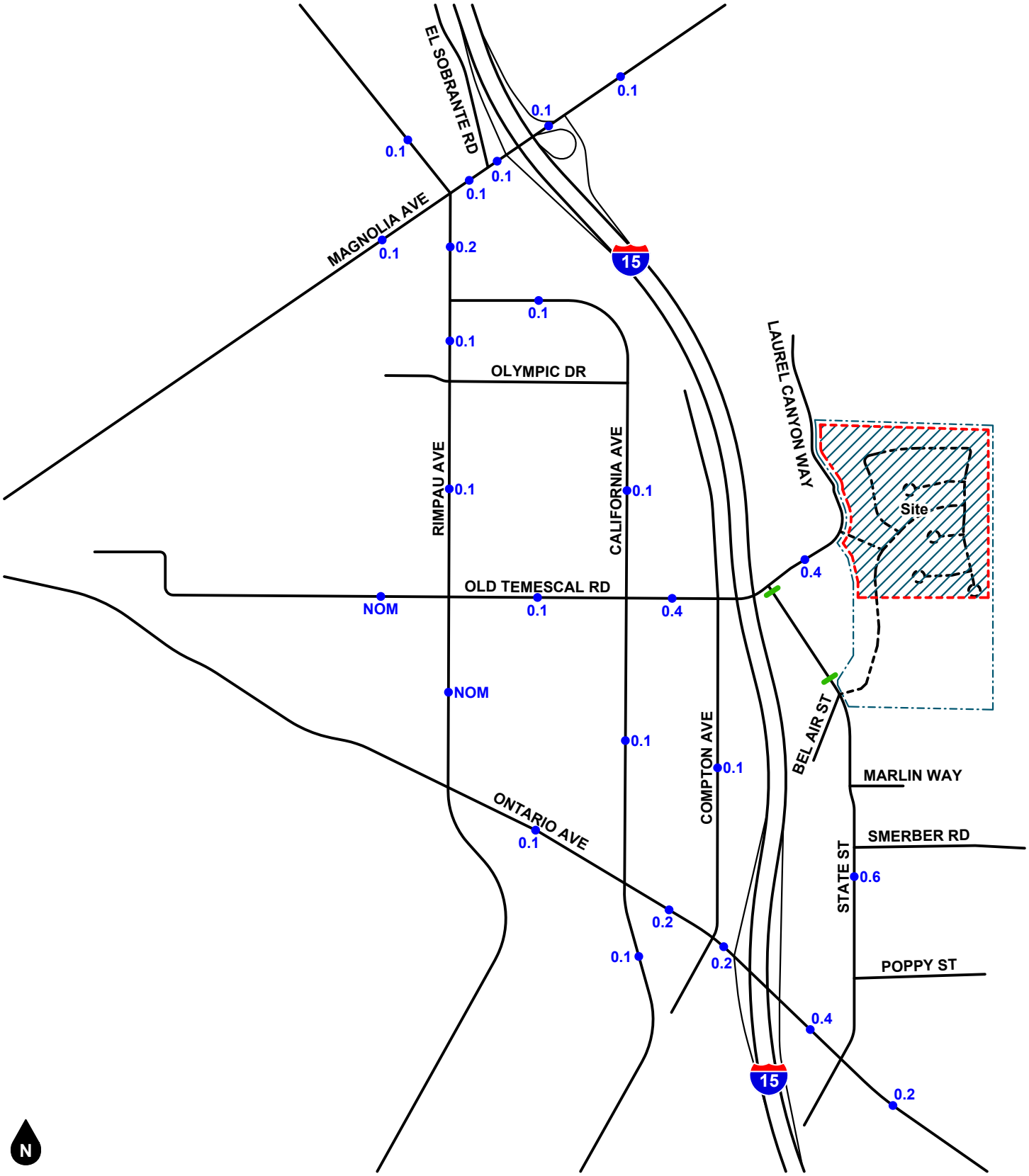


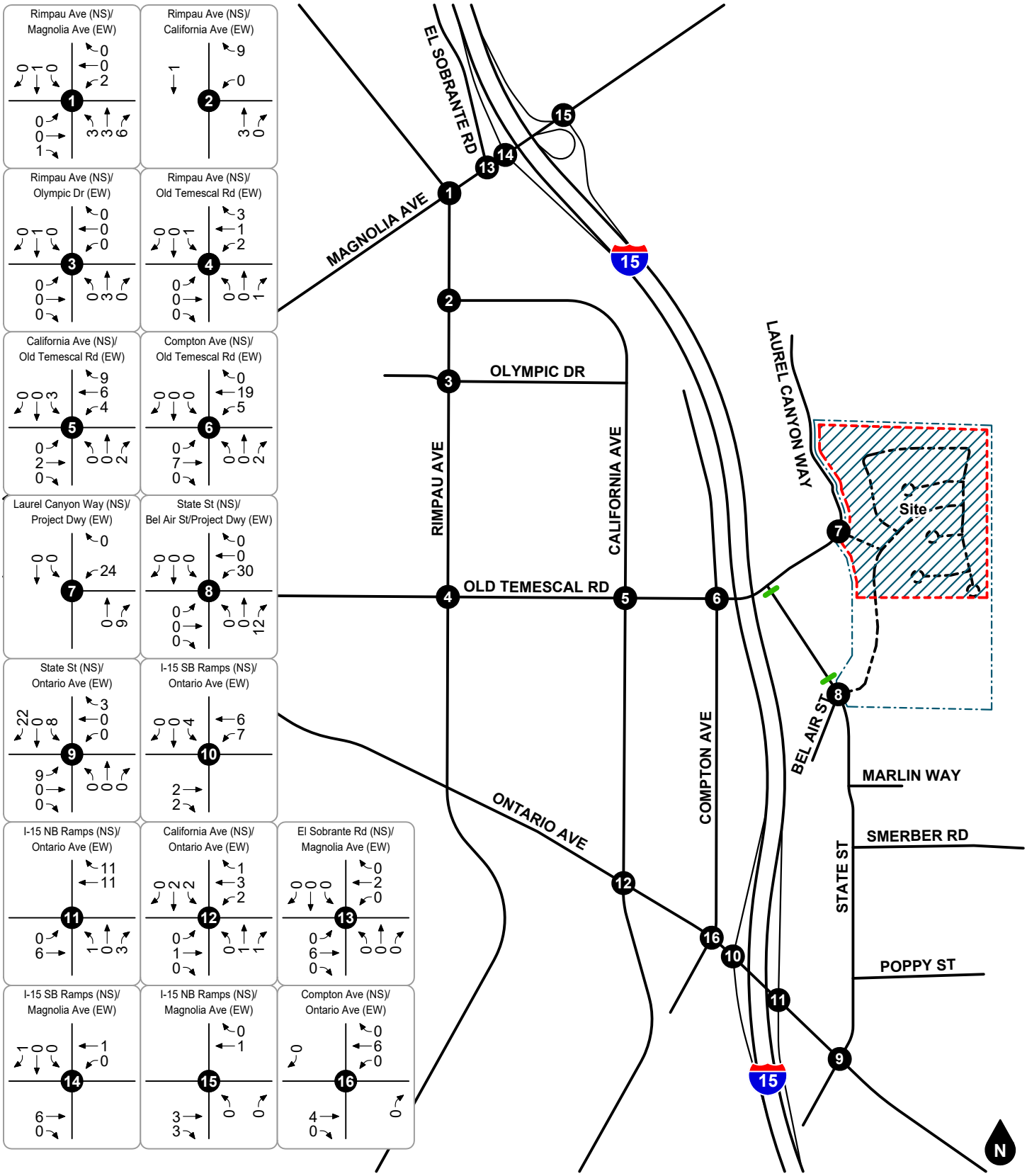

**Figure 11**
**Project Trip Distribution**




Legend

●## Vehicles Per Day (1,000's)

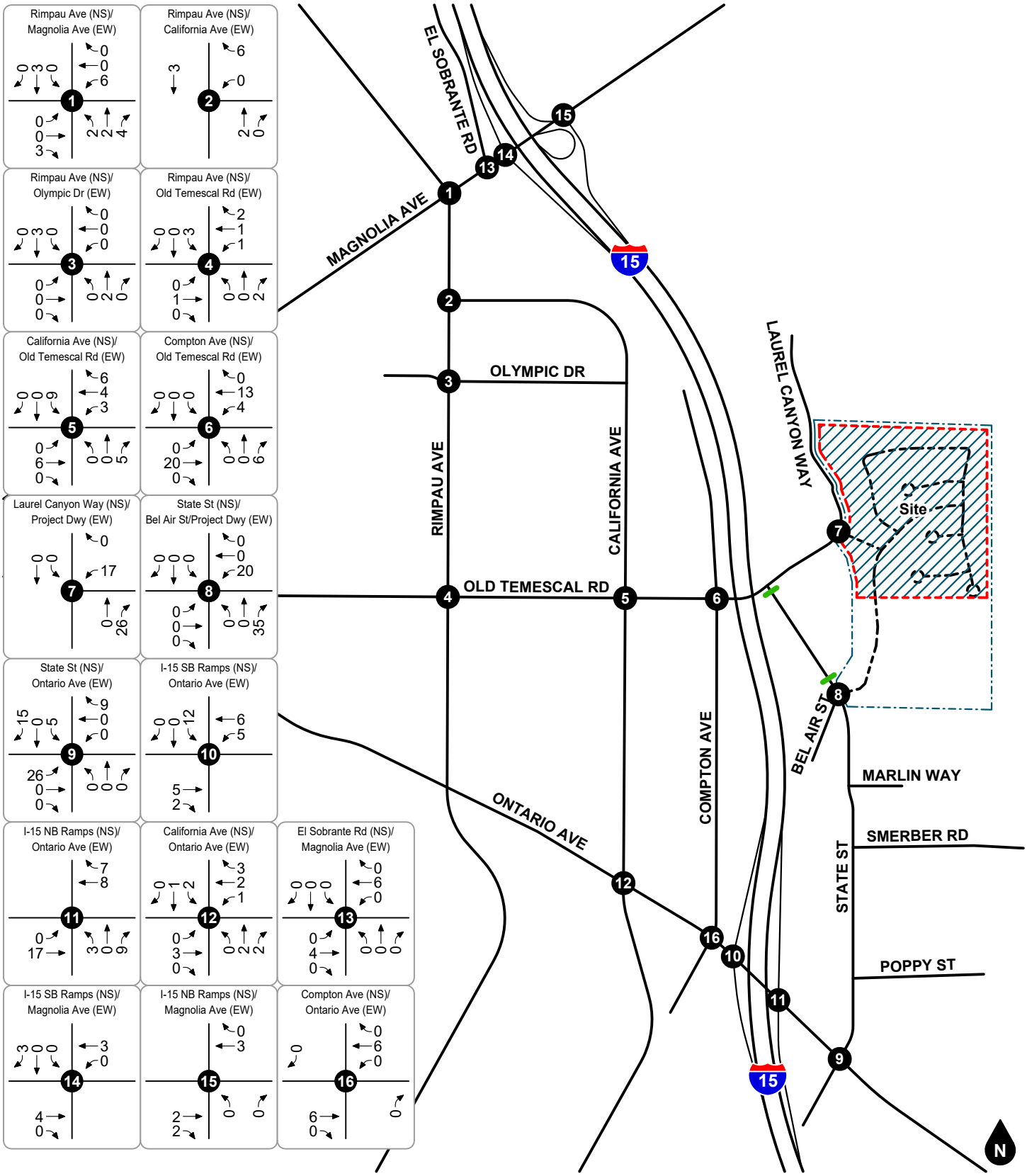
**Figure 12**
**Project Average Daily Traffic Volumes**




Legend

(#) Study Intersection

**Figure 13**
**Project AM Peak Hour Intersection Turning Movement Volumes**




Legend

(#) Study Intersection

**Figure 14**
**Project PM Peak Hour Intersection Turning Movement Volumes**

# 5. FUTURE VOLUME FORECASTS

This section describes how future volume forecasts for each analysis scenario were developed. Forecast study area volumes are illustrated on figures contained in this section. The roadway link 24-hour average daily traffic (ADT) volumes are shown in Appendix G.

## CUMULATIVE TRIPS

### Ambient Growth Rate

To account for ambient growth on roadways, existing 2022 roadway volumes were increased by a growth rate of two percent (2%) per year over three years for Opening Year (2025) conditions. This equates to a total growth factor of approximately 6%. The ambient growth rate was conservatively applied to all movements at the study intersections.

### Other Development

To account for trips generated by future development, trips generated by pending or approved other development projects in the City of Corona and County of Riverside were added to the study area. Table 3 shows the trip generation summary for other development projects. The southern portion of the project site, which is located within the County of Riverside, is being processed separately from this portion. For the purpose of this analysis, the southern portion will be considered as a future phase of the overall site in the cumulative traffic conditions that could be potentially developed with 38 dwelling units of single-family detached housing. Figure 15 shows the trip distribution patterns for the southern portion of Monte Olivo project.

Figure 16 shows the forecast average daily traffic volumes for the other development. Figure 17 and Figure 18 show the forecast morning and evening peak hour intersection turning movement volumes for trips generated by other developments.

## ANALYSIS SCENARIO VOLUME FORECASTS

### Existing Plus Project

Existing Plus Project volume forecasts were derived by adding the project generated trips to Existing volumes, including the diverted existing traffic from Laurel Canyon Way. Existing Plus Project average daily traffic volumes are shown on Figure 19. Existing Plus Project morning and evening peak hour intersection turning movement volumes are shown on Figure 20 and Figure 21.

### Opening Year (2025) Without Project

To develop Opening Year (2025) Without Project volume forecasts, Existing Plus Project volumes were combined with ambient growth. Opening Year (2025) Without Project average daily traffic volumes are shown on Figure 22. Opening Year (2025) Without Project morning and evening peak hour intersection turning movement volumes are shown Figure 23 and Figure 24.

### Opening Year (2025) With Project

Opening Year (2025) With Project volume forecasts were developed by adding trips by the other developments and the potential future phase (northern portion) of the project to the Opening Year (2025) Without Project forecast. Opening Year (2025) With Project average daily traffic volumes are shown on Figure

25. Opening Year (2025) With Project morning and evening peak hour intersection turning movement volumes are shown on Figure 26 and Figure 27.

## Table 3 (1 of 2)
## Other Development Trip Generation

| Trip Generation Rates | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Project | | | | AM Peak | | | PM Peak | | | Weekday Daily |
| No. | Land Use | Code[1] | Units[2] | In % | Out % | Total | In % | Out % | Total | |
| 1 | General Light Industrial | ITE 110 | TSF | 88% | 12% | 0.74 | 14% | 86% | 0.65 | 4.87 |
| 2 | Single-Family Detached Housing | ITE 210 | DU | 26% | 74% | 0.70 | 63% | 37% | 0.94 | 9.43 |
| 3 | Multifamily Housing (Low-Rise) | ITE 220 | DU | 24% | 76% | 0.40 | 63% | 37% | 0.51 | 6.74 |
| 4 | Mobile Home Park | ITE 240 | DU | 21% | 79% | 0.39 | 62% | 38% | 0.58 | 7.12 |
| 5 | Hotel | ITE 310 | RM | 56% | 44% | 0.46 | 51% | 49% | 0.59 | 7.99 |
| 6 | Shopping Plaza (40-150k) w/o Supermarket | ITE 821 | TSF | 62% | 38% | 1.73 | 49% | 51% | 5.19 | 67.52 |
| 7 | Automated Car Wash | ITE 938 | TSF | 50% | 50% | 6.31 | 50% | 50% | 14.20 | 157.78 |
| 8 | Automated Car Wash | ITE 938 | CWT | 50% | 50% | 34.44 | 50% | 50% | 77.50 | 861.11 |
| 9 | Automated Car Wash | SANDAG | CWT | 50% | 50% | 36.00 | 50% | 50% | 81.00 | 900.00 |
| 10 | Convenience Store/Gas Station (2-4k) | ITE 945 | VFP | 50% | 50% | 16.06 | 50% | 50% | 18.42 | 265.12 |

| Trips Generated | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Project | | | AM Peak | | | PM Peak | | | Weekday Daily |
| No. | Land Use | Quantity[2] | In | Out | Total | In | Out | Total | |
| 1 | DPR2019-0011/0012<br>General Light Industrial | 731.192 TSF | 475 | 66 | 541 | 66 | 409 | 475 | 3,561 |
| 2 | DRP2018-0019<br>General Light Industrial | 1 TSF | 1 | - | 1 | - | 1 | 1 | 5 |
| 3 | PP2022-0003/0008<br>General Light Industrial | 334.520 TSF | 217 | 30 | 247 | 30 | 187 | 217 | 1,629 |
| 4 | DPR2022-0009<br>General Light Industrial | 62.330 TSF | 41 | 6 | 47 | 6 | 35 | 41 | 304 |
| 5 | DPR2020-0018<br>General Light Industrial | 12 TSF | 8 | 1 | 9 | 1 | 7 | 8 | 58 |
| 6 | DPR2022-0004<br>General Light Industrial | 65.958 TSF | 43 | 6 | 49 | 6 | 37 | 43 | 321 |
| 7 | DPR2022-0029<br>General Light Industrial | 86 TSF | 56 | 8 | 64 | 8 | 48 | 56 | 419 |
| 8 | Foothill Center<br>Shopping Plaza (40-150k) w/o Supermarket | 106.870 TSF | 114 | 71 | 185 | 271 | 283 | 554 | 7,216 |
| | - Pass-By Trip Reduction | 40% [3] | -46 | -28 | -74 | -108 | -113 | -222 | -2,886 |
| | Hotel | 119 RM | 31 | 24 | 55 | 36 | 35 | 71 | 951 |
| | Total | | 99 | 67 | 166 | 199 | 205 | 403 | 5,281 |
| 9 | DPR2022-0018/0019<br>General Light Industrial | 23 TSF | 15 | 2 | 17 | 2 | 13 | 15 | 112 |
| 10 | TTM 36634 & PP15-004<br>Multifamily Housing (Low-Rise) | 11 DU | 1 | 3 | 4 | 4 | 2 | 6 | 74 |
| | Single-Family Detached Housing | 4 DU | 1 | 2 | 3 | 2 | 1 | 3 | 38 |
| | Total | | 2 | 5 | 7 | 6 | 3 | 9 | 112 |

## Table 3 (2 of 2)
## Other Development Trip Generation

| Trips Generated | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Project | | | AM Peak | | | PM Peak | | | Weekday Daily |
| No. | Land Use | Quantity[2] | In | Out | Total | In | Out | Total | |
| | DPR2022-0023 | | | | | | | | |
| 11 | General Light Industrial | 27 TSF | 18 | 2 | 20 | 2 | 15 | 17 | 131 |
| | PP2019-0009 & PM37203 | | | | | | | | |
| 12 | Multifamily Housing (Low-Rise) | 6 DU | 1 | 2 | 3 | 2 | 1 | 3 | 40 |
| | Single-Family Detached Housing | 4 DU | 1 | 2 | 3 | 2 | 1 | 3 | 38 |
| | Total | | 2 | 4 | 6 | 4 | 2 | 6 | 78 |
| | TPM37827 | | | | | | | | |
| 13 | General Light Industrial | 4 TSF | 3 | - | 3 | - | 2 | 2 | 19 |

Notes:

1 ITE = Institute of Transportation Engineers, Trip Generation Manual, 11th Edition, 2021; XXX = Land Use Code

San Diego Association of Governments (SANDAG), Brief Guide of Vehicular Traffic Generation Rates for the San Diego Area, April 2002.

2 TSF = Thousand Square Feet; DU = Dwelling Units; RM = Room; CWT = Car Wash Tunnel; VFP = Vehicle Fueling Position

3 Institute of Transportation Engineers, Trip Generation Manual, 11th Edition, 2021. List of Land Uses with Vehicle Pass-By Rates and Data for ITE 821 (Shopping Plaza).

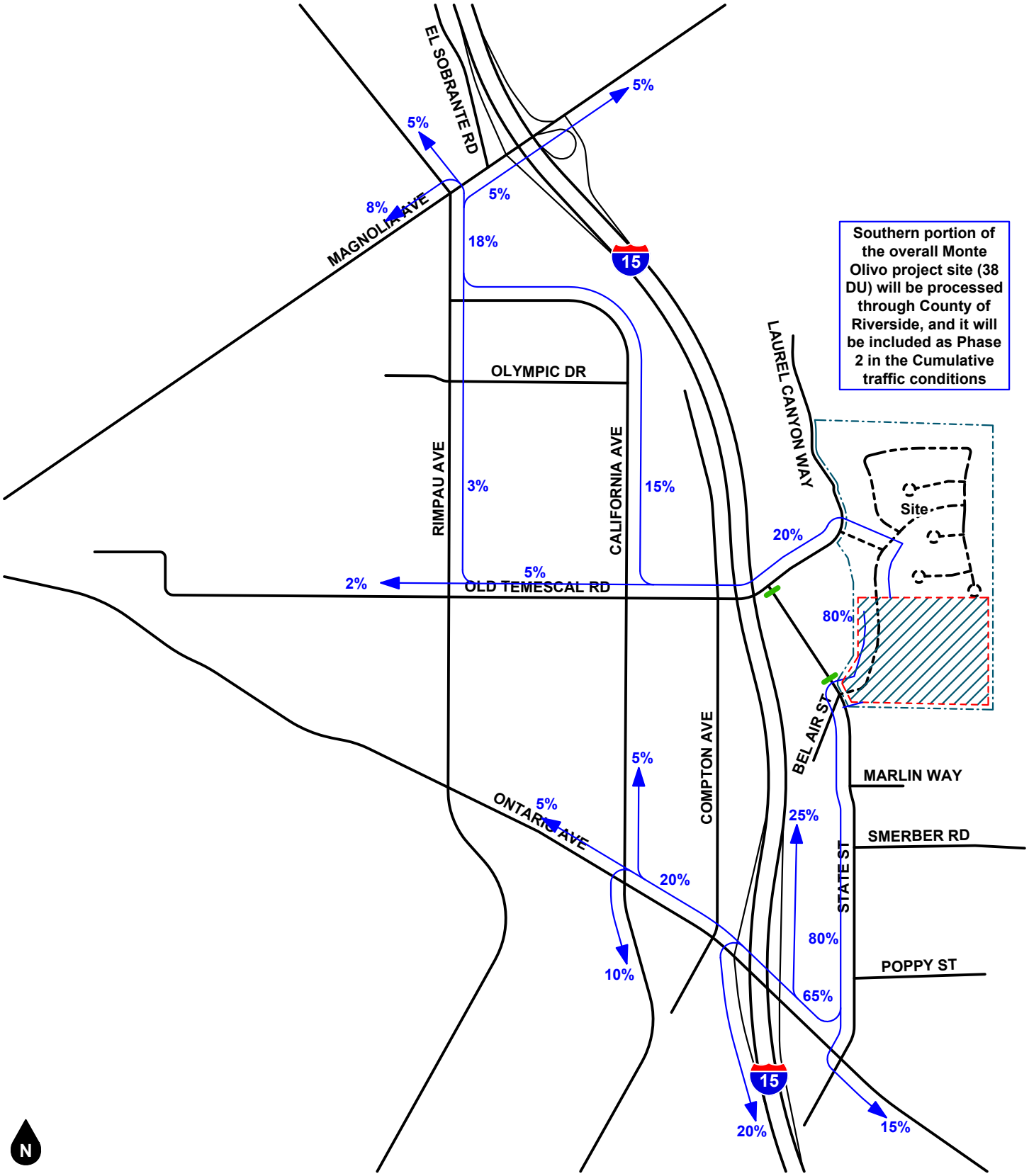
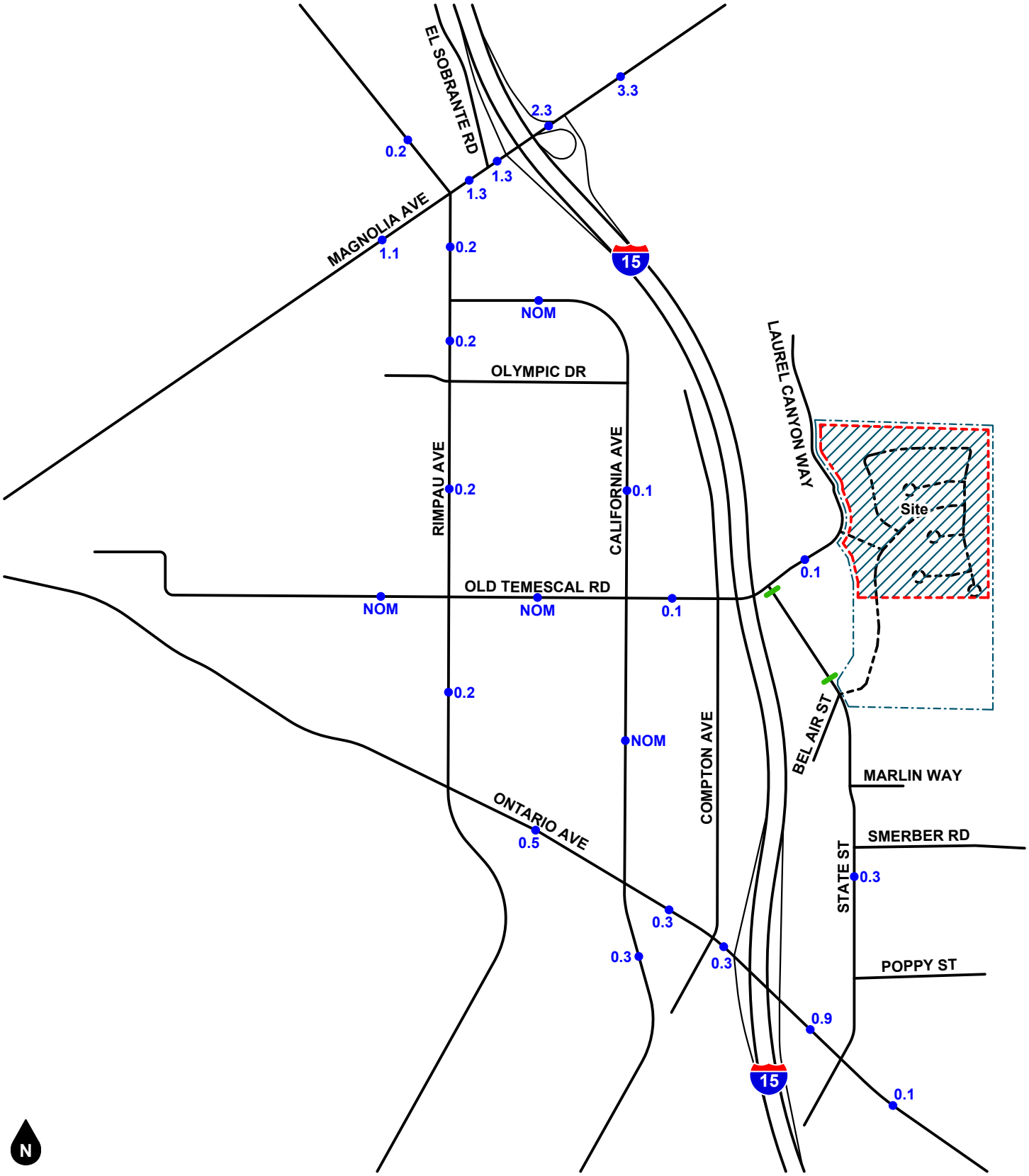


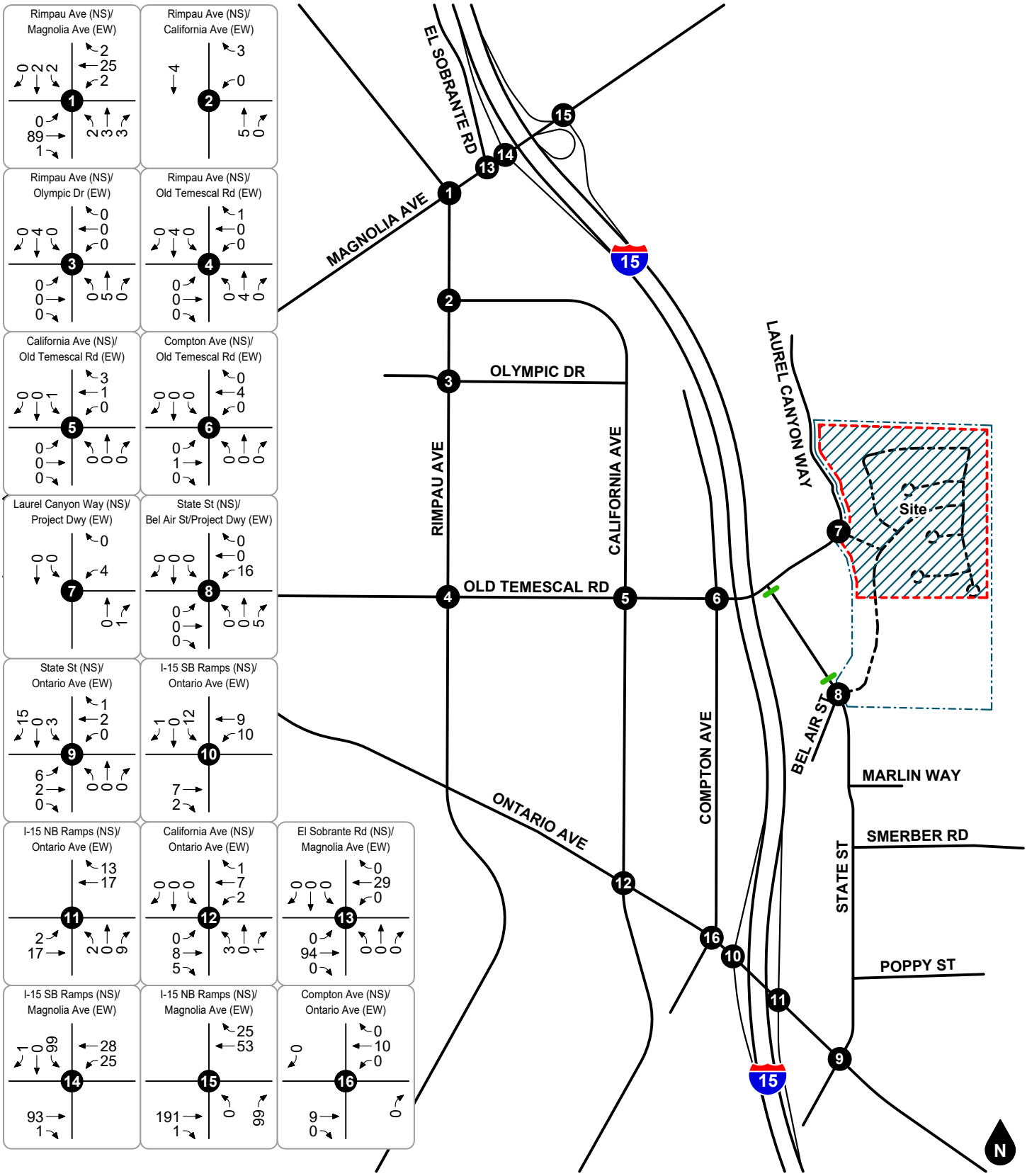

**Figure 15**
**Cumulative Project (Monte Olivo - Southern Portion) Trip Distribution**




Legend

●## Vehicles Per Day (1,000's)

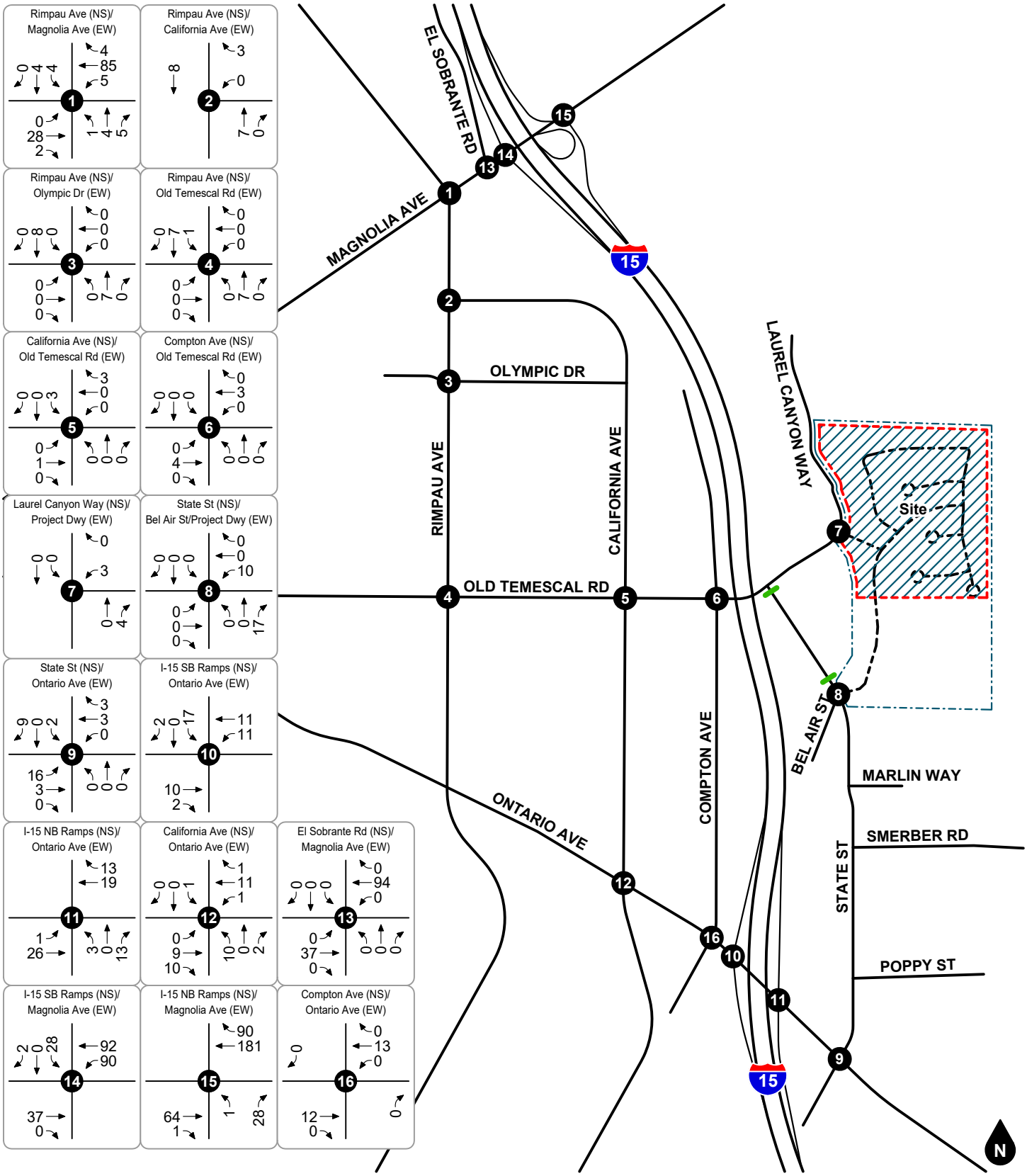
**Figure 16**
**Other Development Average Daily Traffic Volumes**




Legend

(#) Study Intersection

**Figure 17**
**Other Development**
**AM Peak Hour Intersection Turning Movement Volumes**




Legend

(#) Study Intersection

**Figure 18**
**Other Development**
**PM Peak Hour Intersection Turning Movement Volumes**

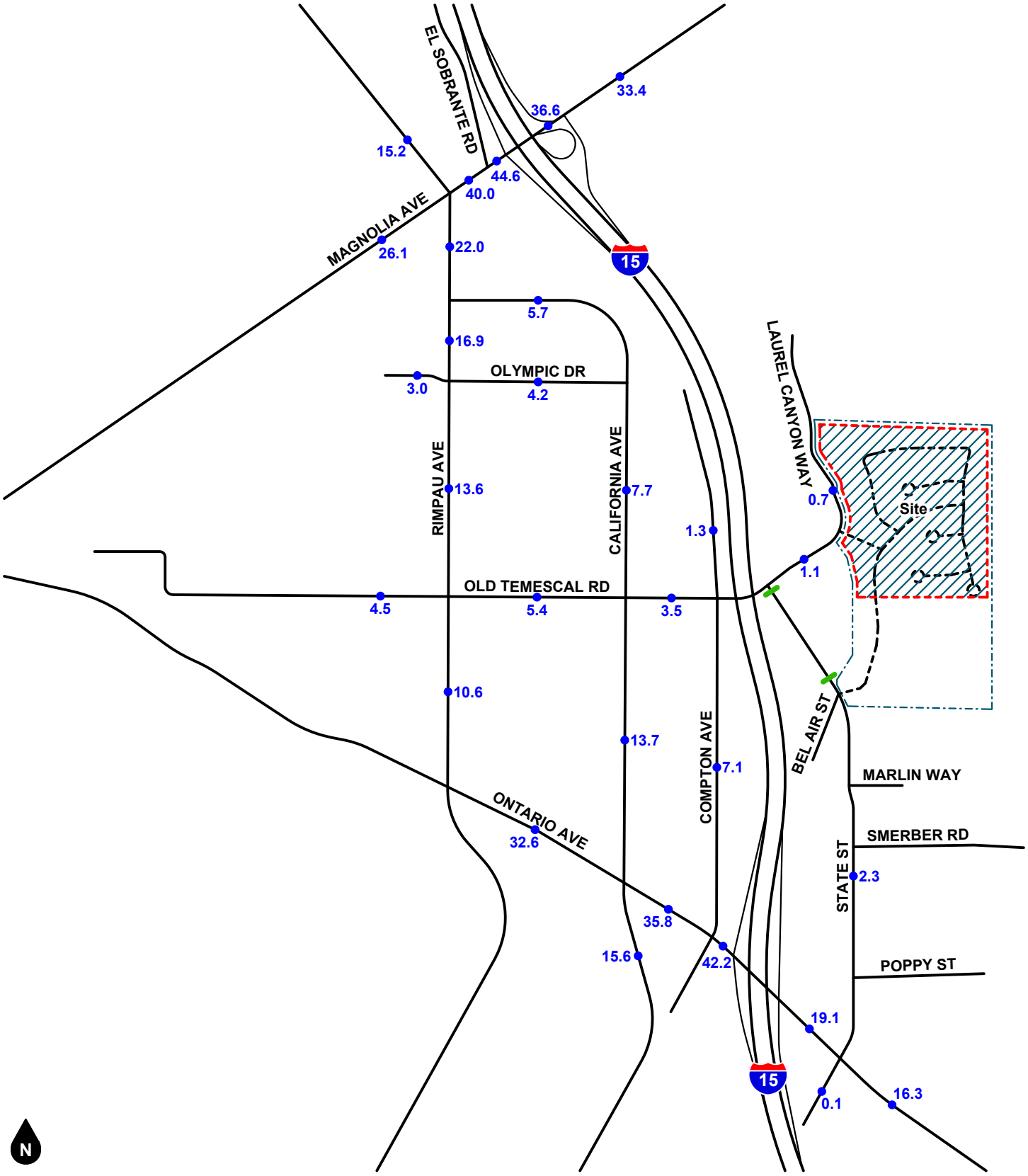
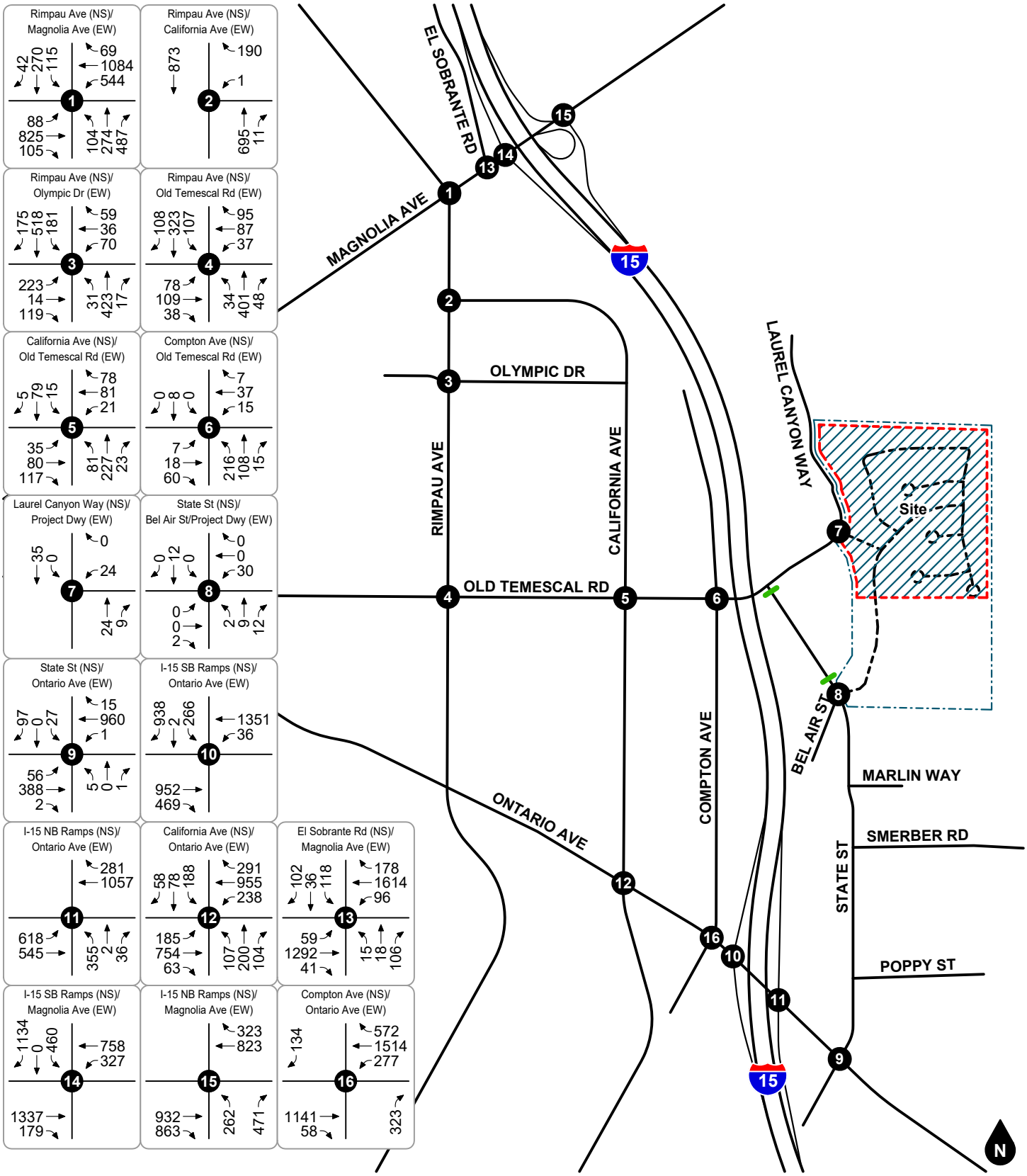


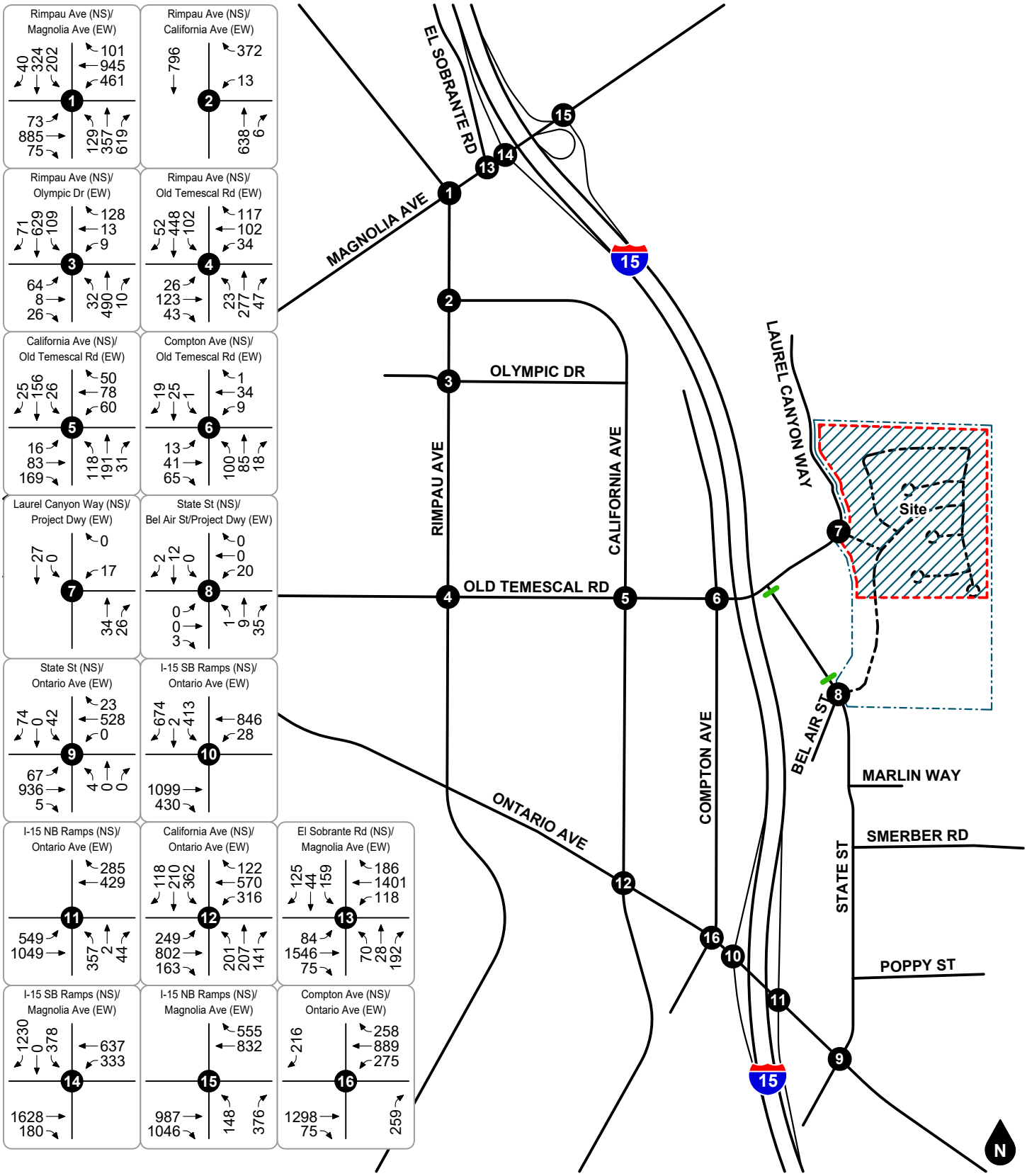

**Figure 19**
**Existing Plus Project Average Daily Traffic Volumes**




Legend

(#) Study Intersection

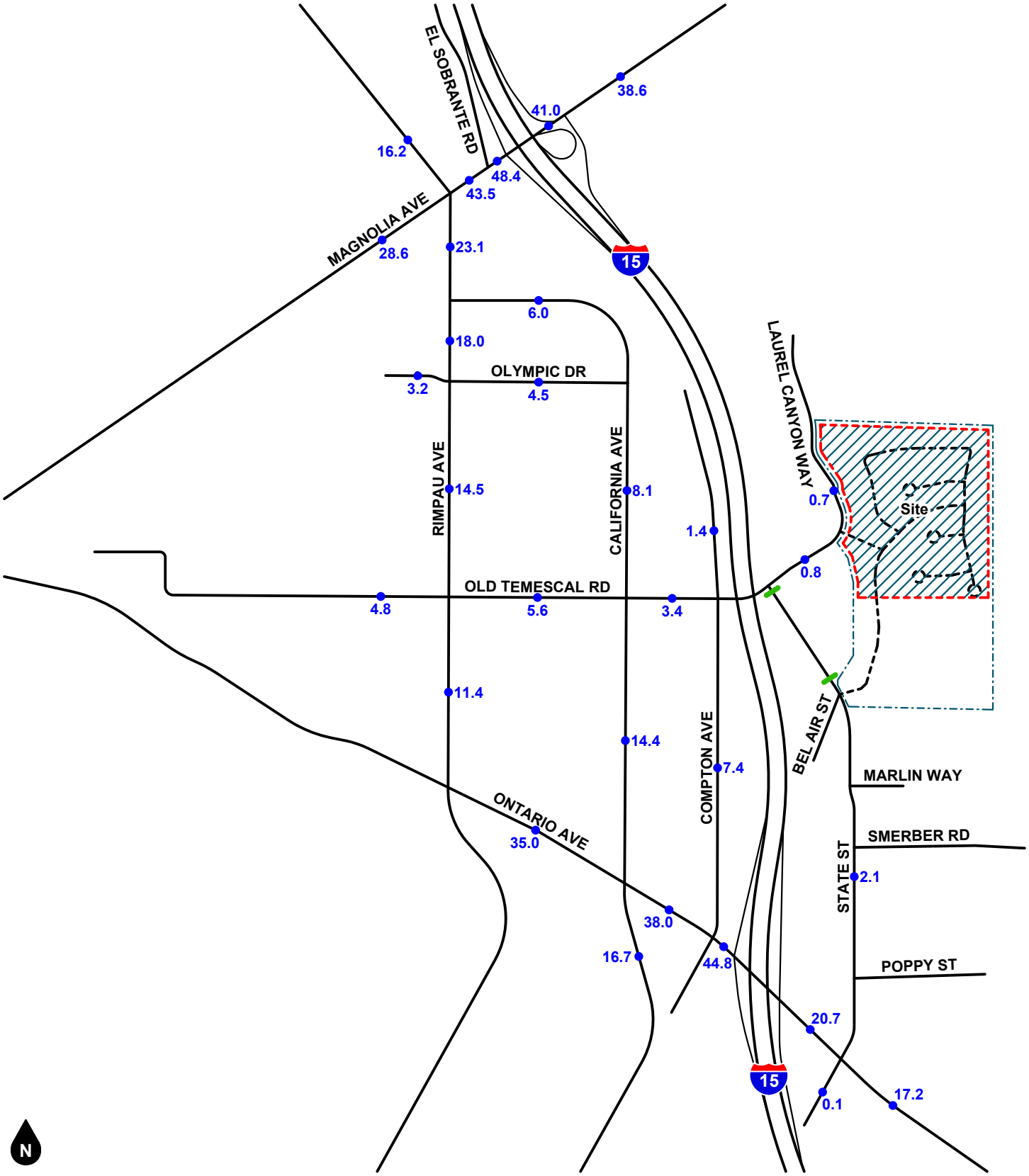
**Figure 20**
**Existing Plus Project**
**AM Peak Hour Intersection Turning Movement Volumes**




Legend

(#) Study Intersection

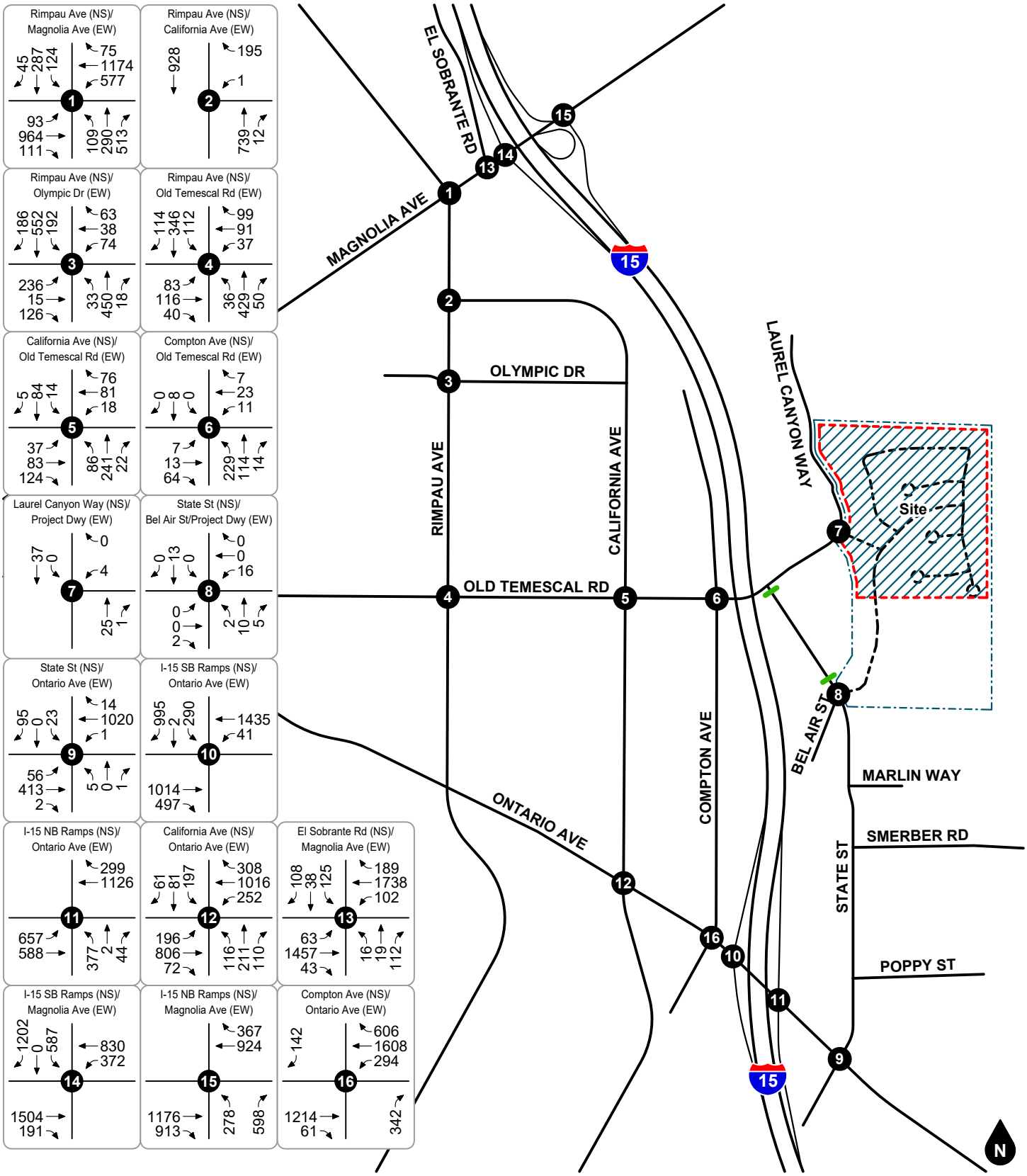
**Figure 21**
**Existing Plus Project**
**PM Peak Hour Intersection Turning Movement Volumes**




Legend

●## Vehicles Per Day (1,000's)

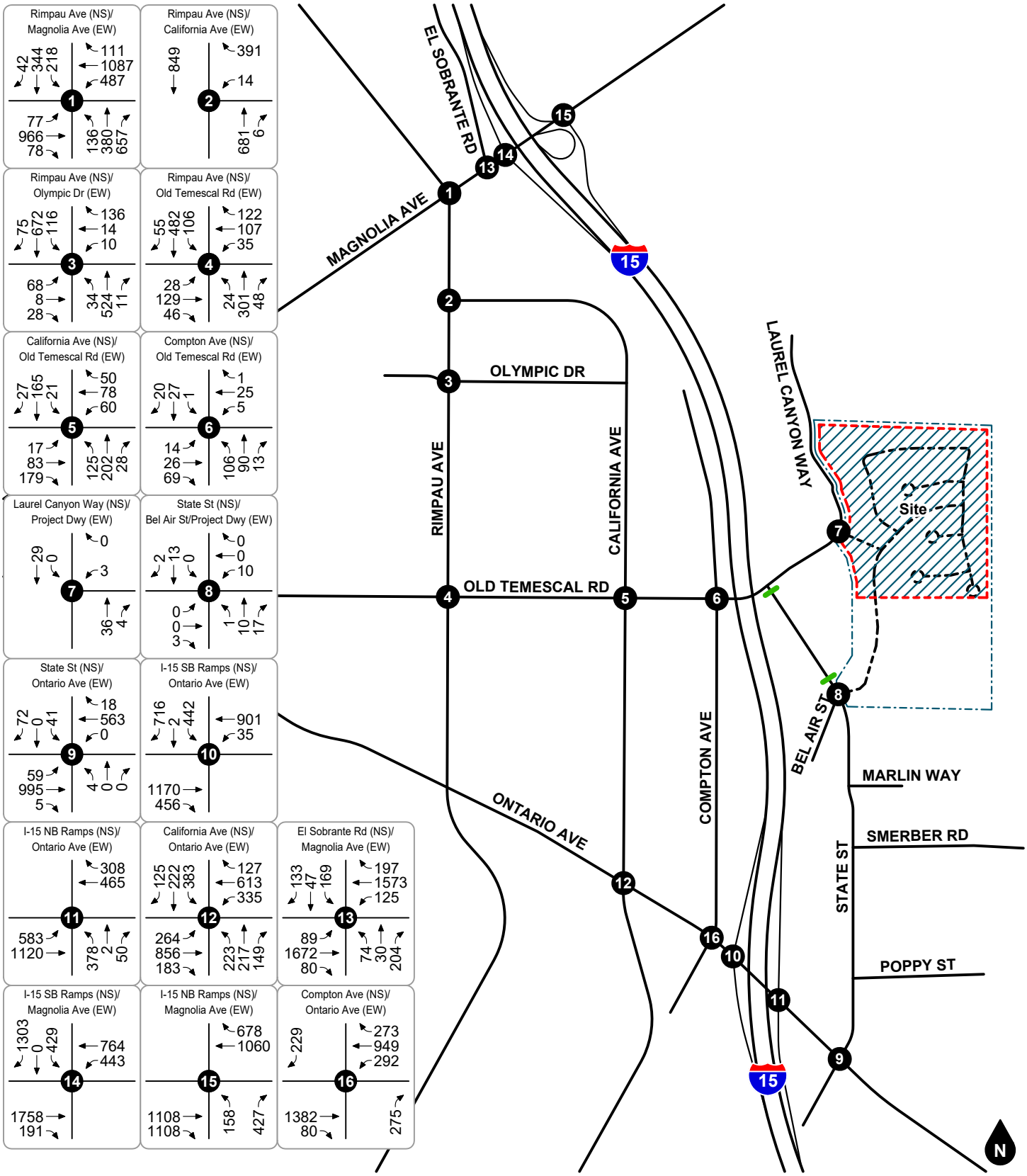
**Figure 22**
**Opening Year (2025) Without Project Average Daily Traffic Volumes**




Legend

(#) Study Intersection

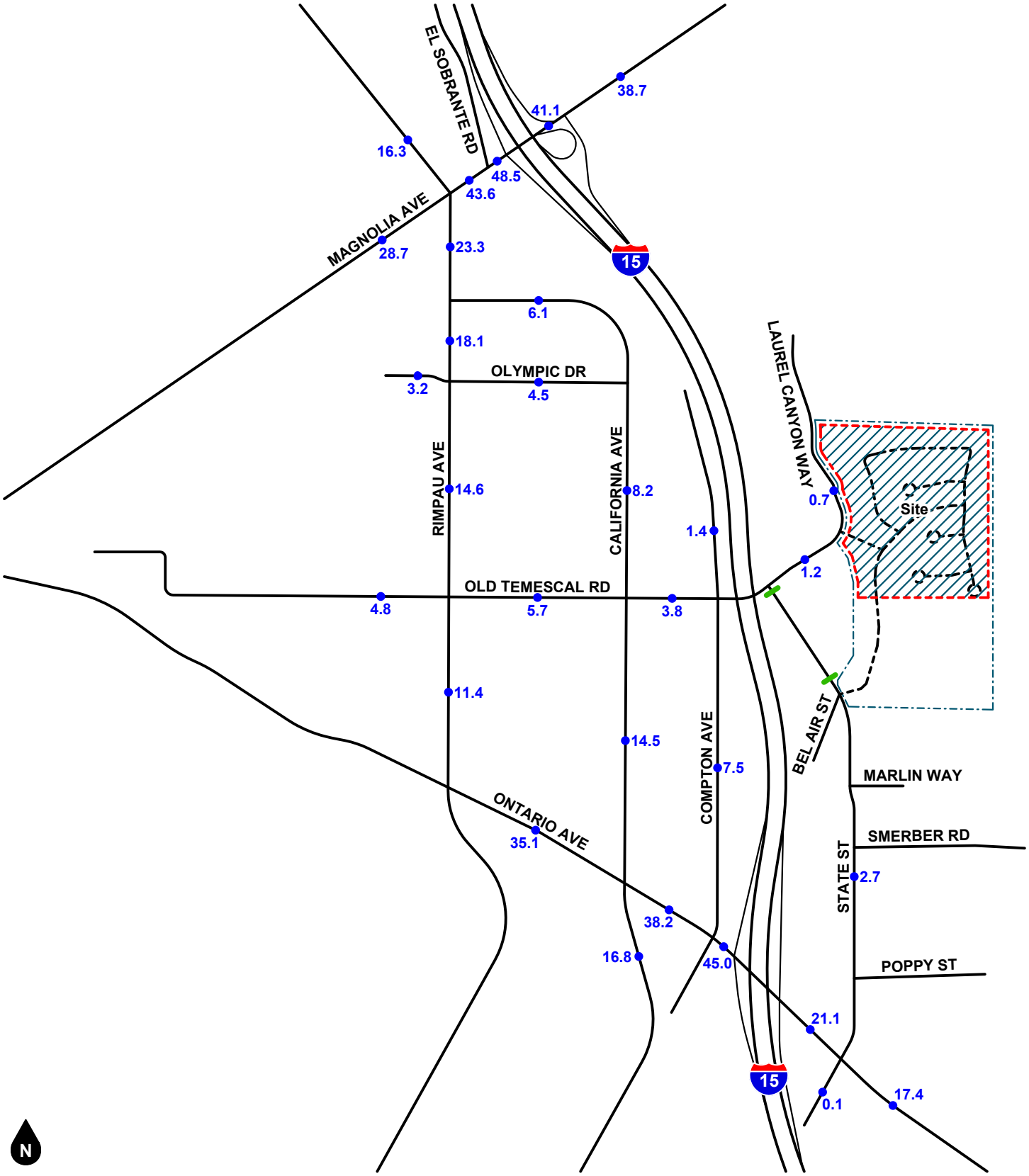
**Figure 23**
**Opening Year (2025) Without Project**
**AM Peak Hour Intersection Turning Movement Volumes**




Legend

(#) Study Intersection

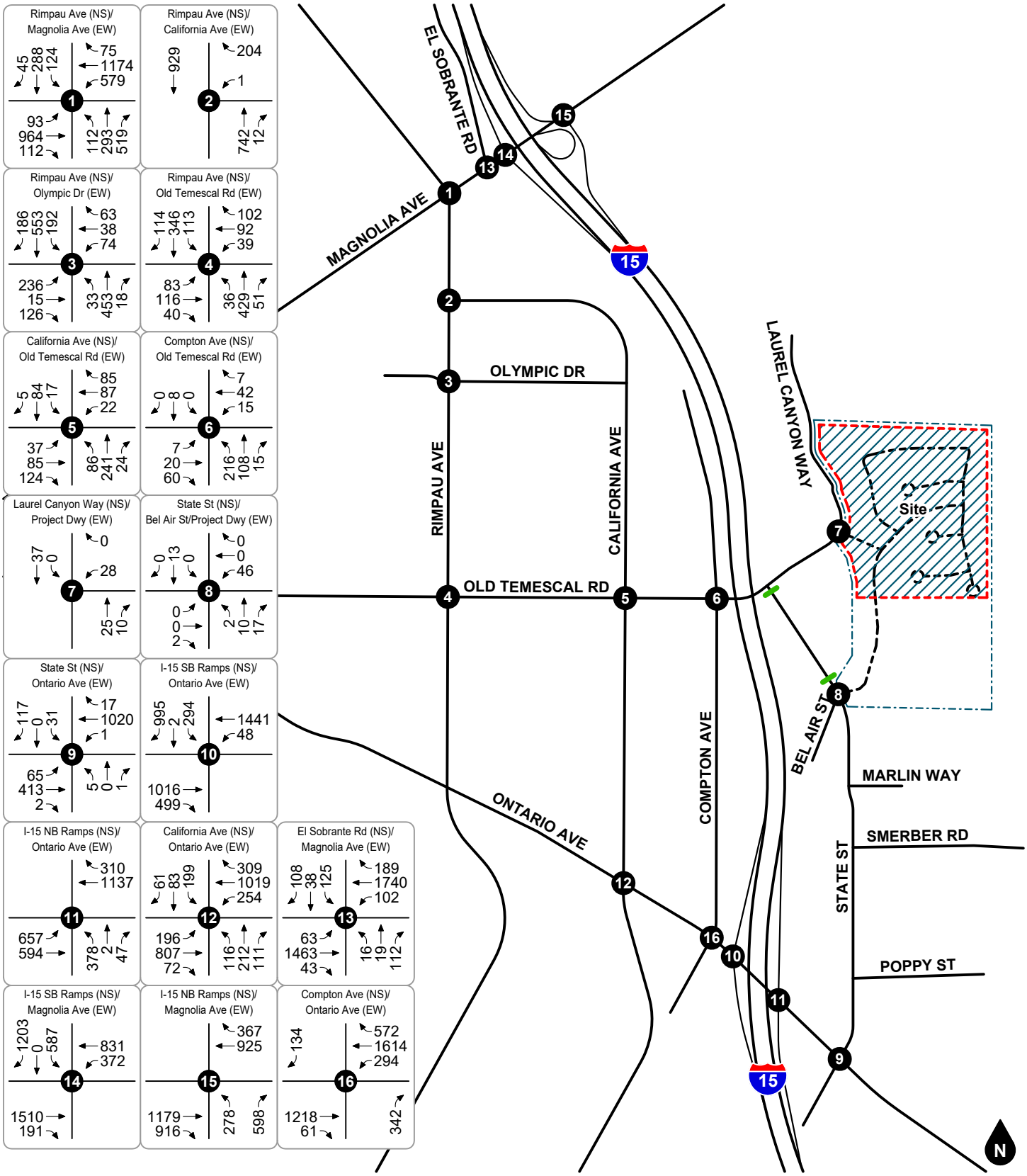
**Figure 24**
**Opening Year (2025) Without Project**
**PM Peak Hour Intersection Turning Movement Volumes**




Legend

●## Vehicles Per Day (1,000's)

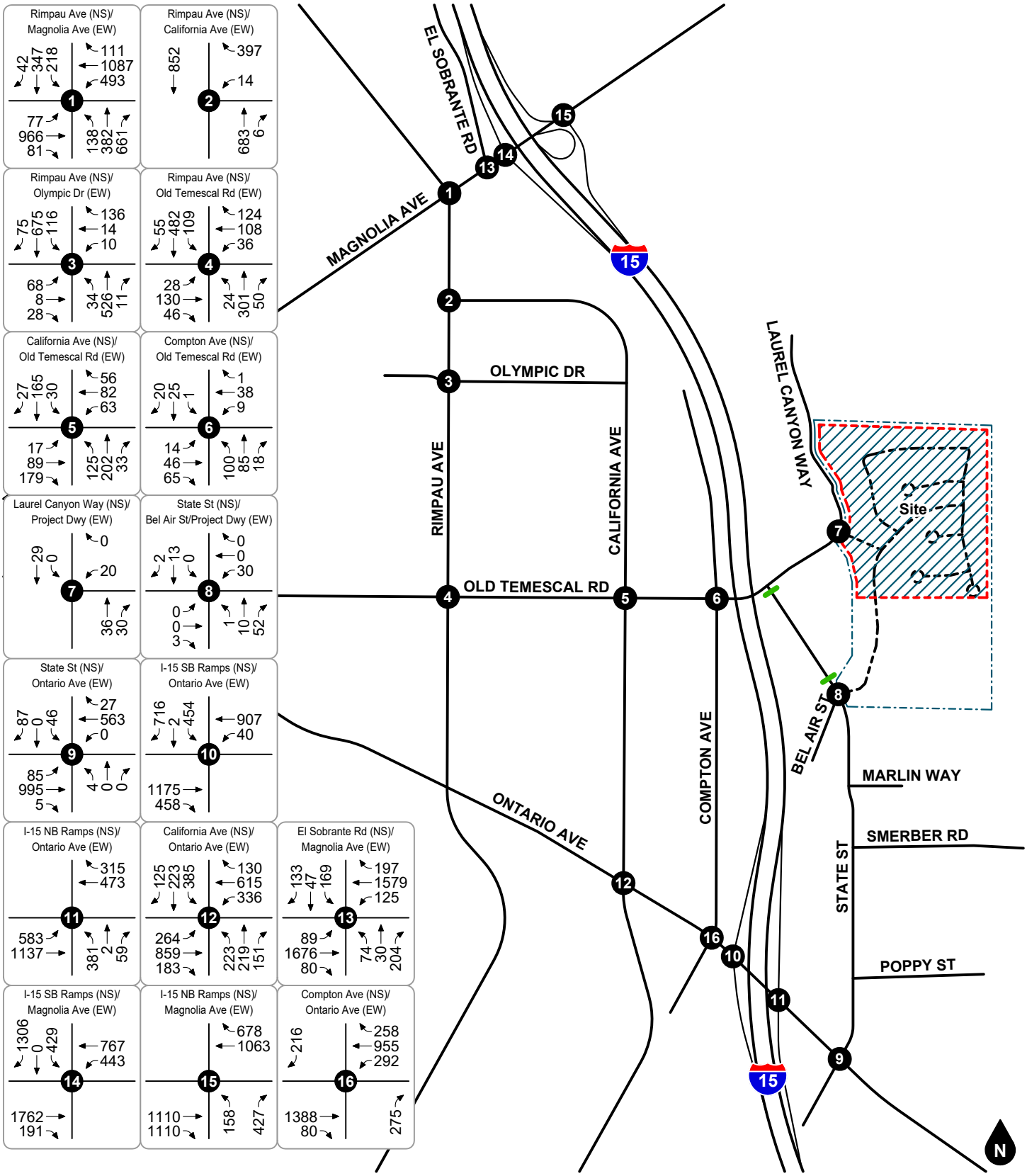
**Figure 25**
**Opening Year (2025) With Project Average Daily Traffic Volumes**




Legend

(#) Study Intersection

**Figure 26**
**Opening Year (2025) With Project**
**AM Peak Hour Intersection Turning Movement Volumes**




Legend

(#) Study Intersection

**Figure 27**
**Opening Year (2025) With Project**
**PM Peak Hour Intersection Turning Movement Volumes**

# 6. FUTURE OPERATIONAL ANALYSIS

Detailed intersection Level of Service calculation worksheets for each of the following analysis scenarios are provided in Appendix E.

## EXISTING PLUS PROJECT

The intersection Levels of Service for Existing Plus Project conditions are shown in Table 4. As shown in Table 4, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Existing Plus Project conditions, except for the following study intersection that is projected to operate at deficient Levels of Service:

- State Street/Ontario Avenue– #9 (PM peak hour)

The project shall construct the following improvements to address the deficient intersection for Existing Plus Project conditions:

- State Street/Ontario Avenue– #9
  - Install traffic signal

## OPENING YEAR (2025) WITHOUT PROJECT

The intersection Levels of Service for Opening Year (2025) Without Project conditions are shown in Table 5. As shown in Table 5, the study intersections are forecast to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2025) Without Project conditions, except for the following study intersection that is forecast to operate at deficient Levels of Service (E or F):

- State Street/Ontario Avenue – #9 (PM peak hour)

## OPENING YEAR (2025) WITH PROJECT

The intersection Levels of Service for Opening Year (2025) With Project conditions are shown in Table 6. As shown in Table 6, the study intersections are projected to operate within acceptable Levels of Service (D or better) during the peak hours for Opening Year (2025) With Project conditions, except for the following study intersection that is forecast to continue operating at deficient Levels of Service (E or F):

- State Street/Ontario Avenue – #9 (AM & PM peak hours)

The following improvements are needed to address the deficient intersections for Opening Year (2025) With Project conditions:

- State Street/Ontario Avenue – #9
  - Install traffic signal

Since this is a degradation of Level of Service for the already deficient intersection operations under Existing conditions, the project applicant is responsible for its fair share of fees to an applicable program for the recommended improvements. The intersection of State Street at Ontario Avenue currently satisfy the traffic signal warrant based on Existing conditions. Figure 28 shows the recommended intersection improvements.

## Table 4
## Existing Plus Project Intersection Levels of Service

| Study Intersection | Traffic Control[1] | AM Peak Hour | | | | | PM Peak Hour | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Without Project | | With Project | | Deficient LOS? | Without Project | | With Project | | Deficient LOS? |
| | | Delay[2] | LOS[3] | Delay[2] | LOS[3] | | Delay[2] | LOS[3] | Delay[2] | LOS[3] | |
| 1. Rimpau Ave at Magnolia Ave | TS | 24.8 | C | 24.9 | C | No | 30.1 | C | 30.5 | C | No |
| 2. Rimpau Ave at California Ave | TS | 6.2 | A | 6.4 | A | No | 10.6 | B | 10.8 | B | No |
| 3. Rimpau Ave at Olympic Dr | TS | 19.8 | B | 19.8 | B | No | 16.6 | B | 16.6 | B | No |
| 4. Rimpau Ave at Old Temescal Rd | AWS | 16.2 | C | 16.3 | C | No | 14.7 | B | 14.9 | B | No |
| 5. California Ave at Old Temescal Rd | AWS | 11.8 | B | 12.0 | B | No | 13.1 | B | 13.4 | B | No |
| 6. Compton Ave at Old Temescal Rd | AWS | 9.9 | A | 10.1 | B | No | 8.3 | A | 8.5 | A | No |
| 7. Laurel Canyon Wy at Project Dwy | CSS | 0.0 | A | 8.9 | A | No | 0.0 | A | 9.0 | A | No |
| 8. State St at Bel Air St/Project Dwy | CSS | 8.4 | A | 8.8 | A | No | 8.4 | A | 8.9 | A | No |
| 9. State St at Ontario Ave | CSS | 29.1 | D | 31.8 | D | No | 42.3 | E | 48.2 | E | Yes |
| • Traffic Signal | TS | - | - | 7.5 | A | No | - | - | 4.7 | A | No |
| 10. I-15 SB Ramps at Ontario Ave | TS | 20.3 | C | 20.7 | C | No | 16.0 | B | 16.3 | B | No |
| 11. I-15 NB Ramps at Ontario Ave | TS | 17.7 | B | 17.8 | B | No | 16.0 | B | 16.2 | B | No |
| 12. California Ave at Ontario Ave | TS | 21.2 | C | 21.2 | C | No | 24.0 | C | 24.1 | C | No |
| 13. El Sobrante Rd at Magnolia Ave | TS | 38.6 | D | 38.7 | D | No | 42.3 | D | 42.4 | D | No |
| 14. I-15 SB Ramps at Magnolia Ave | TS | 26.5 | C | 27.9 | C | No | 36.1 | D | 36.2 | D | No |
| 15. I-15 NB Ramps at Magnolia Ave | TS | 12.0 | B | 12.0 | B | No | 10.7 | B | 10.7 | B | No |
| 16. Compton Ave at Ontario Ave | TS | 22.4 | C | 22.4 | C | No | 16.4 | B | 16.5 | B | No |

Notes:

(1) TS = Traffic Signal; CSS = Cross Street Stop; AWS = All-Way Stop

(2) Delay is shown in seconds/vehicle. For intersections with traffic signal, all way stop control, or roundabout, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service

## Table 5
## Opening Year (2025) Without Project Intersection Levels of Service

| Study Intersection | Traffic Control[1] | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|---|
| | | Delay[2] | LOS[3] | Delay[2] | LOS[3] |
| 1. Rimpau Ave at Magnolia Ave | TS | 27.8 | C | 34.8 | C |
| 2. Rimpau Ave at California Ave | TS | 6.4 | A | 11.1 | B |
| 3. Rimpau Ave at Olympic Dr | TS | 20.9 | C | 17.1 | B |
| 4. Rimpau Ave at Old Temescal Rd | AWS | 18.0 | C | 16.4 | C |
| 5. California Ave at Old Temescal Rd | AWS | 12.6 | B | 14.1 | B |
| 6. Compton Ave at Old Temescal Rd | AWS | 10.3 | B | 8.5 | A |
| 7. Laurel Canyon Wy at Project Dwy | AWS | 8.8 | A | 8.9 | A |
| 8. State St at Bel Air St/Project Dwy | CSS | 8.8 | A | 8.8 | A |
| 9. State St at Ontario Ave | CSS | 35.0 | D | 53.0 | F |
| 10. I-15 SB Ramps at Ontario Ave | TS | 24.3 | C | 17.4 | B |
| 11. I-15 NB Ramps at Ontario Ave | TS | 19.4 | B | 17.7 | B |
| 12. California Ave at Ontario Ave | TS | 21.9 | C | 24.7 | C |
| 13. El Sobrante Rd at Magnolia Ave | TS | 38.8 | D | 44.7 | D |
| 14. I-15 SB Ramps at Magnolia Ave | TS | 32.8 | C | 53.4 | D |
| 15. I-15 NB Ramps at Magnolia Ave | TS | 15.3 | B | 13.2 | B |
| 16. Compton Ave at Ontario Ave | TS | 24.2 | C | 23.7 | C |

Notes:

(1) TS = Traffic Signal; CSS = Cross Street Stop; AWS = All-Way Stop

(2) Delay is shown in seconds/vehicle. For intersections with traffic signal, all way stop control, or roundabout, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service

## Table 6
## Opening Year (2025) With Project Intersection Levels of Service

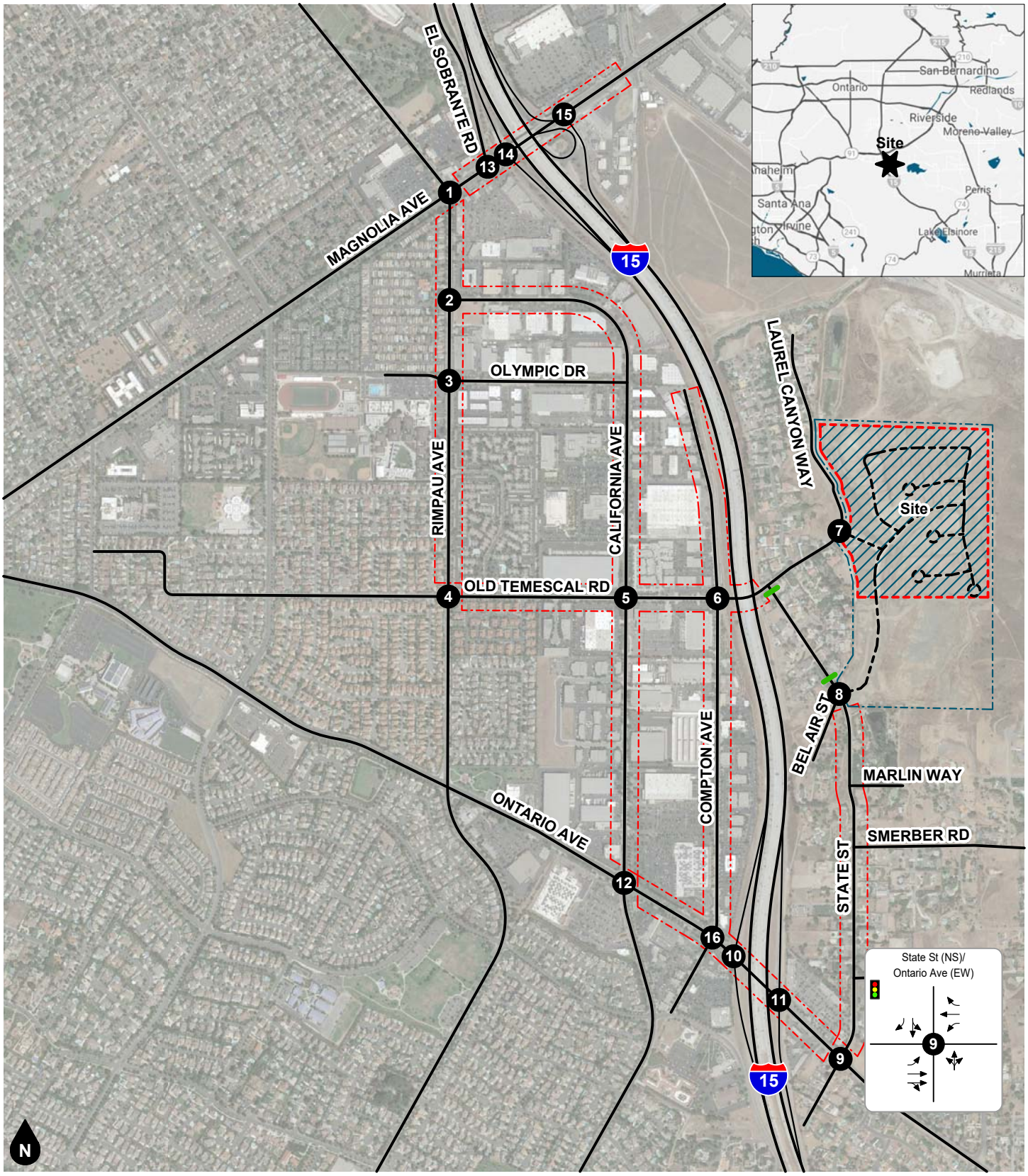
| Study Intersection | Traffic Control[1] | AM Peak Hour | | | | | PM Peak Hour | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Without Project | | With Project | | Significant Impact? | Without Project | | With Project | | Significant Impact? |
| | | Delay[2] | LOS[3] | Delay[2] | LOS[3] | | Delay[2] | LOS[3] | Delay[2] | LOS[3] | |
| 1. Rimpau Ave at Magnolia Ave | TS | 27.8 | C | 27.9 | C | No | 34.8 | C | 35.0 | D | No |
| 2. Rimpau Ave at California Ave | TS | 6.4 | A | 6.7 | A | No | 11.1 | B | 11.2 | B | No |
| 3. Rimpau Ave at Olympic Dr | TS | 20.9 | C | 20.9 | C | No | 17.1 | B | 17.1 | B | No |
| 4. Rimpau Ave at Old Temescal Rd | AWS | 18.0 | C | 18.1 | C | No | 16.4 | C | 16.5 | C | No |
| 5. California Ave at Old Temescal Rd | AWS | 12.6 | B | 12.8 | B | No | 14.1 | B | 14.5 | B | No |
| 6. Compton Ave at Old Temescal Rd | AWS | 10.3 | B | 10.5 | B | No | 8.5 | A | 8.6 | A | No |
| 7. Laurel Canyon Wy at Project Dwy | CSS | 8.8 | A | 9.0 | A | No | 8.9 | A | 9.0 | A | No |
| 8. State St at Bel Air St/Project Dwy | CSS | 8.8 | A | 8.9 | A | No | 8.8 | A | 9.0 | A | No |
| 9. State St at Ontario Ave | CSS | 35.0 | D | 38.4 | E | Yes | 53.0 | F | 60.7 | F | Yes |
| • Traffic Signal | TS | - | - | 7.7 | A | No | - | - | 6.0 | A | No |
| 10. I-15 SB Ramps at Ontario Ave | TS | 24.3 | C | 24.8 | C | No | 17.4 | B | 17.8 | B | No |
| 11. I-15 NB Ramps at Ontario Ave | TS | 19.4 | B | 19.6 | B | No | 17.7 | B | 18.1 | B | No |
| 12. California Ave at Ontario Ave | TS | 21.9 | C | 22.0 | C | No | 24.7 | C | 24.8 | C | No |
| 13. El Sobrante Rd at Magnolia Ave | TS | 38.8 | D | 38.9 | D | No | 44.7 | D | 44.7 | D | No |
| 14. I-15 SB Ramps at Magnolia Ave | TS | 32.8 | C | 33.0 | C | No | 53.4 | D | 53.8 | D | No |
| 15. I-15 NB Ramps at Magnolia Ave | TS | 15.3 | B | 15.3 | B | No | 13.2 | B | 13.2 | B | No |
| 16. Compton Ave at Ontario Ave | TS | 24.2 | C | 24.2 | C | No | 23.7 | C | 23.9 | C | No |

Notes:

(1) TS = Traffic Signal; CSS = Cross Street Stop; AWS = All-Way Stop

(2) Delay is shown in seconds/vehicle. For intersections with traffic signal, all way stop control, or roundabout, overall average intersection delay and LOS are shown. For intersections with cross street stop control, LOS is based on average delay of the worst individual lane (or movements sharing a lane).

(3) LOS = Level of Service




Legend

- # Study Intersection
- Community Gate
- Study Roadway Segment
- Existing Travel Lane
- New Travel Lane
- New Traffic Signal

**Figure 28**
**Recommended Intersection Improvements**

# 7. ROADWAY LINK ANALYSIS

The road link capacity analysis is assessed based on the theoretical 24-hour average daily traffic (ADT) capacity for roadways in terms of volume over capacity ratios. Roadway link capacity analysis methodology is described in Section 2 of the report.

Table 7 summarizes the level of service results of the roadway link capacity analysis for Opening Year (2025) With Project conditions. As shown in Table 7, the study roadway links are projected to function at Level of Service "C" or better for Opening Year (2025) With Project conditions, except for the following roadway links which will operate at LOS "D" with existing roadway width:

- Rimpau Avenue, from Magnolia Avenue to California Avenue
- Magnolia Avenue, from El Sobrante Road to I-15 Southbound Ramps
- Ontario Avenue, from Compton Avenue to I-15 Southbound Ramps

Since the City of Corona will be improving and widening Ontario Avenue from California Avenue to State Street, no additional improvements are recommended for Ontario Avenue. The study intersections along Rimpau Avenue and Magnolia Avenue are projected to operate at acceptable Level of Service "D" or better, therefore, no additional improvements are recommended for Rimpau Avenue and Magnolia Avenue.

## Table 7
## Opening Year (2025) Roadway Link Level of Service

| Roadway Link | | | Opening Year (2025) With Project Traffic[1] | Roadway Classification[2] | Number of Lanes | Roadway Capacity[3] | Volume/ Capacity Ratio | Level of Service |
|---|---|---|---|---|---|---|---|---|
| B | Rimpau Ave | Magnolia Ave to California Ave | 23,300 | Secondary 4 Lane | 2 | 25,900 | 0.90 | D |
| C | Rimpau Ave | California Ave to Olympic Dr | 18,100 | Secondary 4 Lane | 2 | 25,900 | 0.70 | B |
| D | Rimpau Ave | Olympic Dr to Old Temescal Rd | 14,600 | Secondary 4 Lane | 2 | 25,900 | 0.56 | A |
| U | California Ave | East of Rimpau Ave | 6,100 | Collector | 2 | 13,000 | 0.47 | A |
| F | California Ave | Olympic Dr to Old Temescal Rd | 8,200 | Collector | 2 | 13,000 | 0.63 | B |
| G | California Ave | Old Temescal Rd to Shopping Ctr | 8,400 | Collector | 2 | 13,000 | 0.65 | B |
| H | California Ave | Shopping Center to Ontario Ave | 14,500 | Secondary 4 Lane | 4 | 25,900 | 0.56 | A |
| J | Compton Ave | North of Old Temescal Rd | 1,400 | Collector | 2 | 13,000 | 0.11 | A |
| K | Compton Ave | Old Temescal Rd to Ontario Ave | 7,500 | Collector | 2 | 13,000 | 0.58 | A |
| L | State St | Bel Air St to Ontario Ave | 2,700 | Collector | 2 | 13,000 | 0.21 | A |
| Q | Magnolia Ave | Rimpau Ave to El Sobrante Rd | 43,600 | Major Arterial 6 Lane | 6 | 53,900 | 0.81 | D |
| R | Magnolia Ave | El Sobrante Rd to I-15 SB Ramps | 48,500 | Major Arterial 6 Lane | 6 | 53,900 | 0.90 | D |
| Y | Old Temescal Rd | Rimpau Ave to California Ave | 5,700 | Collector | 2 | 13,000 | 0.44 | A |
| Z | Old Temescal Rd | California Ave to Compton Ave | 3,700 | Collector | 2 | 13,000 | 0.28 | A |
| AA | Old Temescal Rd | Compton Ave to Bel Air St | 1,200 | Collector | 2 | 13,000 | 0.09 | A |
| CC | Ontario Ave | California Ave to Compton Ave | 38,100 | Major Arterial 6 Lane | 6 | 53,900 | 0.71 | C |
| DD | Ontario Ave | Compton Ave to I-15 SB Ramps | 44,900 | Major Arterial 6 Lane | 6 | 53,900 | 0.83 | D |
| EE | Ontario Ave | I-15 SB Ramps to I-15 NB Ramps | 35,500 | Major Arterial 6 Lane | 6 | 53,900 | 0.66 | B |
| FF | Ontario Ave | I-15 NB Ramps to State St | 21,100 | Major Arterial 4 Lane | 4 | 34,100 | 0.62 | B |

Notes:

(1) Roadway Link Average Daily Traffic Traffic (see Appendix G).

(2) Corona General Plan Roadway Functional Classification System

(3) City of Corona General Plan Technical Background Report, Table 3.1-6, Riverside County Level of Service Criteria.

# 8. VEHICLE MILES TRAVELED (VMT) ANALYSIS

The Vehicle Miles Traveled (VMT) analysis has been assessed based on the City of Corona guidelines. Using on the Western Riverside Council of Governments (WRCOG) VMT Screening Tool, the project site is located within a low VMT generating Traffic Analysis Zone (TAZ) based on total VMT (28.13 VMT/SP) and Residential Home-Based VMT (14.3 VMP/PC). Appendix H shows the VMT screening results for the project site. Per the City of Corona guidelines, it is presumed to be less than significant VMT impact for projects located in low VMT generating model TAZ. These TAZs generate total daily VMT/SP that is less than the baseline level for the City/jurisdiction.

Per the secondary screening step, the proposed project land use is consistent to the City of Corona General Plan land use destination of Estate Residential (ER) of 1 to 3 dwelling units (DU) per acre. The project site is approximately 57 acres with 103 DU, which is 1.8 DU per acre. The proposed project site is also located within half-mile of a bus stop and within one-mile of employment and shopping destinations. Based on the screening steps, the project is anticipated to generate less than significant VMT impact and no additional improvements are recommended.

# 9. SAFETY REVIEW ALONG STATE STREET

There were some traffic safety concerns raised by local residents near the neighborhoods along State Street. Therefore, this section evaluates the following safety concerns along State Street:

- Speed limit signage and vehicular speed
- Sight distance at project driveway
- Crash history
- Lane width reduction
- Street lighting

## SPEED LIMIT SIGNAGE AND VEHICULAR SPEED

State Street has a posted speed limit of 35 miles per hour (mph). There are currently 3 speed limit signs posted along State Street at the following locations as shown in Figure 3:

- Northbound direction south of Poppy Street
- Southbound direction south of Bel Air Street
- Southbound direction south of Marlin Way

A speed survey was conducted in October 25, 2022 on State Street between Smerber Road and Poppy Street (see Appendix I). The speed survey shows that the 85th-percentile speed on State Street is 39 miles per hour (mph). Based on the California Manual on Uniform Traffic Control Devices (CA MUTCD) guidelines, the speed limit should be rounded to the nearest 5 mph increment of the 85th-percentile speed, which would be 40 mph in this case. However, for cases in which the nearest 5 mph increment of the 85th-percentile speed would require a rounding up, then the speed limit may be rounded down to the nearest 5 mph increment below the 85th percentile speed, if no further reduction is used. Therefore, the current posted speed limit of 35 mph is considered appropriate and reasonable.

Currently, there is a speed limit sign on the southbound direction south of Marlin Way while the remainder 2,500 feet of State Street from Marlin Way toward the south has no other speed limit sign. Since the southbound direction of State Street is going downhill where vehicles tends to travel at higher speeds, it recommended that an additional speed limit sign be installed on the southbound direction south of Smerber Road to warn the motorists to slow down and adhere to appropriate speed.

Another option is replace the existing speed limit on the southbound direction south of Marlin Way with a radar speed sign which more visible and illuminated. This location of State Street is near the vertical crest of State Street and has a steep grade than other segments of State Street where a radar speed sign may be beneficial to warn motorists to reduce vehicular speed.

## SIGHT DISTANCE AT PROJECT DRIVEWAY

Figure 29 shows the sight distance analysis for the project driveway on State Street. The sight distance is evaluated based on sight distance guidelines specified in the American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Street (7th Edition, 2018)* ["*AASHTO Greenbook*"]. As shown on Figure 29, adequate sight distances can be provided as long as any landscaping near the northeast and southeast corners of the curb returns at the driveway on State Street do not obstruct drivers' views.

For relatively level major street roadways (i.e., less than three percent grade), stopping sight distance was determined by the following formula:

Stopping Sight Distance = 1.47 Vt + 1.075 (V^2 / a)
where:
V = design speed (miles per hour)
t = brake reaction time, 2.5 seconds
a = deceleration rate (feet / second^2), 11.2 feet/second^2

The intersection sight distance was determined based on "Case F – Left Turns from the Major Road." For Case F conditions, the intersection sight distance is the same as left turns by a stopped vehicle, which was determined by the following formula:

Intersection Sight Distance = 1.47 $V_{major}$ $t_g$
where:
$V_{major}$ = design speed of the major road (miles per hour)
$t_g$ = time gap for minor road vehicle to enter the major road (seconds)

For Case F, left turn from the major road, AASHTO recommends a time gap of 5.5 seconds for passenger cars, plus 0.5 seconds for each additional lane and/or median width lane equivalent that must be crossed in excess of one lane. Therefore, a time gap of 7.0 seconds was used since the left turn movement would cross three through lanes and one turn lane after project frontage improvements. A design speed of 40 miles per hour was used based on the results of the radar speed survey (85th-percentile speed of 39 miles per hour). Based on the sight distance formulas, an intersection sight distance of 441 feet is desirable with a minimum stopping sight distance of 300 feet.

## CRASH HISTORY

Based on the crash history records from County of Riverside, there are no recent vehicular crashes along State Street from the project site to Ontario Avenue. Since State Street appears to be relatively safe with no recent vehicular crash, there should be no major safety concerns regarding sight distance and speed factors.

## LANE WIDTH REDUCTION

The approximate widths of the existing pavement and travel lanes along State Street are listed below:

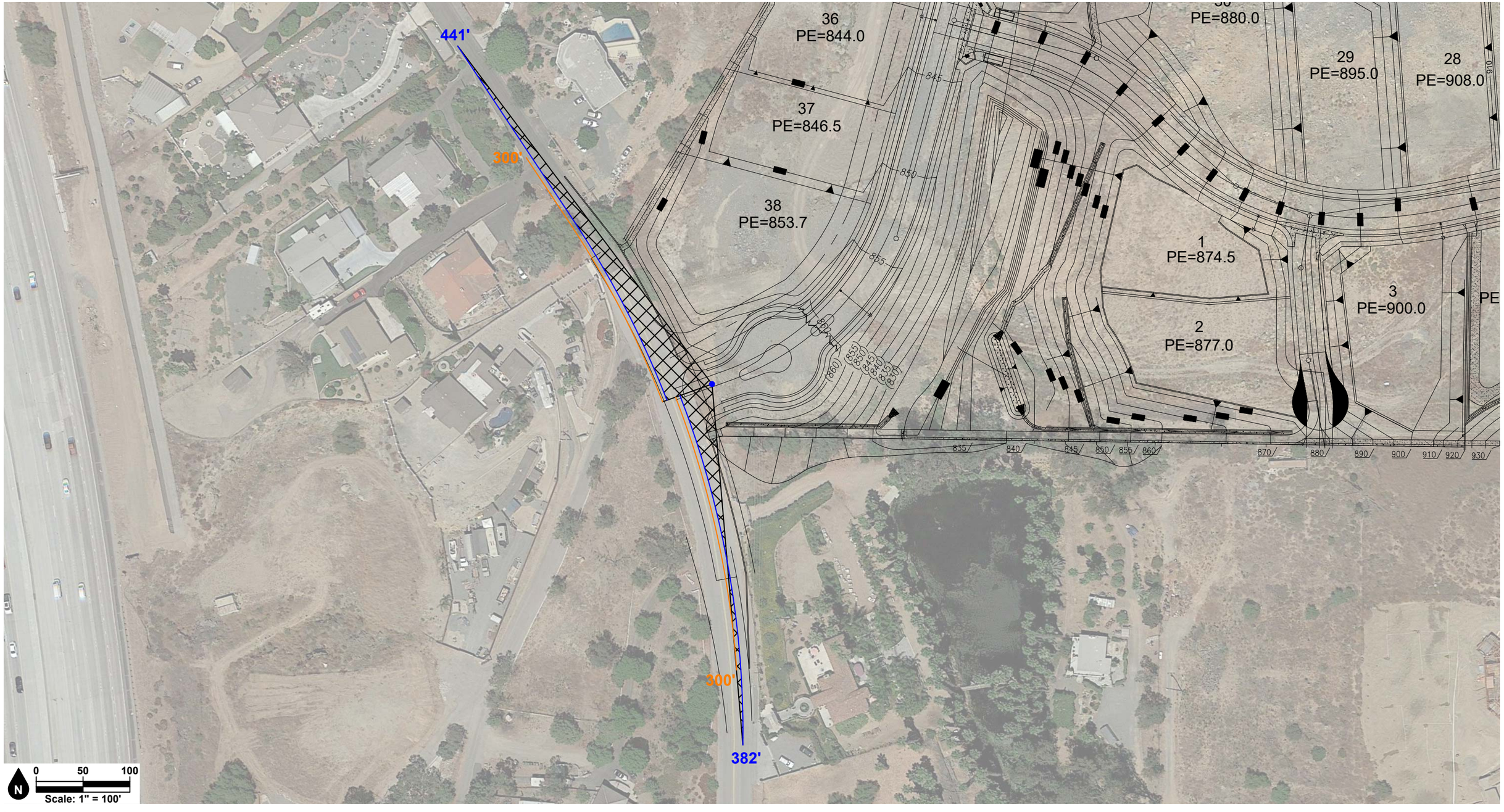
- Ontario Avenue to Poppy Street: 38 to 42 feet (Travel lanes are 19 to 21 feet)
- Poppy Street to Smerber Road : 40 to 42 feet (Travel lanes are 19 to 23 feet)
- Smerber Road to Marlin Way : 42 feet (Travel lanes are 19 to 21 feet)
- Marlin Way to Bel Air Street: 42 feet (Travel lanes are 19 to 21 feet)

The travel lane widths along State Street are between 19 feet and 23 feet which are wider than a typical travel lane that is usually between 12 and 14 feet. A wider travel lane usually results in higher vehicle speed while a narrow travel lane will likely encourage motorists to slow down. Even though lane width reduction is an effective tool to reduce vehicular speed in most cases, it is unnecessary to implement lane width reduction on State Street because vehicular speed does not appear to be a safety issue due to lack of recent vehicular crashes and there is adequate sight distance for the proposed project driveway. Other speed reduction strategies such as installing additional speed limit signs and radar speed signs should be considered prior to lane width reduction.

## STREET LIGHTING

There are no street lights on State Street, except for a short 400-foot segment where there are street lights on the west side of State Street from Ontario Avenue to the northern boundary of the shopping center located

west of State Street. Therefore, it is dark along most of State Street during the evenings. The County may consider installing new street lighting that would improve nighttime visibility, however, this may result in increased vehicular speeds on State Street at night.




Legend

- Intersection Sight Distance
- Stopping Sight Distance
- Restricted Use Area
- Driver's Eye (10 foot setback from curbline extension and 3 feet right of centerline)

Major Road Design Speed (Vm = 40 MPH)
Stopping Sight Distance = 300 Feet
Corner Sight Distance (CSD) = 1.47 x Vm xTg
Time Gap For Cars ( Tg = 6.5sec. Right Turn and 7.5sec. Left Turn)
CSD Right = 382 Feet
CSD Left = 441 Feet

**Figure 29**
**Sight Distance Analysis for the Project Driveway on State Street**

# 10. CONCLUSIONS

## RECOMMENDED IMPROVEMENTS FOR THE INTERSECTIONS

The following improvements are recommended to address the deficient intersections for Existing Plus Project conditions:

- State Street/Ontario Avenue – #9
  - Install traffic signal

Since this is a degradation of Level of Service for the already deficient intersection operations under Existing and "Without Project" conditions, the project applicant is responsible for its fair share of fees to an applicable program for the recommended improvements. The intersection currently satisfy the traffic signal warrant based on Existing conditions. Figure 28 shows the recommended intersection improvements.

## ROADWAY LINK ANALYSIS RESULTS

The study roadway links are projected to function at Level of Service "C" or better for Opening Year (2025) With Project conditions, except forthe following roadway links which will operate at LOS "D" with existing roadway width:

- Rimpau Avenue, from Magnolia Avenue to California Avenue
- Magnolia Avenue, from El Sobrante Road to I-15 Southbound Ramps
- Ontario Avenue, from Compton Avenue to I-15 Southbound Ramps

Since the City of Corona will be improving and widening Ontario Avenue from California Avenue to State Street, no additional improvements are recommended for Ontario Avenue. The study intersections along Rimpau Avenue and Magnolia Avenue are projected to operate at acceptable Level of Service "D" or better, therefore, no additional improvements are recommended for Rimpau Avenue and Magnolia Avenue.

## VMT ANALYSIS RESULTS

Using on the WRCOG VMT Screening Tool, the project site is located within a low VMT generating Traffic Analysis Zone (TAZ). Per the City of Corona guidelines, it is presumed to be less than significant VMT impact for projects located in low VMT generating model TAZ. These TAZs generate total daily VMT/SP that is less than the baseline level for the City/jurisdiction.

Per the secondary screening step, the proposed project land use is consistent to the City of Corona General Plan land use destination. The proposed project site is also located within half-mile of a bus stop and within one-mile of employment and shopping destinations. Based on the screening steps, the project is anticipated to generate less than significant VMT impact and no additional improvements are recommended.

## PROJECT FAIR SHARE CONTRIBUTION

Per the City of Corona guidelines, the percentage of fair share for the project shall be calculated at each location as the ratio of the increase in delay from project trips divided by the difference between total delay (including project for both Northern and Southern Portions) and delay at acceptable Level of Service. Table 8 presents the project fair share calculations at the Opening Year (2025) With Project study intersection improvement locations. The intersection project fair share calculations are typically based on the higher of the weekday morning and weekday evening peak hour conditions. As shown in Table 8, the project's fair share percentages of identified deficient intersections are approximately 30.0% to 100.0% for both Northern and

Southern Portions. Appendix J includes the delay worksheets for the fair share calculations. The fair share calculations are intended only for the discussion purposes of this traffic analysis, and do not imply any legal responsibility or formula for contributions or improvements.

## SITE ACCESS

The following improvements will be constructed by the project to provide project site access:

**Project Driveway at Laurel Canyon Way (Intersection #7)**

- Install a westbound stop sign with a private gate.
- Provide a westbound shared left-right lane.

**Project Driveway at State Street (Intersection #8 – Opposite Bel Air Street)**

- Install a westbound stop sign with a private gate.
- Provide a westbound shared left-right lane.

The project should provide a secondary access road through the southern portion of the site which will create a stop-controlled secondary access driveway on State Street that aligns with Bel Air Street for project residents only with a private gate which is not open to the public.

## SAFETY REVIEW

MUTCD states that when a speed limit within a speed zone is posted, it should be within 5 mph of the 85th-percentile speed of free-flowing traffic. Since the speed difference between the 85th percentile speed (39 mph) and the current posted speed limit (35 mph) is within 5 mph, the current posted speed limit of 35 mph is considered appropriate and reasonable.

Since the southbound direction of State Street is going downhill where vehicles tends to travel at higher speeds, it recommended that an additional speed limit sign be installed on the southbound direction south of Smerber Road to warn the motorists to slow down and adhere to appropriate speed.

Another option is replace the existing speed limit on the southbound direction south of Marlin Way with a radar speed sign which more visible and illuminated. This location of State Street is near the vertical crest of State Street and has a steep grade than other segments of State Street where a radar speed sign may be beneficial to warn motorists to reduce vehicular speed.

Adequate sight distances can be provided as long as any landscaping near the northeast and southeast corners of the curb returns at the driveway on State Street do not obstruct drivers' views.

Since State Street appears to be relatively safe with no recent vehicular crash, there should be no major safety concerns regarding sight distance and speed factors.

It is unnecessary to implement lane width reduction on State Street because vehicular speed does not appear to be a safety issue due to lack of recent vehicular crashes and there is adequate sight distance for the proposed project driveway. Other speed reduction strategies such as installing additional speed limit signs and radar speed signs should be considered prior to lane width reduction.

The County may consider installing new street lighting that would improve nighttime visibility, but it may also result in increased vehicular speed on State Street when motorists have better visibility at night.

## GENERAL RECOMMENDATIONS

Figure 30 summarizes the circulation recommendations for the proposed project.

Laurel Canyon Way, adjacent to the project boundary, should be constructed at its ultimate half-section width, including landscaping and parkway improvements in conjunction with development per City standards.

The project should provide a secondary access road through the southern portion of the site which will create a stop-controlled secondary access driveway at State Street for project residents only. No public access.

All roadway design, traffic signing and striping, and traffic control improvements relating to the proposed project should be constructed in accordance with applicable engineering standards and to the satisfaction of the City of Corona.

Site-adjacent roadways should be constructed or repaired at their ultimate half-section width, including landscaping and parkway improvements in conjunction with development, or as otherwise required by the City of Corona.

On-site traffic signing and striping plans should be submitted for City of Corona approval in conjunction with detailed construction plans for the project.

The final grading, landscaping, and street improvement plans should demonstrate that sight distance standards are met in accordance with applicable City of Corona/California Department of Transportation sight distance standards.

As is the case for any roadway design, the City of Corona should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that the traffic operations are satisfactory.

## Table 8
## Project Fair Share Intersection Traffic Contribution

| Study Intersection | Peak Hour | Average Intersection Delay | | | | | Project Fair Share[5] |
|---|---|---|---|---|---|---|---|
| | | Opening Year (2025) Without Project[1] | Opening Year (2025) With Project[2] | Change Due to Project[3] | Delay at Acceptable LOS[4] | Difference Over Acceptable LOS | |
| 9. State St at Ontario Ave | AM | 35.0 | 38.4 | 3.4 | 35.0 | 3.4 | 100.0% |
| | PM | 53.0 | 60.7 | 7.7 | 35.0 | 25.7 | 30.0% |

Notes:

(1) Total delay of the intersection during critical peak hour without the project (Without Northern and Southern Portions).

(2) D(t) - Total delay of the intersection during critical peak hour including that generated by the project (Northern and Southern Portions).

(3) D(p) - Project only delay increase of the intersection during critical peak hour. (Northern and Southern Portions)

(4) D(a) - Total delay of the intersection during critical peak hour under acceptable Level of Service conditions.

(5) The percentage of fair share for the project (Northern and Southern Portions) shall be calculated at each location as the ratio of the increase in delay from project trips divided by the difference between total delay (including project) and delay at acceptable Level of Service.

$P = [ D(p) / D(t) - D(a) ] * 100$

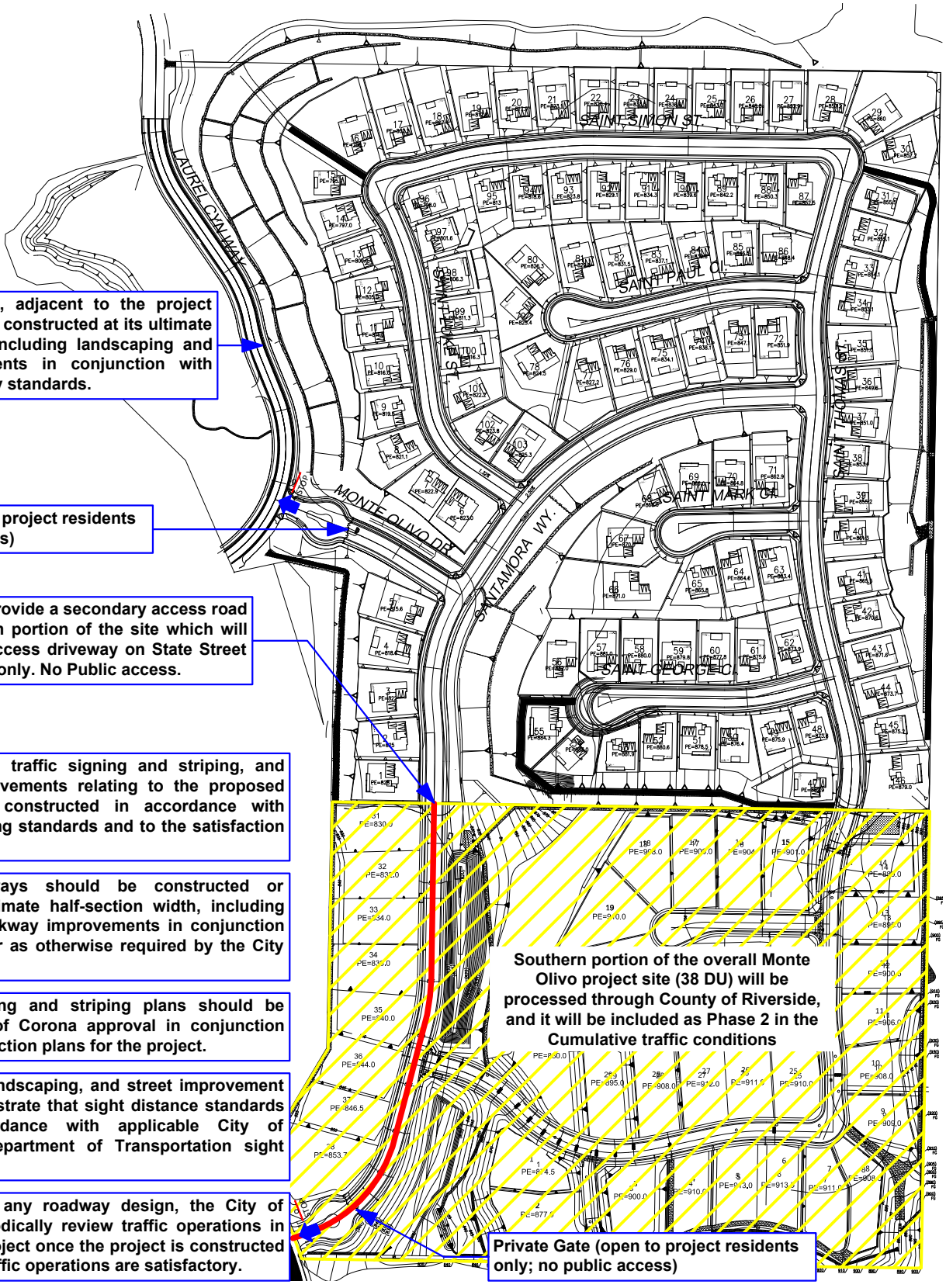



**Figure 30**
**Circulation Recommendations**

# APPENDICES

Appendix A Glossary

Appendix B Scoping Agreement

Appendix C Roadway Link Daily Traffic Capacity

Appendix D Volume Count Worksheets

Appendix E Level of Service Worksheets

Appendix F Traffic Signal Warrant Analysis

Appendix G Roadway Link Average Daily Traffic (ADT) Summary

Appendix H VMT Screening Tool

Appendix I Speed Survey

Appendix J Project Fair Share Calculations

# APPENDIX A

# GLOSSARY

# GLOSSARY OF TERMS

ACRONYMS

| | |
|---|---|
| AC | Acres |
| ADT | Average Daily Traffic |
| Caltrans | California Department of Transportation |
| DU | Dwelling Unit |
| ICU | Intersection Capacity Utilization |
| LOS | Level of Service |
| TSF | Thousand Square Feet |
| V/C | Volume/Capacity |
| VMT | Vehicle Miles Traveled |

TERMS

AVERAGE DAILY TRAFFIC: The average 24-hour volume for a stated period divided by the number of days in that period. For example, Annual Average Daily Traffic is the total volume during a year divided by 365 days.

BANDWIDTH: The number of seconds of green time available for through traffic in a signal progression.

BOTTLENECK: A point of constriction along a roadway that limits the amount of traffic that can proceed downstream from its location.

CAPACITY: The maximum number of vehicles that can be reasonably expected to pass over a given section of a lane or a roadway in a given time period.

CHANNELIZATION: The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movements of both vehicles and pedestrians.

CLEARANCE INTERVAL: Nearly same as yellow time. If there is an all red interval after the end of a yellow, then that is also added into the clearance interval.

CONTROL DELAY: The component of delay, typically expressed in seconds per vehicle, resulting from the type of traffic control at an intersection. Control delay is measured by comparison with the uncontrolled condition; it includes delay incurred by slowing down, stopping/waiting, and speeding up.

CORDON: An imaginary line around an area across which vehicles, persons, or other items are counted (in and out).

CORNER SIGHT DISTANCE: The minimum sight distance required by the driver of a vehicle to cross or enter the lanes of the major roadway without requiring approaching traffic travelling at a given speed to radically alter their speed or trajectory. Corner sight distance is measured from the driver's eye at 42 inches above the pavement to an object height of 36 inches above the pavement in the center of the nearest approach lane.

CYCLE LENGTH: The time period in seconds required for a traffic signal to complete one full cycle of indications.

CUL-DE-SAC: A local street open at one end only and with special provisions for turning around.

DAILY CAPACITY: A theoretical value representing the daily traffic volume that will typically result in a peak hour volume equal to the capacity of the roadway.

DELAY: The time consumed while traffic is impeded in its movement by some element over which it has no control, usually expressed in seconds per vehicle.

DEMAND RESPONSIVE SIGNAL: Same as traffic-actuated signal.

DENSITY: The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.

DETECTOR: A device that responds to a physical stimulus and transmits a resulting impulse to the signal controller.

DESIGN SPEED: A speed selected for purposes of design. Features of a highway, such as curvature, superelevation, and sight distance (upon which the safe operation of vehicles is dependent) are correlated to design speed.

DIRECTIONAL SPLIT: The percent of traffic in the peak direction at any point in time.

DIVERSION: The rerouting of peak hour traffic to avoid congestion.

FORCED FLOW: Opposite of free flow.

FREE FLOW: Volumes are well below capacity. Vehicles can maneuver freely and travel is unimpeded by other traffic.

GAP: Time or distance between successive vehicles in a traffic stream, rear bumper to front bumper.

HEADWAY: Time or distance spacing between successive vehicles in a traffic stream, front bumper to front bumper.

INTERCONNECTED SIGNAL SYSTEM: A number of intersections that are connected to achieve signal progression.

LEVEL OF SERVICE: A qualitative measure of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs.

LOOP DETECTOR: A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.

MINIMUM ACCEPTABLE GAP: Smallest time headway between successive vehicles in a traffic stream into which another vehicle is willing and able to cross or merge.

MULTI-MODAL: More than one mode; such as automobile, bus transit, rail rapid transit, and bicycle transportation modes.

OFFSET: The time interval in seconds between the beginning of green at one intersection and the beginning of green at an adjacent intersection.

PLATOON: A closely grouped component of traffic that is composed of several vehicles moving, or standing ready to move, with clear spaces ahead and behind.

PASSENGER CAR EQUIVALENT (PCE): A metric used to assess the impact of larger vehicles, such as trucks, recreational vehicles, and buses, by converting the traffic volume of larger vehicles to an equivalent number of passenger cars.

PEAK HOUR: The 60 consecutive minutes with the highest number of vehicles.

PRETIMED SIGNAL: A type of traffic signal that directs traffic to stop and go on a predetermined time schedule without regard to traffic conditions. Also, fixed time signal.

PROGRESSION: A term used to describe the progressive movement of traffic through several signalized intersections.

QUEUE: The number of vehicles waiting at a service area such as a traffic signal, stop sign, or access gate.

QUEUE LENGTH: The length of vehicle queue, typically expressed in feet, waiting at a service area such as a traffic signal, stop sign, or access gate.

SCREEN-LINE: An imaginary line or physical feature across which all trips are counted, normally to verify the validity of mathematical traffic models.

SHARED/RECIPROCAL PARKING AGREEMENT: A written binding document executed between property owners to provide a designated number of off-street parking stalls within a designated area to be available for specified businesses or land uses.

SIGHT DISTANCE: The continuous length of roadway visible to a driver or roadway user.

SIGNAL CYCLE: The time period in seconds required for one complete sequence of signal indications.

SIGNAL PHASE: The part of the signal cycle allocated to one or more traffic movements.

STACKING DISTANCE: The length of area available behind a service area, such as a traffic signal or gate, for vehicle queueing to occur.

STARTING DELAY: The delay experienced in initiating the movement of queued traffic from a stop to an average running speed through an intersection.

STOPPING SIGHT DISTANCE: The minimum distance required by the driver of a vehicle on the major roadway travelling at a given speed to bring the vehicle to a stop after an object on the road becomes visible. Stopping sight distance is measured from the driver's eye at 42 inches above the pavement to an object height of 6 inches above the pavement.

TRAFFIC-ACTUATED SIGNAL: A type of traffic signal that directs traffic to stop and go in accordance with the demands of traffic, as registered by the actuation of detectors.

TRIP: The movement of a person or vehicle from one location (origin) to another (destination). For example, from home to store to home is two trips, not one.

TRIP-END: One end of a trip at either the origin or destination (i.e., each trip has two trip-ends). A trip-end occurs when a person, object, or message is transferred to or from a vehicle.

TRIP GENERATION RATE: The quantity of trips produced and/or attracted by a specific land use stated in terms of units such as per dwelling, per acre, and per 1,000 square feet of floor space.

TRUCK: A vehicle having dual tires on one or more axles, or having more than two axles.

TURNING RADIUS: The circular arc formed by the smallest turning path radius of the front outside tire of a vehicle, such as that performed by a U-turn maneuver. This is based on the length and width of the wheel base as well as the steering mechanism of the vehicle.

UNBALANCED FLOW: Heavier traffic flow in one direction than the other. On a daily basis, most facilities have balanced flow. During the peak hours, flow is seldom balanced in an urban area.

VEHICLE MILES OF TRAVEL: A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.

# APPENDIX B

# SCOPING AGREEMENT

# Exhibit F

## Traffic Impact Study Scope – City of Corona

| | |
|---|---|
| Project Name: | Monte Olivo Phase 1 Project |
| Project Address: | East of the I-15 between Laurel Canyon Way and State Street |
| Project Description: | 103 DU Single-Family Detached Housing (See attached Figure 2) |
| Case Number: | |

| | Consultant | Developer |
|---|---|---|
| Name: | GANDDINI GROUP, INC.<br>Tom Huang | MARI GIRGIS, LLC<br>Emad Bolous |
| Address: | 555 Parkcenter Street,<br>Suite 225 | 4030 Birch Street,<br>Suite 100 |
| Telephone:<br>E-mail: | 714-795-3100 ext. 102<br>tom@ganddini.com | 909-262-1558<br>ebolous@aol.com |

**A. Trip Generation** (See Table 2)

| | | | |
|---|---|---|---|
| Proposed Land Use | Single-Family Res. | Previous Land Use | |
| Existing Zoning | | Proposed Zoning | |

| | In | Out | Total |
|---|---|---|---|
| AM Peak Hour | 19 | 54 | 73 |
| PM Peak Hour | 61 | 36 | 97 |

**B. Trip Distribution**

Attach graphical representation (See Figures 11 and 15)

Figures 8, 9 and 10 show existing roadway link ADT, AM and PM peak hour traffic.

**C. Background Traffic**

| | | | |
|---|---|---|---|
| **Project Opening year:** | 2025 | **Growth Rate:** | 2.0 |

**D. Study Intersections** (See Figure 1)

| | |
|---|---|
| 1.Rimpau Ave (NS) at Magnolia Ave (EW) | 9.State Street (NS) at Ontario Ave (EW) |
| 2.Rimpau Ave (NS) at California Ave (EW) | 10. I-15 SB Ramps (NS) at Ontario Ave (EW) |
| 3.Rimpau Ave (NS) at Olympic Ave (EW) | 11. I-15 NB Ramps (NS) at Ontario Ave (EW) |
| 4.Rimpau Ave (NS) at Old Temescal Rd (EW) | 12.California Ave (NS) at Ontario Ave (EW) |
| 5.California Ave(NS) at Old Temescal Rd(EW) | 13.El Sobrante Rd (NS) at Magnolia Ave (EW) |
| 6.Compton Ave(NS)at Old Temescal(EW) | 14. I-15 SB Ramps(NS)at Magnolia Ave(EW) |
| 7.Laurel Canyon Wy(NS) at Project Dwy(EW) | 15. I-15 NB Ramps(NS)at Magnolia Ave(EW) |
| 8.State St (NS) at Project Dwy(EW) | |

**E. Specific Issues to be addressed in the Study**

| |
|---|
| VMT Assessment per City TIA guidelines. |
| |

**Approved By:**

| |
|---|
| **City of Corona Traffic Engineering:** |
| **Date:** |

APPROVED
By Rosalva Ureno at 4:28 pm, Dec 07, 2022

The southern portion of the overall project site (38 DU) will be processed through County of Riverside, and it will be included as Phase 2 in the cumulative traffic conditions.

Signal Warrants for the following:
-Ontario Ave(NS)at State St(EW)#9
-Rimpau Ave(NS)at Old Temescal Rd(EW)#4
-California Ave(NS)at Old Temescal Rd(EW)#5
-Compton Ave(NS) at Old Temescal Rd(EW)#6

Study Roadway Segments:
-Old Temescal Rd (Rimpau - Bel Air)
-State St (Bel Air - Ontario)
-Compton (Pico - Ontario)
-Ontario (California - State)
-Rimpau (Magnolia - Old Temescal)
-Magnolia (Rimpau - I-15 Fwy)
-California (Rimpau - Old Temescal)
-California (Old Temescal - Ontario)

## Table 2
## Project Trip Generation

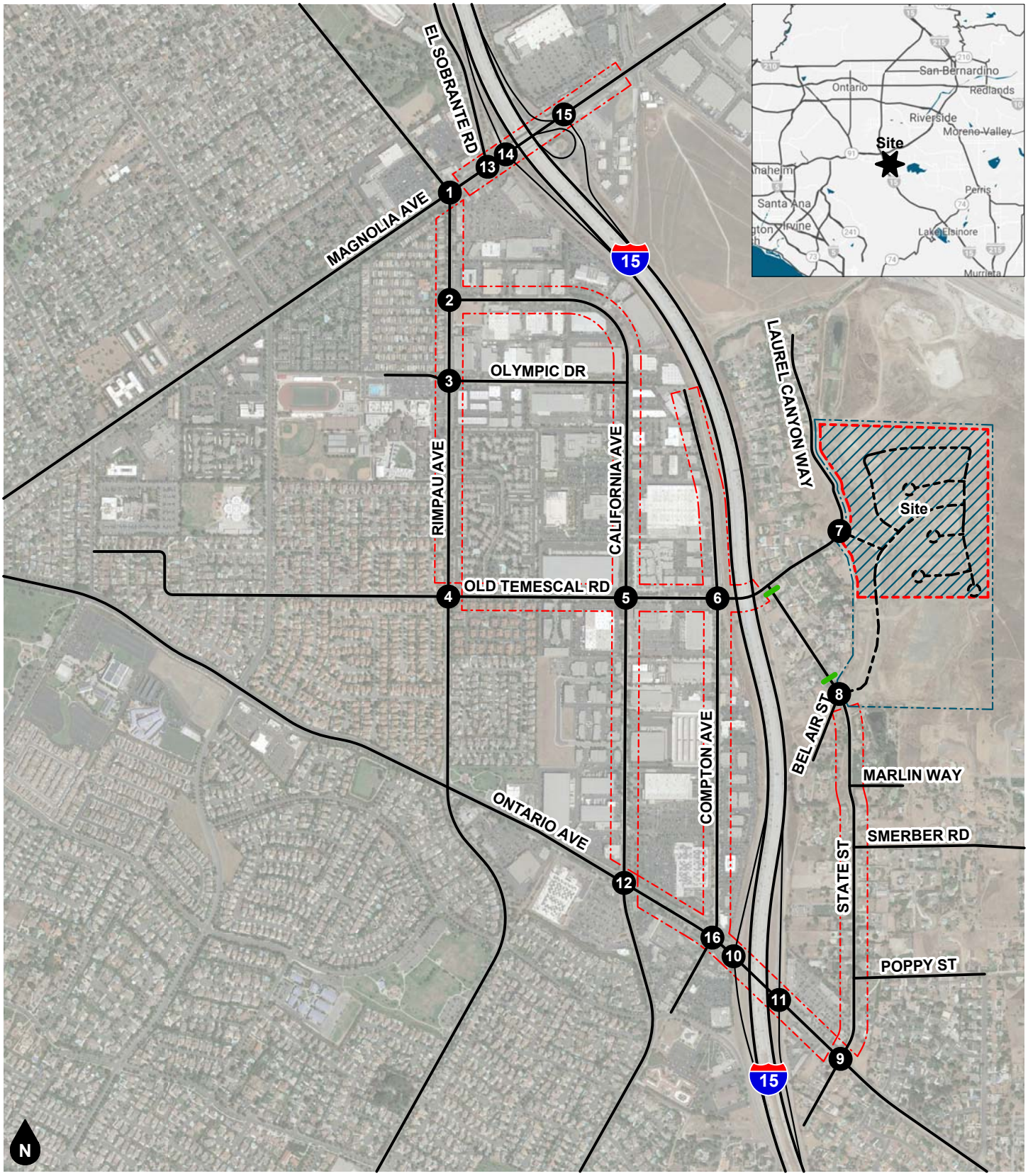
| Trip Generation Rates | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Project | | | | AM Peak | | | PM Peak | | | Daily |
| No. | Land Use | Code[1] | Units[2] | In % | Out % | Total | In % | Out % | Total | |
| 1 | Single-Family Detached Housing | ITE 210 | DU | 26% | 74% | 0.70 | 63% | 37% | 0.94 | 9.43 |

| Trips Generated | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Project | | | AM Peak | | | PM Peak | | | Weekday Daily |
| No. | Land Use | Quantity[2] | In | Out | Total | In | Out | Total | |
| | Phase 1 (Northern Portion) | | | | | | | | |
| 1 | Single-Family Detached Housing | 103 DU | 19 | 54 | 73 | 61 | 36 | 97 | 971 |
| | Phase 2 (Southern Portion) | | | | | | | | |
| 2 | Single-Family Detached Housing | 38 DU | 7 | 20 | 27 | 22 | 13 | 35 | 358 |

Notes:

(1) ITE = Institute of Transportation Engineers, Trip Generation Manual, 11th Edition, 2021; XXX = Land Use Code

(2) DU = Dwelling Units




Legend

- # Study Intersection
- Community Gate
- Study Roadway Segment

**Figure 1**
**Project Location Map**

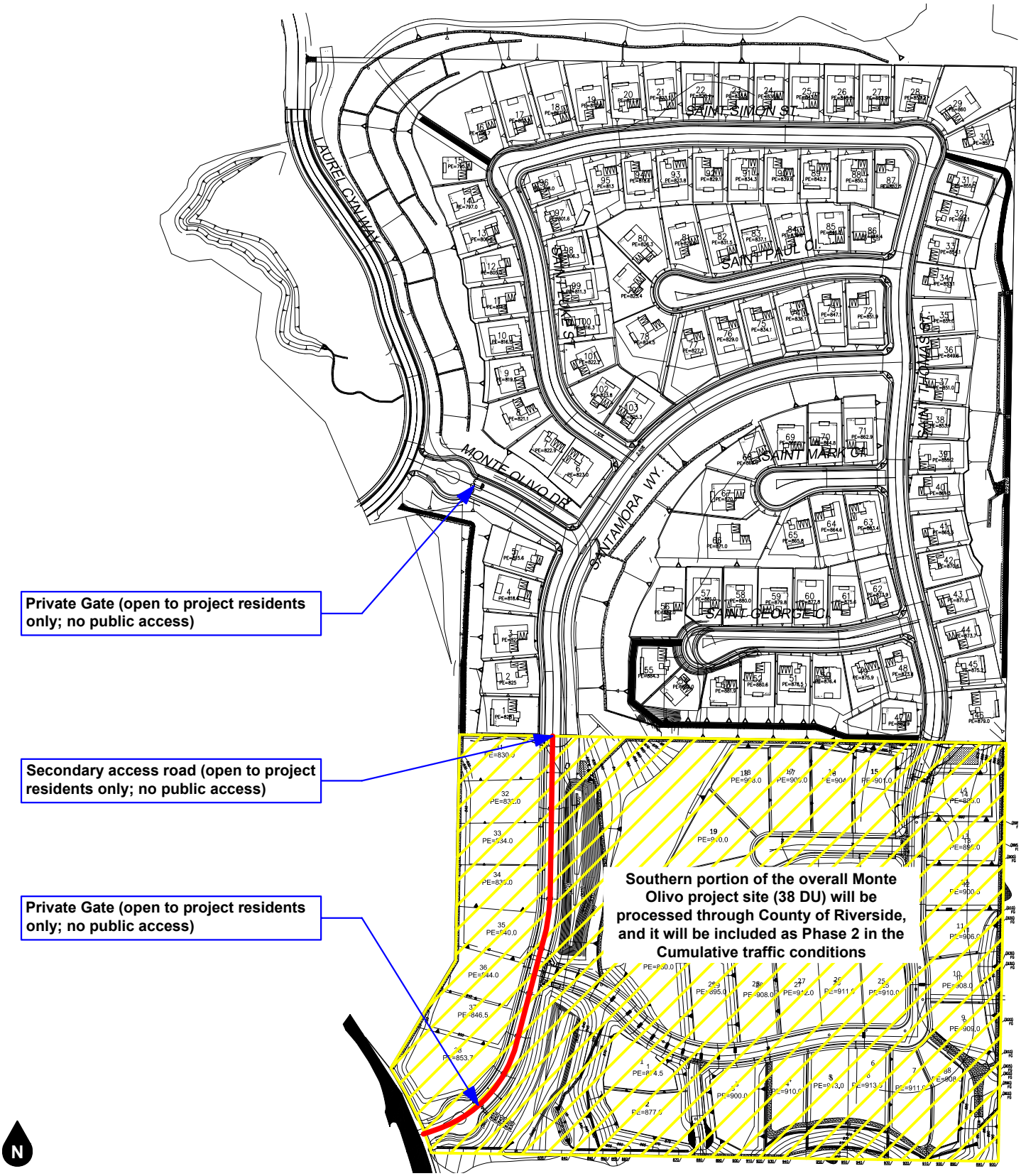
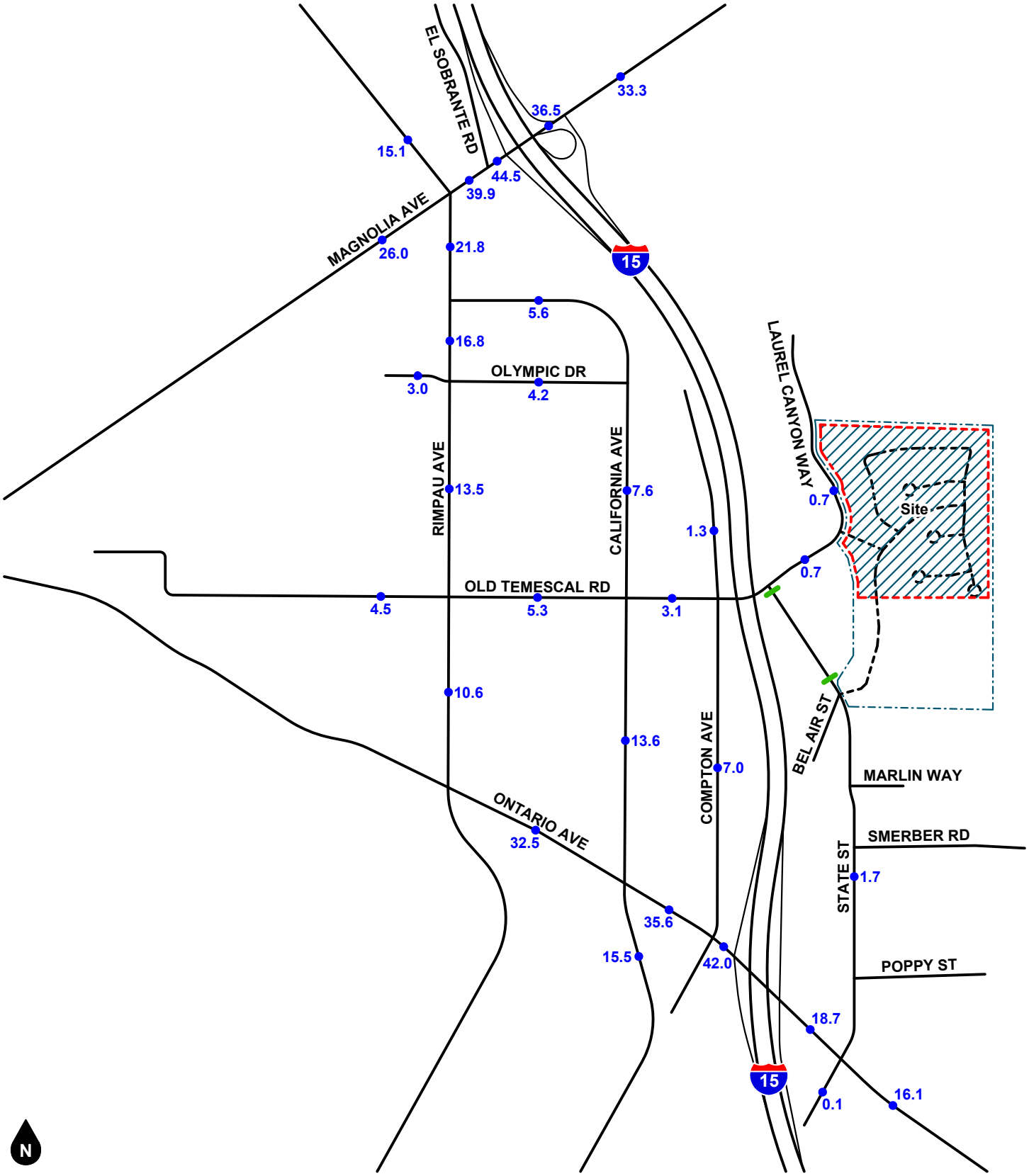


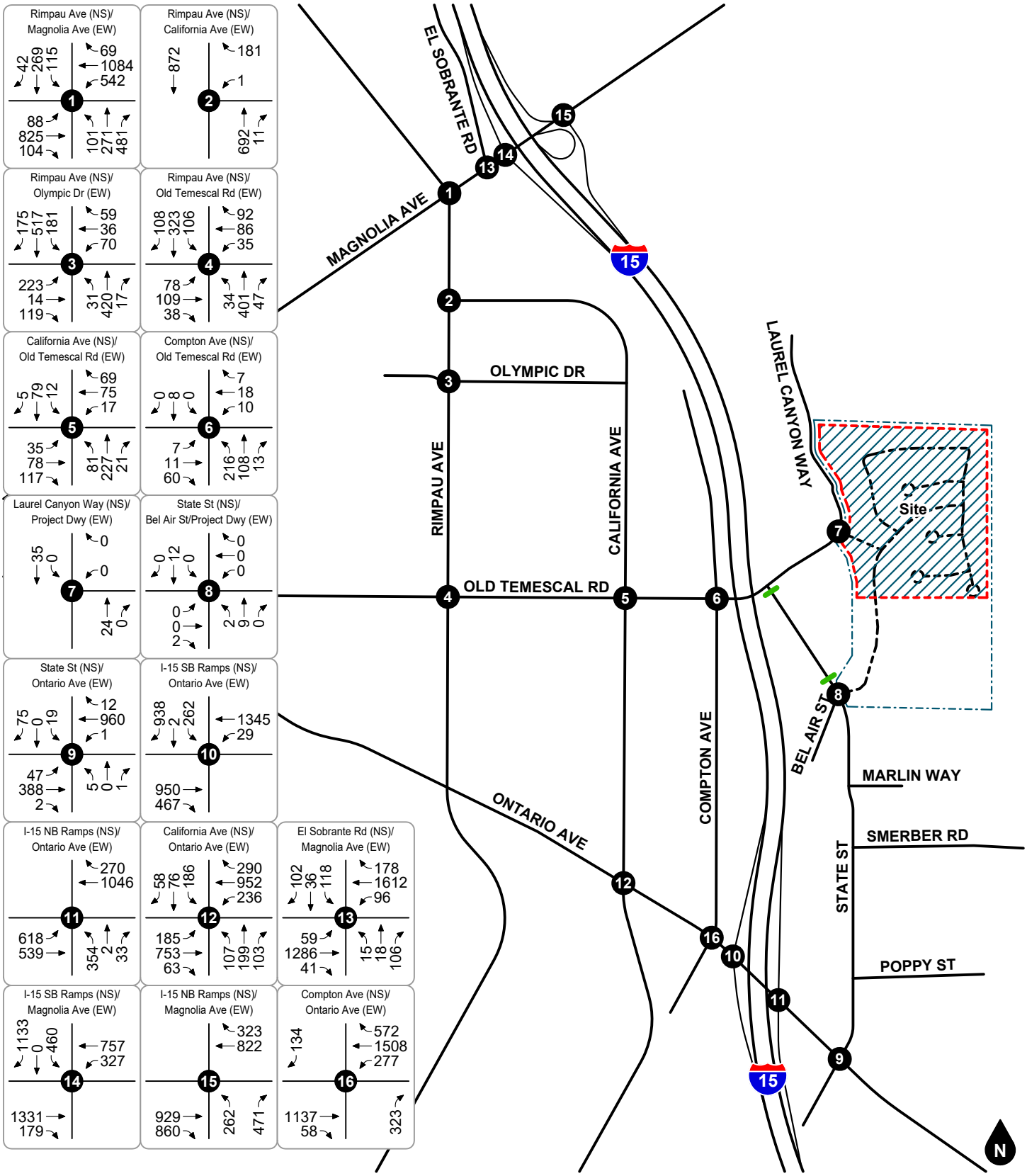

**Figure 2**
**Site Plan**




Legend

●## Vehicles Per Day (1,000's)

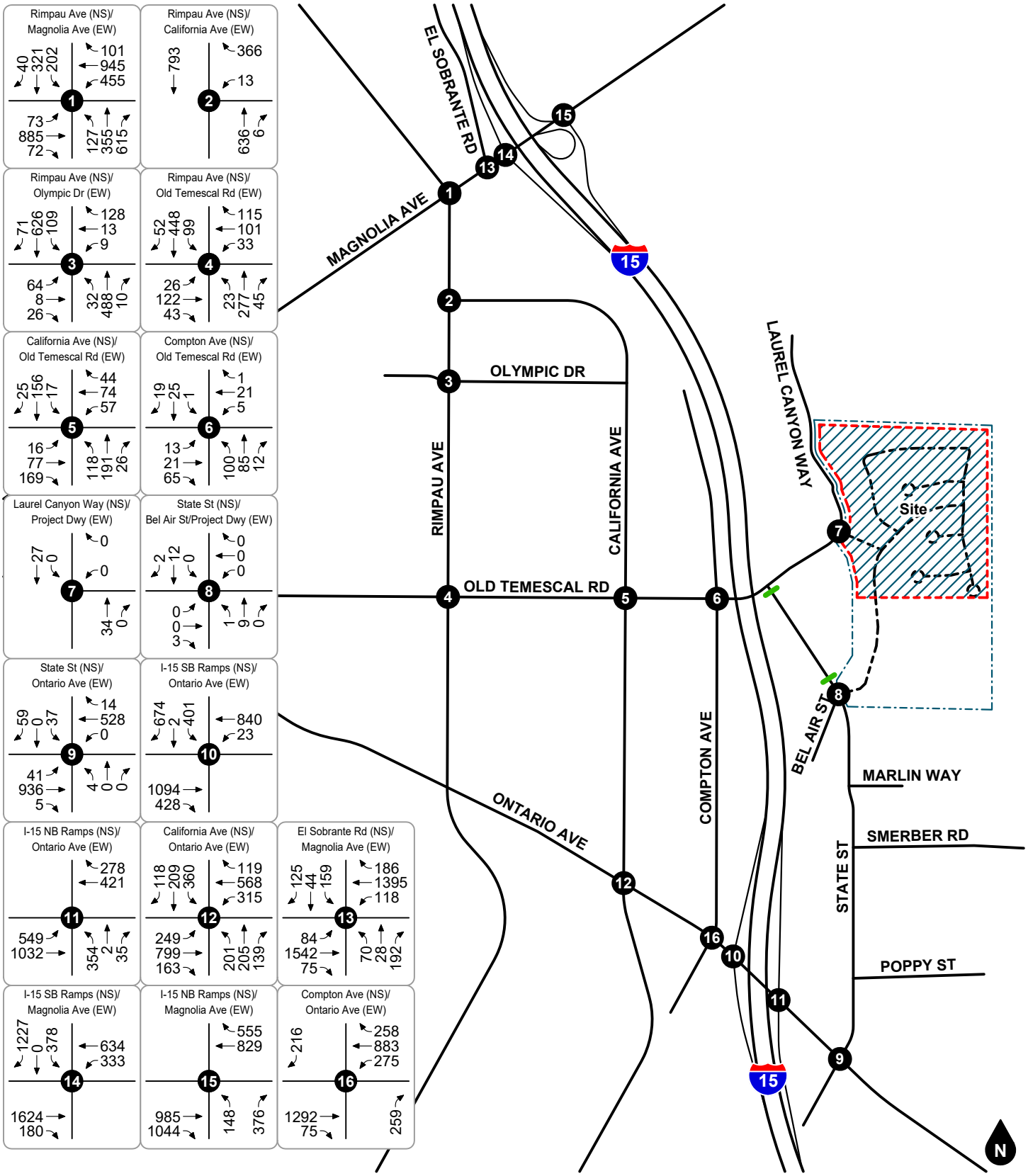
**Figure 8**
**Existing Average Daily Traffic Volumes**




Legend

(#) Study Intersection

**Figure 9**
**Existing AM Peak Hour Intersection Turning Movement Volumes**




Legend

# Study Intersection

**Figure 10**
**Existing PM Peak Hour Intersection Turning Movement Volumes**

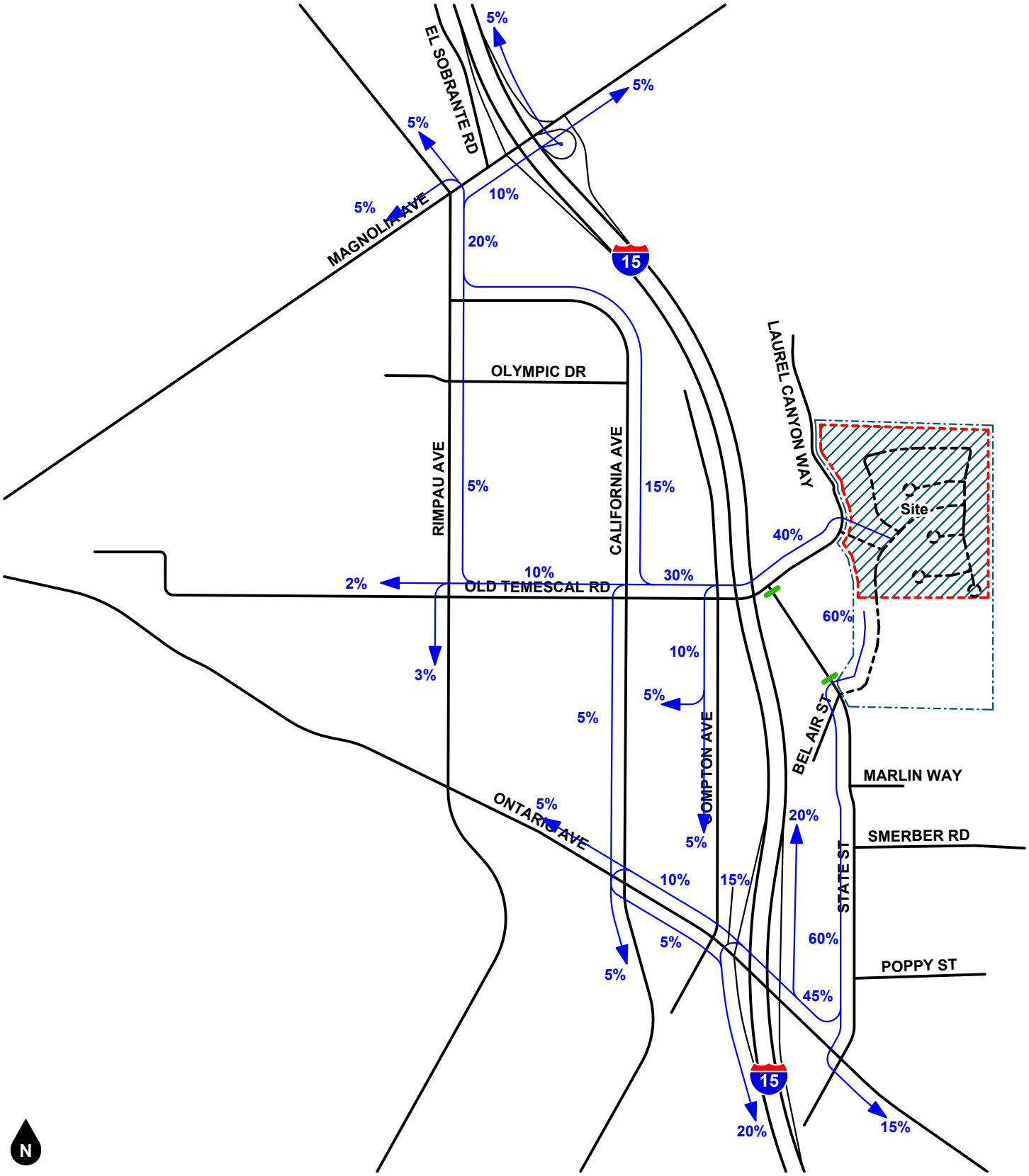



**Figure 11**
**Project Trip Distribution**

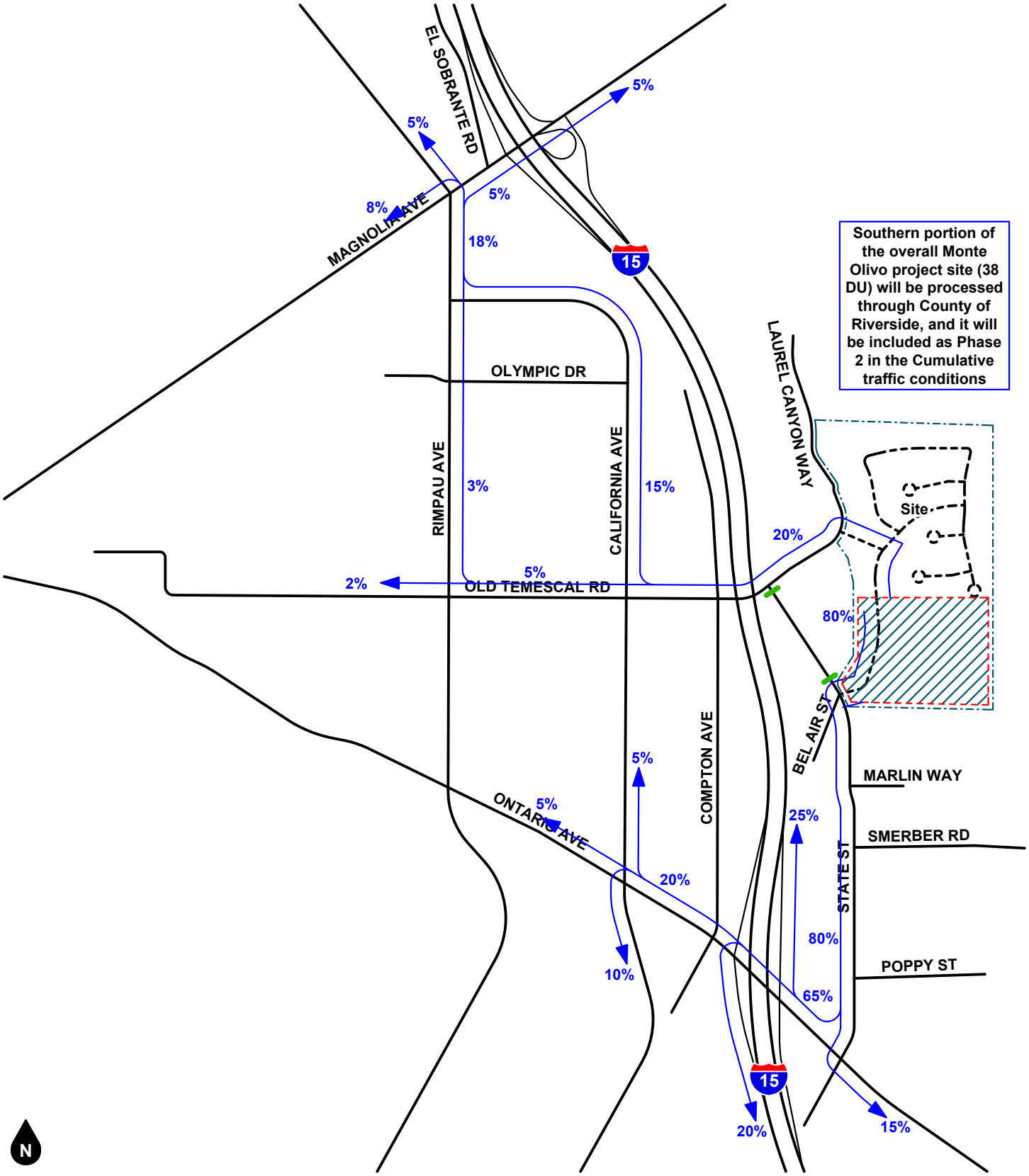



**Figure 15**
**Cumulative Project (Monte Olivo - Southern Portion) Trip Distribution**

# APPENDIX C

# ROADWAY LINK DAILY TRAFFIC CAPACITY

| DESIGN CRITERIA | DIVIDED MAJOR ARTERIAL | SECONDARY ARTERIAL | COLLECTOR | INDUSTRIAL | LOCAL | LOW VOLUME LOCAL | CUL-DE-SAC OR HILLSIDE | PRIVATE | RURAL |
|---|---|---|---|---|---|---|---|---|---|
| ESTIMATED 24 HOUR TRAFFIC (ADT) | 20,000 - 50,000 | 10,000 - 20,000 | 7,000 - 10,000 | 2,500- 7,000 | 500- 2,000 | 500 - 1,000 | 500 | 500 - 1,500 | |
| DESIGN SPEED (MPH) | 55 | 50 | 45 | 35 | 35 | 30 | 25 | 25 | 20 |
| STOPPING SIGHT DISTANCE | 500' | 425' | 360' | 250' | 250' | 200' | 150' | 150' | 150' |
| RIGHT-OF-WAY WIDTH | 130' | 88' | 68' | 64' | 64' | 60' | 56' | SEE STD 110 | 50' |
| CURB TO CURB DISTANCE | 106' 14' MEDIAN | 64' | 44' | 44' | 40' | 36' | 36' | SEE STD 110 | 36' |
| MINIMUM TRAFFIC INDEX | 11 | 10 | 8 | 8 | 5.5 | 5 | 5 | 5 | 5 |
| MINIMUM STRUCTURAL SECTION | 6" AC 10" AB | 6" AC 8" AB | 5" AC 6" AB | 6" AC 8" AB | 4" AC 6" AB | 4" AC 6" AB | 4" AC 6" AB | 4" AC 6" AB | 4" AC 6" AB |
| MINIMUM HORIZONTAL RADIUS | 1800' W/O SUPER ELEVATION | 1800' W/O SUPER ELEVATION | 1100' W/O SUPER ELEVATION | 500' | 500' | 500' | 250' | 150' | 150' |
| MAXIMUM GRADE | 6% | 8% | 8% | 8% | 10% | 10% | 12% | 12% | 12% |
| MINIMUM GRADE | 1.0% | 1.0% | 1.0% | 0.6% | 0.6% | 0.6% | 0.6% | 0.6% | 0.6% |
| MAXIMUM INTERSECTION GRADE | 3% (NO CROSS GUTTERS) | 3% (NO CROSS GUTTERS) | 4% (NO CROSS GUTTERS) | 5% | 5% | 5% | 5% | 5% | 5% |
| MIN. CORNER SIGHT DISTANCE | 525' | 400' | 360' | 250' | 250' | 250' | 250' | 250' | 250' |
| DRIVEWAY SPACING | 300' | 275' | 230' | 150' OR ONE PER LOT | 150' OR ONE PER LOT | 125' OR ONE PER LOT | 100' OR ONE PER LOT | 100' OR ONE PER LOT | 85' OR ONE PER LOT |
| CURB RADIUS RETURN | 35' | 35' | 35' | 35' | 25' | 25' | 25' | 25' | N/A |
| MIN. SIDEWALK WIDTH | 5' | 5' | 5' | 5' | 4' | 4' | 4' | 4' | N/A |
| CURB HEIGHT | 8" | 8" | 8" | 8" | 6" | 6" | 6" | 6" | N/A |
| STREET LIGHT TYPE LOCATION PER STD 500-504 | 8,500-8,700 LUMEN 180' BOTH SIDES | 8,500-8,700 LUMEN 180' STAGGERED | 5,100-8,500 LUMEN 180' STAGGERED | 5,100-8,500 LUMEN 180' STAGGERED | 3,100-3,400 LUMEN 180' STAGGERED | 3,100-3,400 LUMEN 180' STAGGERED | 3,400-4,100 LUMEN 180' STAGGERED | 3,100-3,400 LUMEN 180' STAGGERED | 3,100-3,400 LUMEN AT INTERSECTION |

REVISIONS:

| NO. | DATE | APPRV'D |
|---|---|---|
| | 3/14/11 | KF |
| | | |
| | | |
| | | |
| | | |

APPROVED BY:

11-23-09

CITY ENGINEER — DATE

KIP D. FIELD

RCE NO. 45679 EXP. DATE 12-31-12

# CITY OF CORONA

## STREET DESIGN TABLE

STANDARD PLAN NUMBER: **100** SHT 1 OF 1

# Exhibit C



**Table 3.1-6 Riverside County Level of Service Criteria**

| Roadway Classification | Number of Lanes | Maximum Two-Way Traffic Volume (ADT)[1] | | |
|---|---|---|---|---|
| | | Service Level C | Service Level D | Service Level E |
| Collector | 2 | 10,400 | 11,700 | 13,000 |
| Secondary | 4 | 20,700 | 23,300 | 25,900 |
| Major | 4 | 27,300 | 30,700 | 34,100 |
| Arterial[2] | 2 | 14,400 | 16,200 | 18,000 |
| Arterial | 4 | 28,700 | 32,300 | 35,900 |
| Mountain Arterial[2] | 2 | 12,900 | 14,500 | 16,100 |
| Mountain Arterial | 3 | 16,700 | 18,800 | 20,900 |
| Mountain Arterial | 4 | 29,800 | 33,500 | 37,200 |
| Urban Arterial | 4 | 28,700 | 32,300 | 35,900 |
| Urban Arterial | 6 | 43,100 | 48,500 | 53,900 |
| Urban Arterial | 8 | 57,400 | 64,600 | 71,800 |
| Expressway | 4 | 32,700 | 36,800 | 40,900 |
| Expressway | 6 | 49,000 | 55,200 | 61,300 |
| Expressway | 8 | 65,400 | 73,500 | 81,700 |
| Freeway | 4 | 61,200 | 68,900 | 76,500 |
| Freeway | 6 | 94,000 | 105,800 | 117,500 |
| Freeway | 8 | 128,400 | 144,500 | 160,500 |
| Freeway | 10 | 160,500 | 180,500 | 200,600 |
| Ramp[3] | 1 | 16,000 | 18,000 | 20,000 |

All capacity figures are based on optimum conditions and are intended as guidelines for planning purposes only.

1. Maximum two-way ADT values are based on the 1999 Modified Highway Capacity Manual Level of Service Tables as defined in the Riverside County Congestion Management Program.
2. Two-lane roadways designated as future arterials that conform to arterial design standards for vertical and horizontal alignment are analyzed as arterials.
3. Ramp capacity is given as a one-way traffic volume.

Source: City of Corona General Plan Technical Background Report, Page 3-27

# APPENDIX D

# VOLUME COUNT WORKSHEETS

Tuesday, October 18, 2022 CITY: Corona PROJECT: SC3686

**ADT A Compton north of Old Temescal.** **Prepared by AimTD LLC tel. 714 253 7888**

| AM Period | NB | | SB | | | PM Period | NB | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0:00 | 1 | | 0 | | | 12:00 | 15 | | 11 | | |
| 0:15 | 0 | | 0 | | | 12:15 | 15 | | 5 | | |
| 0:30 | 0 | | 0 | | | 12:30 | 14 | | 4 | | |
| 0:45 | 1 | 2 | 0 | 0 | 2 | 12:45 | 22 | 66 | 5 | 25 | 91 |
| 1:00 | 0 | | 0 | | | 13:00 | 15 | | 2 | | |
| 1:15 | 0 | | 0 | | | 13:15 | 19 | | 0 | | |
| 1:30 | 1 | | 0 | | | 13:30 | 20 | | 4 | | |
| 1:45 | 0 | 1 | 0 | 0 | 1 | 13:45 | 9 | 63 | 4 | 10 | 73 |
| 2:00 | 0 | | 0 | | | 14:00 | 17 | | 3 | | |
| 2:15 | 0 | | 0 | | | 14:15 | 17 | | 5 | | |
| 2:30 | 0 | | 0 | | | 14:30 | 16 | | 2 | | |
| 2:45 | 0 | 0 | 0 | 0 | | 14:45 | 14 | 64 | 3 | 13 | 77 |
| 3:00 | 0 | | 0 | | | 15:00 | 15 | | 13 | | |
| 3:15 | 0 | | 0 | | | 15:15 | 12 | | 3 | | |
| 3:30 | 1 | | 0 | | | 15:30 | 23 | | 8 | | |
| 3:45 | 1 | 2 | 1 | 1 | 3 | 15:45 | 20 | 70 | 12 | 36 | 106 |
| 4:00 | 0 | | 0 | | | 16:00 | 25 | | 7 | | |
| 4:15 | 0 | | 0 | | | 16:15 | 24 | | 4 | | |
| 4:30 | 3 | | 0 | | | 16:30 | 25 | | 11 | | |
| 4:45 | 4 | 7 | 1 | 1 | 8 | 16:45 | 16 | 90 | 8 | 30 | 120 |
| 5:00 | 3 | | 0 | | | 17:00 | 33 | | 4 | | |
| 5:15 | 3 | | 1 | | | 17:15 | 28 | | 18 | | |
| 5:30 | 4 | | 1 | | | 17:30 | 22 | | 15 | | |
| 5:45 | 11 | 21 | 1 | 3 | 24 | 17:45 | 13 | 96 | 5 | 42 | 138 |
| 6:00 | 7 | | 2 | | | 18:00 | 14 | | 3 | | |
| 6:15 | 13 | | 1 | | | 18:15 | 18 | | 7 | | |
| 6:30 | 14 | | 0 | | | 18:30 | 9 | | 7 | | |
| 6:45 | 15 | 49 | 0 | 3 | 52 | 18:45 | 5 | 46 | 5 | 22 | 68 |
| 7:00 | 17 | | 0 | | | 19:00 | 3 | | 4 | | |
| 7:15 | 23 | | 1 | | | 19:15 | 7 | | 0 | | |
| 7:30 | 25 | | 0 | | | 19:30 | 8 | | 8 | | |
| 7:45 | 29 | 94 | 5 | 6 | 100 | 19:45 | 7 | 25 | 0 | 12 | 37 |
| 8:00 | 35 | | 1 | | | 20:00 | 11 | | 1 | | |
| 8:15 | 33 | | 2 | | | 20:15 | 3 | | 0 | | |
| 8:30 | 20 | | 3 | | | 20:30 | 0 | | 9 | | |
| 8:45 | 22 | 110 | 2 | 8 | 118 | 20:45 | 1 | 15 | 0 | 10 | 25 |
| 9:00 | 22 | | 0 | | | 21:00 | 2 | | 2 | | |
| 9:15 | 25 | | 3 | | | 21:15 | 5 | | 1 | | |
| 9:30 | 24 | | 2 | | | 21:30 | 18 | | 0 | | |
| 9:45 | 11 | 82 | 0 | 5 | 87 | 21:45 | 6 | 31 | 0 | 3 | 34 |
| 10:00 | 13 | | 2 | | | 22:00 | 1 | | 1 | | |
| 10:15 | 7 | | 4 | | | 22:15 | 2 | | 0 | | |
| 10:30 | 14 | | 5 | | | 22:30 | 1 | | 2 | | |
| 10:45 | 15 | 49 | 3 | 14 | 63 | 22:45 | 1 | 5 | 0 | 3 | 8 |
| 11:00 | 17 | | 4 | | | 23:00 | 3 | | 1 | | |
| 11:15 | 20 | | 3 | | | 23:15 | 0 | | 0 | | |
| 11:30 | 15 | | 3 | | | 23:30 | 1 | | 1 | | |
| 11:45 | 10 | 62 | 7 | 17 | 79 | 23:45 | 1 | 5 | 0 | 2 | 7 |
| **Total Vol.** | | 479 | | 58 | **537** | | | 576 | | 208 | **784** |

**Daily Totals**

| NB | SB | **Combined** |
|---|---|---|
| 1055 | 266 | **1321** |

| | **AM** | | | **PM** | | |
|---|---|---|---|---|---|---|
| **Split %** | 89.2% | 10.8% | **40.7%** | 73.5% | 26.5% | **59.3%** |
| **Peak Hour** | 7:30 | 11:45 | **7:30** | 16:30 | 16:45 | **16:45** |
| **Volume** | 122 | 27 | **130** | 102 | 45 | **144** |
| **P.H.F.** | 0.87 | 0.61 | **0.90** | 0.81 | 0.63 | **0.78** |

cs@aimtd.com Tell. 714 253 7888

Tuesday, October 18, 2022 CITY: Corona PROJECT: SC3686

**ADT B Compton north of Ontario.** **Prepared by AimTD LLC tel. 714 253 7888**

| AM Period | NB | | SB | | | PM Period | NB | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0:00 | 1 | | 2 | | | 12:00 | 70 | | 51 | | |
| 0:15 | 1 | | 2 | | | 12:15 | 69 | | 41 | | |
| 0:30 | 0 | | 1 | | | 12:30 | 59 | | 38 | | |
| 0:45 | 3 | 5 | 0 | 5 | 10 | 12:45 | 78 | 276 | 41 | 171 | 447 |
| 1:00 | 0 | | 0 | | | 13:00 | 71 | | 36 | | |
| 1:15 | 0 | | 0 | | | 13:15 | 71 | | 28 | | |
| 1:30 | 0 | | 0 | | | 13:30 | 60 | | 50 | | |
| 1:45 | 1 | 1 | 0 | 0 | 1 | 13:45 | 70 | 272 | 35 | 149 | 421 |
| 2:00 | 2 | | 2 | | | 14:00 | 54 | | 42 | | |
| 2:15 | 1 | | 0 | | | 14:15 | 67 | | 43 | | |
| 2:30 | 2 | | 0 | | | 14:30 | 78 | | 40 | | |
| 2:45 | 3 | 8 | 0 | 2 | 10 | 14:45 | 75 | 274 | 42 | 167 | 441 |
| 3:00 | 3 | | 0 | | | 15:00 | 71 | | 61 | | |
| 3:15 | 8 | | 3 | | | 15:15 | 68 | | 48 | | |
| 3:30 | 7 | | 1 | | | 15:30 | 79 | | 58 | | |
| 3:45 | 9 | 27 | 4 | 8 | 35 | 15:45 | 64 | 282 | 71 | 238 | 520 |
| 4:00 | 3 | | 1 | | | 16:00 | 66 | | 57 | | |
| 4:15 | 6 | | 2 | | | 16:15 | 54 | | 47 | | |
| 4:30 | 6 | | 2 | | | 16:30 | 55 | | 48 | | |
| 4:45 | 19 | 34 | 1 | 6 | 40 | 16:45 | 53 | 228 | 37 | 189 | 417 |
| 5:00 | 18 | | 5 | | | 17:00 | 66 | | 65 | | |
| 5:15 | 16 | | 4 | | | 17:15 | 68 | | 38 | | |
| 5:30 | 30 | | 22 | | | 17:30 | 57 | | 50 | | |
| 5:45 | 38 | 102 | 20 | 51 | 153 | 17:45 | 55 | 246 | 48 | 201 | 447 |
| 6:00 | 39 | | 23 | | | 18:00 | 35 | | 42 | | |
| 6:15 | 53 | | 29 | | | 18:15 | 33 | | 33 | | |
| 6:30 | 58 | | 23 | | | 18:30 | 42 | | 45 | | |
| 6:45 | 96 | 246 | 19 | 94 | 340 | 18:45 | 42 | 152 | 29 | 149 | 301 |
| 7:00 | 94 | | 29 | | | 19:00 | 42 | | 28 | | |
| 7:15 | 89 | | 26 | | | 19:15 | 24 | | 28 | | |
| 7:30 | 98 | | 27 | | | 19:30 | 33 | | 30 | | |
| 7:45 | 142 | 423 | 22 | 104 | 527 | 19:45 | 33 | 132 | 25 | 111 | 243 |
| 8:00 | 167 | | 35 | | | 20:00 | 34 | | 19 | | |
| 8:15 | 144 | | 37 | | | 20:15 | 29 | | 27 | | |
| 8:30 | 128 | | 41 | | | 20:30 | 36 | | 19 | | |
| 8:45 | 138 | 577 | 42 | 155 | 732 | 20:45 | 26 | 125 | 27 | 92 | 217 |
| 9:00 | 84 | | 41 | | | 21:00 | 10 | | 19 | | |
| 9:15 | 84 | | 43 | | | 21:15 | 13 | | 15 | | |
| 9:30 | 79 | | 38 | | | 21:30 | 9 | | 25 | | |
| 9:45 | 70 | 317 | 59 | 181 | 498 | 21:45 | 8 | 40 | 7 | 66 | 106 |
| 10:00 | 83 | | 51 | | | 22:00 | 5 | | 12 | | |
| 10:15 | 68 | | 53 | | | 22:15 | 4 | | 5 | | |
| 10:30 | 84 | | 54 | | | 22:30 | 4 | | 5 | | |
| 10:45 | 77 | 312 | 43 | 201 | 513 | 22:45 | 1 | 14 | 3 | 25 | 39 |
| 11:00 | 85 | | 64 | | | 23:00 | 2 | | 8 | | |
| 11:15 | 74 | | 55 | | | 23:15 | 3 | | 1 | | |
| 11:30 | 88 | | 48 | | | 23:30 | 1 | | 2 | | |
| 11:45 | 77 | 324 | 61 | 228 | 552 | 23:45 | 1 | 7 | 2 | 13 | 20 |
| **Total Vol.** | | 2376 | | 1035 | **3411** | | | 2048 | | 1571 | **3619** |

| | **Daily Totals** | | |
|---|---|---|---|
| | NB | SB | **Combined** |
| | 4424 | 2606 | **7030** |

| | **AM** | | | **PM** | | |
|---|---|---|---|---|---|---|
| **Split %** | 69.7% | 30.3% | **48.5%** | 56.6% | 43.4% | **51.5%** |
| **Peak Hour** | 7:45 | 11:00 | **8:00** | 14:45 | 15:00 | **15:00** |
| **Volume** | 581 | 228 | **732** | 293 | 238 | **520** |
| **P.H.F.** | 0.87 | 0.89 | **0.91** | 0.94 | 0.84 | **0.95** |

cs@aimtd.com Tell. 714 253 7888

Tuesday, October 18, 2022 | CITY: Corona | PROJECT: SC3686

**ADT C State north of Ontario.** | **Prepared by AimTD LLC tel. 714 253 7888**

| AM Period | NB | | SB | | | PM Period | NB | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0:00 | 2 | | 0 | | | 12:00 | 11 | | 19 | | |
| 0:15 | 2 | | 1 | | | 12:15 | 8 | | 12 | | |
| 0:30 | 3 | | 1 | | | 12:30 | 11 | | 15 | | |
| 0:45 | 1 | 8 | 2 | 4 | 12 | 12:45 | 10 | 40 | 15 | 61 | 101 |
| 1:00 | 0 | | 0 | | | 13:00 | 11 | | 17 | | |
| 1:15 | 0 | | 0 | | | 13:15 | 4 | | 15 | | |
| 1:30 | 0 | | 0 | | | 13:30 | 16 | | 9 | | |
| 1:45 | 0 | 0 | 2 | 2 | 2 | 13:45 | 6 | 37 | 16 | 57 | 94 |
| 2:00 | 1 | | 0 | | | 14:00 | 11 | | 5 | | |
| 2:15 | 0 | | 0 | | | 14:15 | 18 | | 17 | | |
| 2:30 | 1 | | 0 | | | 14:30 | 15 | | 29 | | |
| 2:45 | 0 | 2 | 1 | 1 | 3 | 14:45 | 15 | 59 | 20 | 71 | 130 |
| 3:00 | 0 | | 1 | | | 15:00 | 14 | | 12 | | |
| 3:15 | 0 | | 1 | | | 15:15 | 11 | | 12 | | |
| 3:30 | 0 | | 0 | | | 15:30 | 13 | | 18 | | |
| 3:45 | 0 | 0 | 1 | 3 | 3 | 15:45 | 19 | 57 | 15 | 57 | 114 |
| 4:00 | 0 | | 1 | | | 16:00 | 13 | | 22 | | |
| 4:15 | 1 | | 1 | | | 16:15 | 13 | | 16 | | |
| 4:30 | 0 | | 5 | | | 16:30 | 14 | | 34 | | |
| 4:45 | 0 | 1 | 4 | 11 | 12 | 16:45 | 18 | 58 | 16 | 88 | 146 |
| 5:00 | 1 | | 1 | | | 17:00 | 10 | | 30 | | |
| 5:15 | 2 | | 5 | | | 17:15 | 7 | | 19 | | |
| 5:30 | 1 | | 5 | | | 17:30 | 21 | | 18 | | |
| 5:45 | 2 | 6 | 7 | 18 | 24 | 17:45 | 10 | 48 | 17 | 84 | 132 |
| 6:00 | 6 | | 10 | | | 18:00 | 19 | | 20 | | |
| 6:15 | 5 | | 9 | | | 18:15 | 13 | | 20 | | |
| 6:30 | 6 | | 12 | | | 18:30 | 15 | | 18 | | |
| 6:45 | 8 | 25 | 9 | 40 | 65 | 18:45 | 18 | 65 | 12 | 70 | 135 |
| 7:00 | 6 | | 10 | | | 19:00 | 6 | | 13 | | |
| 7:15 | 6 | | 17 | | | 19:15 | 17 | | 8 | | |
| 7:30 | 8 | | 16 | | | 19:30 | 6 | | 6 | | |
| 7:45 | 17 | 37 | 22 | 65 | 102 | 19:45 | 12 | 41 | 7 | 34 | 75 |
| 8:00 | 14 | | 27 | | | 20:00 | 10 | | 11 | | |
| 8:15 | 16 | | 19 | | | 20:15 | 8 | | 6 | | |
| 8:30 | 12 | | 26 | | | 20:30 | 6 | | 12 | | |
| 8:45 | 16 | 58 | 18 | 90 | 148 | 20:45 | 9 | 33 | 9 | 38 | 71 |
| 9:00 | 13 | | 13 | | | 21:00 | 8 | | 5 | | |
| 9:15 | 13 | | 11 | | | 21:15 | 2 | | 7 | | |
| 9:30 | 9 | | 9 | | | 21:30 | 3 | | 3 | | |
| 9:45 | 6 | 41 | 14 | 47 | 88 | 21:45 | 6 | 19 | 6 | 21 | 40 |
| 10:00 | 9 | | 15 | | | 22:00 | 7 | | 0 | | |
| 10:15 | 7 | | 23 | | | 22:15 | 2 | | 2 | | |
| 10:30 | 10 | | 21 | | | 22:30 | 3 | | 1 | | |
| 10:45 | 9 | 35 | 26 | 85 | 120 | 22:45 | 2 | 14 | 1 | 4 | 18 |
| 11:00 | 9 | | 19 | | | 23:00 | 2 | | 0 | | |
| 11:15 | 11 | | 20 | | | 23:15 | 3 | | 2 | | |
| 11:30 | 7 | | 11 | | | 23:30 | 2 | | 1 | | |
| 11:45 | 7 | 34 | 13 | 63 | 97 | 23:45 | 1 | 8 | 1 | 4 | 12 |
| **Total Vol.** | | 247 | | 429 | **676** | | | 479 | | 589 | **1068** |

**Daily Totals**

| NB | SB | Combined |
|---|---|---|
| 726 | 1018 | **1744** |

| | AM | | | PM | | |
|---|---|---|---|---|---|---|
| **Split %** | 36.5% | 63.5% | **38.8%** | 44.9% | 55.1% | **61.2%** |
| **Peak Hour** | 7:45 | 7:45 | **7:45** | 18:00 | 16:30 | **16:15** |
| **Volume** | 59 | 94 | **153** | 65 | 99 | **151** |
| **P.H.F.** | 0.87 | 0.87 | **0.93** | 0.82 | 0.73 | **0.79** |

cs@aimtd.com | Tell. 714 253 7888

Tuesday, October 18, 2022 | CITY: Corona | PROJECT: SC3686

**ADT D Old Temescal west of California.** | **Prepared by AimTD LLC tel. 714 253 7888**

| AM Period | EB | | WB | | | PM Period | EB | | WB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0:00 | 2 | | 4 | | | 12:00 | 46 | | 49 | | |
| 0:15 | 1 | | 1 | | | 12:15 | 54 | | 37 | | |
| 0:30 | 2 | | 1 | | | 12:30 | 51 | | 34 | | |
| 0:45 | 2 | 7 | 2 | 8 | 15 | 12:45 | 49 | 200 | 33 | 153 | 353 |
| 1:00 | 1 | | 2 | | | 13:00 | 52 | | 38 | | |
| 1:15 | 2 | | 1 | | | 13:15 | 48 | | 38 | | |
| 1:30 | 1 | | 2 | | | 13:30 | 52 | | 42 | | |
| 1:45 | 1 | 5 | 3 | 8 | 13 | 13:45 | 54 | 206 | 51 | 169 | 375 |
| 2:00 | 2 | | 2 | | | 14:00 | 51 | | 37 | | |
| 2:15 | 3 | | 0 | | | 14:15 | 44 | | 40 | | |
| 2:30 | 2 | | 2 | | | 14:30 | 47 | | 51 | | |
| 2:45 | 3 | 10 | 0 | 4 | 14 | 14:45 | 59 | 201 | 45 | 173 | 374 |
| 3:00 | 0 | | 2 | | | 15:00 | 69 | | 47 | | |
| 3:15 | 2 | | 0 | | | 15:15 | 56 | | 53 | | |
| 3:30 | 2 | | 0 | | | 15:30 | 68 | | 57 | | |
| 3:45 | 6 | 10 | 0 | 2 | 12 | 15:45 | 93 | 286 | 53 | 210 | 496 |
| 4:00 | 2 | | 3 | | | 16:00 | 69 | | 58 | | |
| 4:15 | 3 | | 2 | | | 16:15 | 66 | | 52 | | |
| 4:30 | 7 | | 0 | | | 16:30 | 74 | | 54 | | |
| 4:45 | 12 | 24 | 4 | 9 | 33 | 16:45 | 54 | 263 | 44 | 208 | 471 |
| 5:00 | 9 | | 5 | | | 17:00 | 68 | | 65 | | |
| 5:15 | 7 | | 2 | | | 17:15 | 77 | | 58 | | |
| 5:30 | 11 | | 7 | | | 17:30 | 47 | | 41 | | |
| 5:45 | 28 | 55 | 4 | 18 | 73 | 17:45 | 54 | 246 | 49 | 213 | 459 |
| 6:00 | 20 | | 12 | | | 18:00 | 39 | | 36 | | |
| 6:15 | 23 | | 17 | | | 18:15 | 57 | | 32 | | |
| 6:30 | 30 | | 15 | | | 18:30 | 46 | | 33 | | |
| 6:45 | 42 | 115 | 18 | 62 | 177 | 18:45 | 34 | 176 | 30 | 131 | 307 |
| 7:00 | 30 | | 22 | | | 19:00 | 35 | | 33 | | |
| 7:15 | 30 | | 29 | | | 19:15 | 30 | | 40 | | |
| 7:30 | 43 | | 27 | | | 19:30 | 27 | | 33 | | |
| 7:45 | 56 | 159 | 34 | 112 | 271 | 19:45 | 21 | 113 | 17 | 123 | 236 |
| 8:00 | 42 | | 53 | | | 20:00 | 17 | | 19 | | |
| 8:15 | 76 | | 39 | | | 20:15 | 17 | | 13 | | |
| 8:30 | 56 | | 35 | | | 20:30 | 14 | | 25 | | |
| 8:45 | 48 | 222 | 27 | 154 | 376 | 20:45 | 19 | 67 | 9 | 66 | 133 |
| 9:00 | 43 | | 28 | | | 21:00 | 11 | | 8 | | |
| 9:15 | 38 | | 21 | | | 21:15 | 9 | | 11 | | |
| 9:30 | 40 | | 30 | | | 21:30 | 5 | | 16 | | |
| 9:45 | 44 | 165 | 30 | 109 | 274 | 21:45 | 14 | 39 | 11 | 46 | 85 |
| 10:00 | 39 | | 37 | | | 22:00 | 6 | | 10 | | |
| 10:15 | 36 | | 32 | | | 22:15 | 2 | | 6 | | |
| 10:30 | 44 | | 30 | | | 22:30 | 4 | | 9 | | |
| 10:45 | 55 | 174 | 34 | 133 | 307 | 22:45 | 2 | 14 | 6 | 31 | 45 |
| 11:00 | 54 | | 40 | | | 23:00 | 1 | | 4 | | |
| 11:15 | 63 | | 43 | | | 23:15 | 4 | | 3 | | |
| 11:30 | 67 | | 48 | | | 23:30 | 3 | | 2 | | |
| 11:45 | 58 | 242 | 37 | 168 | 410 | 23:45 | 2 | 10 | 3 | 12 | 22 |
| **Total Vol.** | | 1188 | | 787 | **1975** | | | 1821 | | 1535 | **3356** |

| **Daily Totals** | EB | WB | **Combined** |
|---|---|---|---|
| | 3009 | 2322 | **5331** |

| | **AM** | | | **PM** | | |
|---|---|---|---|---|---|---|
| **Split %** | 60.2% | 39.8% | **37.0%** | 54.3% | 45.7% | **63.0%** |
| **Peak Hour** | 11:00 | 11:15 | **11:15** | 15:45 | 15:15 | **15:45** |
| **Volume** | 242 | 177 | **411** | 302 | 221 | **519** |
| **P.H.F.** | 0.90 | 0.90 | **0.89** | 0.81 | 0.95 | **0.89** |

cs@aimtd.com Tell. 714 253 7888

Tuesday, October 18, 2022 | CITY: Corona | PROJECT: SC3686

**ADT E Old Temescal east of California.** | **Prepared by AimTD LLC tel. 714 253 7888**

| AM Period | EB | | WB | | | PM Period | EB | | WB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0:00 | 1 | | 2 | | | 12:00 | 21 | | 46 | | |
| 0:15 | 0 | | 1 | | | 12:15 | 22 | | 29 | | |
| 0:30 | 1 | | 0 | | | 12:30 | 23 | | 29 | | |
| 0:45 | 0 | 2 | 0 | 3 | 5 | 12:45 | 27 | 93 | 34 | 138 | 231 |
| 1:00 | 0 | | 1 | | | 13:00 | 29 | | 28 | | |
| 1:15 | 0 | | 0 | | | 13:15 | 15 | | 21 | | |
| 1:30 | 1 | | 0 | | | 13:30 | 31 | | 25 | | |
| 1:45 | 0 | 1 | 0 | 1 | 2 | 13:45 | 23 | 98 | 31 | 105 | 203 |
| 2:00 | 0 | | 1 | | | 14:00 | 19 | | 28 | | |
| 2:15 | 0 | | 0 | | | 14:15 | 16 | | 33 | | |
| 2:30 | 0 | | 0 | | | 14:30 | 18 | | 24 | | |
| 2:45 | 2 | 2 | 0 | 1 | 3 | 14:45 | 24 | 77 | 26 | 111 | 188 |
| 3:00 | 1 | | 1 | | | 15:00 | 27 | | 45 | | |
| 3:15 | 2 | | 2 | | | 15:15 | 23 | | 38 | | |
| 3:30 | 0 | | 2 | | | 15:30 | 32 | | 38 | | |
| 3:45 | 2 | 5 | 0 | 5 | 10 | 15:45 | 29 | 111 | 36 | 157 | 268 |
| 4:00 | 0 | | 0 | | | 16:00 | 25 | | 61 | | |
| 4:15 | 0 | | 4 | | | 16:15 | 34 | | 31 | | |
| 4:30 | 1 | | 0 | | | 16:30 | 27 | | 39 | | |
| 4:45 | 3 | 4 | 3 | 7 | 11 | 16:45 | 26 | 112 | 43 | 174 | 286 |
| 5:00 | 3 | | 2 | | | 17:00 | 33 | | 62 | | |
| 5:15 | 2 | | 4 | | | 17:15 | 35 | | 45 | | |
| 5:30 | 3 | | 5 | | | 17:30 | 20 | | 42 | | |
| 5:45 | 8 | 16 | 7 | 18 | 34 | 17:45 | 18 | 106 | 41 | 190 | 296 |
| 6:00 | 10 | | 6 | | | 18:00 | 20 | | 30 | | |
| 6:15 | 14 | | 14 | | | 18:15 | 24 | | 32 | | |
| 6:30 | 4 | | 18 | | | 18:30 | 17 | | 18 | | |
| 6:45 | 22 | 50 | 17 | 55 | 105 | 18:45 | 14 | 75 | 15 | 95 | 170 |
| 7:00 | 18 | | 32 | | | 19:00 | 13 | | 17 | | |
| 7:15 | 12 | | 26 | | | 19:15 | 6 | | 14 | | |
| 7:30 | 21 | | 25 | | | 19:30 | 11 | | 21 | | |
| 7:45 | 26 | 77 | 29 | 112 | 189 | 19:45 | 10 | 40 | 10 | 62 | 102 |
| 8:00 | 23 | | 52 | | | 20:00 | 8 | | 14 | | |
| 8:15 | 36 | | 47 | | | 20:15 | 7 | | 7 | | |
| 8:30 | 26 | | 33 | | | 20:30 | 9 | | 16 | | |
| 8:45 | 28 | 113 | 23 | 155 | 268 | 20:45 | 4 | 28 | 6 | 43 | 71 |
| 9:00 | 32 | | 33 | | | 21:00 | 11 | | 5 | | |
| 9:15 | 19 | | 20 | | | 21:15 | 3 | | 6 | | |
| 9:30 | 16 | | 35 | | | 21:30 | 2 | | 11 | | |
| 9:45 | 15 | 82 | 24 | 112 | 194 | 21:45 | 2 | 18 | 5 | 27 | 45 |
| 10:00 | 26 | | 26 | | | 22:00 | 2 | | 1 | | |
| 10:15 | 24 | | 16 | | | 22:15 | 1 | | 7 | | |
| 10:30 | 16 | | 29 | | | 22:30 | 4 | | 2 | | |
| 10:45 | 21 | 87 | 18 | 89 | 176 | 22:45 | 4 | 11 | 1 | 11 | 22 |
| 11:00 | 26 | | 40 | | | 23:00 | 3 | | 3 | | |
| 11:15 | 38 | | 37 | | | 23:15 | 2 | | 0 | | |
| 11:30 | 25 | | 30 | | | 23:30 | 2 | | 2 | | |
| 11:45 | 27 | 116 | 31 | 138 | 254 | 23:45 | 1 | 8 | 1 | 6 | 14 |
| **Total Vol.** | | 555 | | 696 | **1251** | | | 777 | | 1119 | **1896** |

| | **Daily Totals** EB | WB | **Combined** |
|---|---|---|---|
| | 1332 | 1815 | **3147** |

| | **AM** | | | **PM** | | |
|---|---|---|---|---|---|---|
| **Split %** | 44.4% | 55.6% | **39.8%** | 41.0% | 59.0% | **60.2%** |
| **Peak Hour** | 8:15 | 7:45 | **7:45** | 16:30 | 16:45 | **16:30** |
| **Volume** | 122 | 161 | **272** | 121 | 192 | **310** |
| **P.H.F.** | 0.85 | 0.77 | **0.82** | 0.86 | 0.77 | **0.82** |

cs@aimtd.com Tell. 714 253 7888

Tuesday, October 18, 2022 CITY: Corona PROJECT: SC3686

**ADT F Old Temescal east of Compton.** **Prepared by AimTD LLC tel. 714 253 7888**

| AM Period | EB | | WB | | | PM Period | EB | | WB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0:00 | 0 | | 0 | | | 12:00 | 8 | | 5 | | |
| 0:15 | 0 | | 0 | | | 12:15 | 3 | | 7 | | |
| 0:30 | 0 | | 0 | | | 12:30 | 6 | | 2 | | |
| 0:45 | 0 | 0 | 0 | 0 | | 12:45 | 5 | 22 | 5 | 19 | 41 |
| 1:00 | 0 | | 0 | | | 13:00 | 7 | | 3 | | |
| 1:15 | 0 | | 0 | | | 13:15 | 4 | | 8 | | |
| 1:30 | 0 | | 0 | | | 13:30 | 10 | | 7 | | |
| 1:45 | 0 | 0 | 0 | 0 | | 13:45 | 6 | 27 | 4 | 22 | 49 |
| 2:00 | 0 | | 1 | | | 14:00 | 2 | | 6 | | |
| 2:15 | 0 | | 0 | | | 14:15 | 6 | | 11 | | |
| 2:30 | 0 | | 0 | | | 14:30 | 4 | | 5 | | |
| 2:45 | 1 | 1 | 0 | 1 | 2 | 14:45 | 7 | 19 | 6 | 28 | 47 |
| 3:00 | 1 | | 0 | | | 15:00 | 11 | | 1 | | |
| 3:15 | 0 | | 0 | | | 15:15 | 11 | | 9 | | |
| 3:30 | 0 | | 0 | | | 15:30 | 8 | | 7 | | |
| 3:45 | 0 | 1 | 0 | 0 | 1 | 15:45 | 8 | 38 | 5 | 22 | 60 |
| 4:00 | 0 | | 0 | | | 16:00 | 7 | | 5 | | |
| 4:15 | 0 | | 1 | | | 16:15 | 11 | | 1 | | |
| 4:30 | 0 | | 2 | | | 16:30 | 10 | | 7 | | |
| 4:45 | 0 | 0 | 1 | 4 | 4 | 16:45 | 11 | 39 | 9 | 22 | 61 |
| 5:00 | 1 | | 2 | | | 17:00 | 7 | | 6 | | |
| 5:15 | 0 | | 1 | | | 17:15 | 7 | | 6 | | |
| 5:30 | 1 | | 0 | | | 17:30 | 10 | | 6 | | |
| 5:45 | 0 | 2 | 4 | 7 | 9 | 17:45 | 9 | 33 | 12 | 30 | 63 |
| 6:00 | 2 | | 1 | | | 18:00 | 10 | | 2 | | |
| 6:15 | 3 | | 4 | | | 18:15 | 5 | | 8 | | |
| 6:30 | 2 | | 3 | | | 18:30 | 8 | | 2 | | |
| 6:45 | 2 | 9 | 3 | 11 | 20 | 18:45 | 8 | 31 | 3 | 15 | 46 |
| 7:00 | 3 | | 5 | | | 19:00 | 8 | | 6 | | |
| 7:15 | 0 | | 7 | | | 19:15 | 3 | | 12 | | |
| 7:30 | 4 | | 8 | | | 19:30 | 4 | | 2 | | |
| 7:45 | 6 | 13 | 10 | 30 | 43 | 19:45 | 9 | 24 | 2 | 22 | 46 |
| 8:00 | 4 | | 10 | | | 20:00 | 5 | | 3 | | |
| 8:15 | 10 | | 7 | | | 20:15 | 7 | | 1 | | |
| 8:30 | 8 | | 5 | | | 20:30 | 3 | | 1 | | |
| 8:45 | 6 | 28 | 6 | 28 | 56 | 20:45 | 5 | 20 | 0 | 5 | 25 |
| 9:00 | 6 | | 15 | | | 21:00 | 1 | | 1 | | |
| 9:15 | 8 | | 10 | | | 21:15 | 2 | | 2 | | |
| 9:30 | 1 | | 8 | | | 21:30 | 3 | | 2 | | |
| 9:45 | 2 | 17 | 5 | 38 | 55 | 21:45 | 1 | 7 | 1 | 6 | 13 |
| 10:00 | 2 | | 3 | | | 22:00 | 4 | | 1 | | |
| 10:15 | 3 | | 0 | | | 22:15 | 0 | | 6 | | |
| 10:30 | 4 | | 3 | | | 22:30 | 0 | | 1 | | |
| 10:45 | 6 | 15 | 1 | 7 | 22 | 22:45 | 2 | 6 | 1 | 9 | 15 |
| 11:00 | 3 | | 4 | | | 23:00 | 0 | | 1 | | |
| 11:15 | 4 | | 5 | | | 23:15 | 2 | | 0 | | |
| 11:30 | 8 | | 5 | | | 23:30 | 0 | | 0 | | |
| 11:45 | 2 | 17 | 4 | 18 | 35 | 23:45 | 1 | 3 | 1 | 2 | 5 |
| **Total Vol.** | 103 | | 144 | | **247** | | 269 | | 202 | | **471** |

| **Daily Totals** | EB | WB | **Combined** |
|---|---|---|---|
| | 372 | 346 | **718** |

| | **AM** | | | **PM** | | |
|---|---|---|---|---|---|---|
| **Split %** | 41.7% | 58.3% | **34.4%** | 57.1% | 42.9% | **65.6%** |
| **Peak Hour** | 8:15 | 8:45 | **8:30** | 16:00 | 17:00 | **16:30** |
| **Volume** | 30 | 39 | **64** | 39 | 30 | **63** |
| **P.H.F.** | 0.75 | 0.65 | **0.76** | 0.89 | 0.63 | **0.79** |

cs@aimtd.com Tell. 714 253 7888

Tuesday, October 18, 2022 | CITY: Corona | PROJECT: SC3686

**ADT G Ontario west of Compton.** | **Prepared by AimTD LLC tel. 714 253 7888**

| AM Period | EB | | WB | | | PM Period | EB | | WB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0:00 | 23 | | 26 | | | 12:00 | 291 | | 311 | | |
| 0:15 | 24 | | 18 | | | 12:15 | 290 | | 276 | | |
| 0:30 | 15 | | 9 | | | 12:30 | 284 | | 268 | | |
| 0:45 | 17 | 79 | 14 | 67 | 146 | 12:45 | 299 | 1164 | 284 | 1139 | 2303 |
| 1:00 | 10 | | 10 | | | 13:00 | 281 | | 269 | | |
| 1:15 | 13 | | 12 | | | 13:15 | 269 | | 242 | | |
| 1:30 | 16 | | 9 | | | 13:30 | 299 | | 294 | | |
| 1:45 | 10 | 49 | 10 | 41 | 90 | 13:45 | 302 | 1151 | 298 | 1103 | 2254 |
| 2:00 | 19 | | 11 | | | 14:00 | 305 | | 282 | | |
| 2:15 | 12 | | 7 | | | 14:15 | 300 | | 296 | | |
| 2:30 | 13 | | 6 | | | 14:30 | 319 | | 350 | | |
| 2:45 | 9 | 53 | 8 | 32 | 85 | 14:45 | 355 | 1279 | 360 | 1288 | 2567 |
| 3:00 | 7 | | 15 | | | 15:00 | 367 | | 317 | | |
| 3:15 | 7 | | 11 | | | 15:15 | 345 | | 322 | | |
| 3:30 | 15 | | 20 | | | 15:30 | 361 | | 365 | | |
| 3:45 | 19 | 48 | 35 | 81 | 129 | 15:45 | 404 | 1477 | 331 | 1335 | 2812 |
| 4:00 | 19 | | 24 | | | 16:00 | 376 | | 259 | | |
| 4:15 | 22 | | 32 | | | 16:15 | 388 | | 290 | | |
| 4:30 | 38 | | 40 | | | 16:30 | 361 | | 251 | | |
| 4:45 | 34 | 113 | 75 | 171 | 284 | 16:45 | 358 | 1483 | 293 | 1093 | 2576 |
| 5:00 | 44 | | 60 | | | 17:00 | 373 | | 326 | | |
| 5:15 | 73 | | 64 | | | 17:15 | 332 | | 278 | | |
| 5:30 | 77 | | 140 | | | 17:30 | 361 | | 283 | | |
| 5:45 | 88 | 282 | 154 | 418 | 700 | 17:45 | 324 | 1390 | 310 | 1197 | 2587 |
| 6:00 | 100 | | 140 | | | 18:00 | 312 | | 332 | | |
| 6:15 | 114 | | 138 | | | 18:15 | 256 | | 258 | | |
| 6:30 | 125 | | 141 | | | 18:30 | 325 | | 253 | | |
| 6:45 | 135 | 474 | 218 | 637 | 1111 | 18:45 | 263 | 1156 | 242 | 1085 | 2241 |
| 7:00 | 150 | | 252 | | | 19:00 | 279 | | 248 | | |
| 7:15 | 168 | | 279 | | | 19:15 | 273 | | 220 | | |
| 7:30 | 219 | | 333 | | | 19:30 | 221 | | 200 | | |
| 7:45 | 246 | 783 | 400 | 1264 | 2047 | 19:45 | 238 | 1011 | 211 | 879 | 1890 |
| 8:00 | 263 | | 429 | | | 20:00 | 178 | | 149 | | |
| 8:15 | 298 | | 407 | | | 20:15 | 178 | | 158 | | |
| 8:30 | 318 | | 309 | | | 20:30 | 182 | | 129 | | |
| 8:45 | 255 | 1134 | 269 | 1414 | 2548 | 20:45 | 180 | 718 | 140 | 576 | 1294 |
| 9:00 | 235 | | 255 | | | 21:00 | 153 | | 136 | | |
| 9:15 | 212 | | 216 | | | 21:15 | 119 | | 104 | | |
| 9:30 | 199 | | 219 | | | 21:30 | 137 | | 148 | | |
| 9:45 | 215 | 861 | 254 | 944 | 1805 | 21:45 | 102 | 511 | 98 | 486 | 997 |
| 10:00 | 236 | | 274 | | | 22:00 | 80 | | 83 | | |
| 10:15 | 238 | | 294 | | | 22:15 | 75 | | 59 | | |
| 10:30 | 226 | | 259 | | | 22:30 | 54 | | 47 | | |
| 10:45 | 294 | 994 | 299 | 1126 | 2120 | 22:45 | 39 | 248 | 51 | 240 | 488 |
| 11:00 | 249 | | 283 | | | 23:00 | 66 | | 43 | | |
| 11:15 | 278 | | 260 | | | 23:15 | 45 | | 31 | | |
| 11:30 | 291 | | 278 | | | 23:30 | 37 | | 34 | | |
| 11:45 | 318 | 1136 | 289 | 1110 | 2246 | 23:45 | 32 | 180 | 31 | 139 | 319 |
| **Total Vol.** | | 6006 | | 7305 | **13311** | | | 11768 | | 10560 | **22328** |

| | **Daily Totals** EB | WB | **Combined** |
|---|---|---|---|
| | 17774 | 17865 | **35639** |

| | **AM** | | | **PM** | | |
|---|---|---|---|---|---|---|
| **Split %** | 45.1% | 54.9% | **37.3%** | 52.7% | 47.3% | **62.7%** |
| **Peak Hour** | 11:30 | 7:30 | **7:45** | 15:30 | 14:45 | **15:00** |
| **Volume** | 1190 | 1569 | **2670** | 1529 | 1364 | **2812** |
| **P.H.F.** | 0.94 | 0.91 | **0.95** | 0.95 | 0.93 | **0.96** |

cs@aimtd.com Tell. 714 253 7888

Tuesday, October 18, 2022 | CITY: Corona | PROJECT: SC3686

**ADT H Ontario west of State.** | **Prepared by AimTD LLC tel. 714 253 7888**

| AM Period | EB | | WB | | | PM Period | EB | | WB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0:00 | 21 | | 14 | | | 12:00 | 117 | | 161 | | |
| 0:15 | 11 | | 14 | | | 12:15 | 125 | | 131 | | |
| 0:30 | 14 | | 10 | | | 12:30 | 117 | | 135 | | |
| 0:45 | 17 | 63 | 9 | 47 | 110 | 12:45 | 106 | 465 | 148 | 575 | 1040 |
| 1:00 | 4 | | 3 | | | 13:00 | 133 | | 150 | | |
| 1:15 | 4 | | 5 | | | 13:15 | 94 | | 132 | | |
| 1:30 | 9 | | 4 | | | 13:30 | 140 | | 135 | | |
| 1:45 | 5 | 22 | 7 | 19 | 41 | 13:45 | 148 | 515 | 145 | 562 | 1077 |
| 2:00 | 3 | | 9 | | | 14:00 | 127 | | 132 | | |
| 2:15 | 6 | | 3 | | | 14:15 | 159 | | 161 | | |
| 2:30 | 9 | | 5 | | | 14:30 | 167 | | 198 | | |
| 2:45 | 3 | 21 | 6 | 23 | 44 | 14:45 | 174 | 627 | 162 | 653 | 1280 |
| 3:00 | 6 | | 13 | | | 15:00 | 192 | | 158 | | |
| 3:15 | 1 | | 10 | | | 15:15 | 207 | | 117 | | |
| 3:30 | 1 | | 15 | | | 15:30 | 234 | | 163 | | |
| 3:45 | 12 | 20 | 16 | 54 | 74 | 15:45 | 243 | 876 | 142 | 580 | 1456 |
| 4:00 | 8 | | 21 | | | 16:00 | 238 | | 137 | | |
| 4:15 | 18 | | 30 | | | 16:15 | 244 | | 141 | | |
| 4:30 | 12 | | 44 | | | 16:30 | 252 | | 141 | | |
| 4:45 | 23 | 61 | 50 | 145 | 206 | 16:45 | 256 | 990 | 137 | 556 | 1546 |
| 5:00 | 25 | | 49 | | | 17:00 | 230 | | 172 | | |
| 5:15 | 30 | | 58 | | | 17:15 | 239 | | 141 | | |
| 5:30 | 32 | | 100 | | | 17:30 | 239 | | 120 | | |
| 5:45 | 43 | 130 | 88 | 295 | 425 | 17:45 | 238 | 946 | 142 | 575 | 1521 |
| 6:00 | 44 | | 101 | | | 18:00 | 256 | | 135 | | |
| 6:15 | 44 | | 89 | | | 18:15 | 197 | | 139 | | |
| 6:30 | 53 | | 132 | | | 18:30 | 199 | | 116 | | |
| 6:45 | 55 | 196 | 152 | 474 | 670 | 18:45 | 172 | 824 | 113 | 503 | 1327 |
| 7:00 | 55 | | 182 | | | 19:00 | 125 | | 112 | | |
| 7:15 | 68 | | 247 | | | 19:15 | 129 | | 107 | | |
| 7:30 | 121 | | 214 | | | 19:30 | 124 | | 90 | | |
| 7:45 | 133 | 377 | 268 | 911 | 1288 | 19:45 | 115 | 493 | 96 | 405 | 898 |
| 8:00 | 92 | | 320 | | | 20:00 | 80 | | 82 | | |
| 8:15 | 95 | | 225 | | | 20:15 | 73 | | 85 | | |
| 8:30 | 117 | | 227 | | | 20:30 | 75 | | 59 | | |
| 8:45 | 95 | 399 | 181 | 953 | 1352 | 20:45 | 79 | 307 | 86 | 312 | 619 |
| 9:00 | 96 | | 155 | | | 21:00 | 62 | | 72 | | |
| 9:15 | 91 | | 146 | | | 21:15 | 54 | | 61 | | |
| 9:30 | 73 | | 145 | | | 21:30 | 50 | | 73 | | |
| 9:45 | 95 | 355 | 163 | 609 | 964 | 21:45 | 37 | 203 | 47 | 253 | 456 |
| 10:00 | 91 | | 135 | | | 22:00 | 41 | | 44 | | |
| 10:15 | 97 | | 123 | | | 22:15 | 34 | | 31 | | |
| 10:30 | 116 | | 139 | | | 22:30 | 32 | | 23 | | |
| 10:45 | 106 | 410 | 155 | 552 | 962 | 22:45 | 24 | 131 | 34 | 132 | 263 |
| 11:00 | 95 | | 126 | | | 23:00 | 24 | | 18 | | |
| 11:15 | 116 | | 125 | | | 23:15 | 29 | | 17 | | |
| 11:30 | 120 | | 125 | | | 23:30 | 28 | | 21 | | |
| 11:45 | 128 | 459 | 121 | 497 | 956 | 23:45 | 14 | 95 | 13 | 69 | 164 |
| **Total Vol.** | | 2513 | | 4579 | **7092** | | | 6472 | | 5175 | **11647** |

| **Daily Totals** | | |
|---|---|---|
| EB | WB | **Combined** |
| 8985 | 9754 | **18739** |

| | **AM** | | | **PM** | | |
|---|---|---|---|---|---|---|
| **Split %** | 35.4% | 64.6% | **37.8%** | 55.6% | 44.4% | **62.2%** |
| **Peak Hour** | 11:30 | 7:15 | **7:45** | 16:00 | 14:15 | **16:15** |
| **Volume** | 490 | 1049 | **1477** | 990 | 679 | **1573** |
| **P.H.F.** | 0.96 | 0.82 | **0.90** | 0.97 | 0.86 | **0.98** |

cs@aimtd.com Tell. 714 253 7888

Tuesday, October 18, 2022 | CITY: Corona | PROJECT: SC3686

**ADT I Rimpau south of Magnolia.** | **Prepared by AimTD LLC tel. 714 253 7888**

| AM Period | NB | | SB | | | PM Period | NB | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0:00 | 20 | | 23 | | | 12:00 | 198 | | 148 | | |
| 0:15 | 15 | | 12 | | | 12:15 | 201 | | 135 | | |
| 0:30 | 11 | | 9 | | | 12:30 | 172 | | 143 | | |
| 0:45 | 6 | 52 | 4 | 48 | 100 | 12:45 | 178 | 749 | 138 | 564 | 1313 |
| 1:00 | 5 | | 9 | | | 13:00 | 192 | | 130 | | |
| 1:15 | 7 | | 9 | | | 13:15 | 157 | | 145 | | |
| 1:30 | 8 | | 12 | | | 13:30 | 184 | | 143 | | |
| 1:45 | 24 | 44 | 9 | 39 | 83 | 13:45 | 177 | 710 | 150 | 568 | 1278 |
| 2:00 | 25 | | 5 | | | 14:00 | 177 | | 128 | | |
| 2:15 | 8 | | 8 | | | 14:15 | 157 | | 151 | | |
| 2:30 | 21 | | 9 | | | 14:30 | 221 | | 170 | | |
| 2:45 | 6 | 60 | 8 | 30 | 90 | 14:45 | 201 | 756 | 175 | 624 | 1380 |
| 3:00 | 7 | | 9 | | | 15:00 | 252 | | 189 | | |
| 3:15 | 13 | | 7 | | | 15:15 | 213 | | 232 | | |
| 3:30 | 18 | | 27 | | | 15:30 | 282 | | 242 | | |
| 3:45 | 16 | 54 | 28 | 71 | 125 | 15:45 | 272 | 1019 | 222 | 885 | 1904 |
| 4:00 | 19 | | 13 | | | 16:00 | 294 | | 219 | | |
| 4:15 | 30 | | 28 | | | 16:15 | 261 | | 217 | | |
| 4:30 | 37 | | 34 | | | 16:30 | 286 | | 193 | | |
| 4:45 | 23 | 109 | 45 | 120 | 229 | 16:45 | 256 | 1097 | 220 | 849 | 1946 |
| 5:00 | 40 | | 29 | | | 17:00 | 265 | | 228 | | |
| 5:15 | 37 | | 28 | | | 17:15 | 199 | | 225 | | |
| 5:30 | 54 | | 59 | | | 17:30 | 225 | | 214 | | |
| 5:45 | 48 | 179 | 99 | 215 | 394 | 17:45 | 237 | 926 | 230 | 897 | 1823 |
| 6:00 | 62 | | 76 | | | 18:00 | 208 | | 227 | | |
| 6:15 | 82 | | 94 | | | 18:15 | 161 | | 187 | | |
| 6:30 | 75 | | 103 | | | 18:30 | 175 | | 157 | | |
| 6:45 | 100 | 319 | 143 | 416 | 735 | 18:45 | 122 | 666 | 147 | 718 | 1384 |
| 7:00 | 156 | | 125 | | | 19:00 | 119 | | 130 | | |
| 7:15 | 189 | | 160 | | | 19:15 | 115 | | 113 | | |
| 7:30 | 201 | | 174 | | | 19:30 | 126 | | 106 | | |
| 7:45 | 177 | 723 | 240 | 699 | 1422 | 19:45 | 143 | 503 | 136 | 485 | 988 |
| 8:00 | 214 | | 286 | | | 20:00 | 100 | | 109 | | |
| 8:15 | 246 | | 234 | | | 20:15 | 90 | | 91 | | |
| 8:30 | 216 | | 155 | | | 20:30 | 90 | | 89 | | |
| 8:45 | 130 | 806 | 134 | 809 | 1615 | 20:45 | 88 | 368 | 79 | 368 | 736 |
| 9:00 | 137 | | 137 | | | 21:00 | 62 | | 62 | | |
| 9:15 | 168 | | 140 | | | 21:15 | 58 | | 85 | | |
| 9:30 | 137 | | 118 | | | 21:30 | 81 | | 57 | | |
| 9:45 | 143 | 585 | 104 | 499 | 1084 | 21:45 | 50 | 251 | 44 | 248 | 499 |
| 10:00 | 147 | | 112 | | | 22:00 | 51 | | 44 | | |
| 10:15 | 127 | | 99 | | | 22:15 | 42 | | 34 | | |
| 10:30 | 110 | | 121 | | | 22:30 | 30 | | 27 | | |
| 10:45 | 132 | 516 | 129 | 461 | 977 | 22:45 | 24 | 147 | 29 | 134 | 281 |
| 11:00 | 172 | | 109 | | | 23:00 | 27 | | 24 | | |
| 11:15 | 145 | | 146 | | | 23:15 | 17 | | 32 | | |
| 11:30 | 161 | | 131 | | | 23:30 | 21 | | 27 | | |
| 11:45 | 180 | 658 | 159 | 545 | 1203 | 23:45 | 13 | 78 | 23 | 106 | 184 |
| **Total Vol.** | 4105 | | 3952 | | **8057** | | 7270 | | 6446 | | **13716** |

**Daily Totals**

| NB | SB | **Combined** |
|---|---|---|
| 11375 | 10398 | **21773** |

| | **AM** | | | **PM** | | |
|---|---|---|---|---|---|---|
| **Split %** | 50.9% | 49.1% | **37.0%** | 53.0% | 47.0% | **63.0%** |
| **Peak Hour** | 7:45 | 7:30 | **7:30** | 15:45 | 15:15 | **15:30** |
| **Volume** | 853 | 934 | **1772** | 1113 | 915 | **2009** |
| **P.H.F.** | 0.87 | 0.82 | **0.89** | 0.93 | 0.95 | **0.96** |

cs@aimtd.com | Tell. 714 253 7888

Tuesday, October 18, 2022 | CITY: Corona | PROJECT: SC3686

**ADT J Rimpau north of Olympic.** | **Prepared by AimTD LLC tel. 714 253 7888**

| AM Period | NB | | SB | | | PM Period | NB | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0:00 | 4 | | 15 | | | 12:00 | 125 | | 134 | | |
| 0:15 | 10 | | 14 | | | 12:15 | 94 | | 125 | | |
| 0:30 | 6 | | 9 | | | 12:30 | 83 | | 114 | | |
| 0:45 | 8 | 28 | 0 | 38 | 66 | 12:45 | 94 | 396 | 120 | 493 | 889 |
| 1:00 | 5 | | 10 | | | 13:00 | 104 | | 113 | | |
| 1:15 | 9 | | 7 | | | 13:15 | 72 | | 127 | | |
| 1:30 | 3 | | 12 | | | 13:30 | 109 | | 133 | | |
| 1:45 | 6 | 23 | 9 | 38 | 61 | 13:45 | 119 | 404 | 156 | 529 | 933 |
| 2:00 | 6 | | 6 | | | 14:00 | 91 | | 128 | | |
| 2:15 | 4 | | 8 | | | 14:15 | 114 | | 129 | | |
| 2:30 | 4 | | 6 | | | 14:30 | 113 | | 152 | | |
| 2:45 | 1 | 15 | 9 | 29 | 44 | 14:45 | 142 | 460 | 190 | 599 | 1059 |
| 3:00 | 5 | | 5 | | | 15:00 | 151 | | 175 | | |
| 3:15 | 10 | | 8 | | | 15:15 | 112 | | 217 | | |
| 3:30 | 15 | | 22 | | | 15:30 | 222 | | 224 | | |
| 3:45 | 17 | 47 | 26 | 61 | 108 | 15:45 | 223 | 708 | 190 | 806 | 1514 |
| 4:00 | 17 | | 10 | | | 16:00 | 196 | | 206 | | |
| 4:15 | 21 | | 19 | | | 16:15 | 150 | | 210 | | |
| 4:30 | 33 | | 28 | | | 16:30 | 185 | | 184 | | |
| 4:45 | 28 | 99 | 28 | 85 | 184 | 16:45 | 149 | 680 | 206 | 806 | 1486 |
| 5:00 | 34 | | 21 | | | 17:00 | 148 | | 216 | | |
| 5:15 | 27 | | 21 | | | 17:15 | 116 | | 194 | | |
| 5:30 | 48 | | 44 | | | 17:30 | 143 | | 217 | | |
| 5:45 | 36 | 145 | 72 | 158 | 303 | 17:45 | 163 | 570 | 213 | 840 | 1410 |
| 6:00 | 34 | | 74 | | | 18:00 | 132 | | 225 | | |
| 6:15 | 54 | | 89 | | | 18:15 | 96 | | 178 | | |
| 6:30 | 56 | | 84 | | | 18:30 | 114 | | 129 | | |
| 6:45 | 88 | 232 | 126 | 373 | 605 | 18:45 | 77 | 419 | 150 | 682 | 1101 |
| 7:00 | 119 | | 108 | | | 19:00 | 83 | | 132 | | |
| 7:15 | 155 | | 150 | | | 19:15 | 73 | | 117 | | |
| 7:30 | 142 | | 167 | | | 19:30 | 76 | | 94 | | |
| 7:45 | 144 | 560 | 212 | 637 | 1197 | 19:45 | 97 | 329 | 114 | 457 | 786 |
| 8:00 | 202 | | 229 | | | 20:00 | 68 | | 89 | | |
| 8:15 | 214 | | 284 | | | 20:15 | 61 | | 91 | | |
| 8:30 | 135 | | 123 | | | 20:30 | 60 | | 85 | | |
| 8:45 | 92 | 643 | 117 | 753 | 1396 | 20:45 | 69 | 258 | 75 | 340 | 598 |
| 9:00 | 82 | | 117 | | | 21:00 | 39 | | 63 | | |
| 9:15 | 103 | | 113 | | | 21:15 | 38 | | 73 | | |
| 9:30 | 84 | | 99 | | | 21:30 | 42 | | 56 | | |
| 9:45 | 75 | 344 | 89 | 418 | 762 | 21:45 | 30 | 149 | 53 | 245 | 394 |
| 10:00 | 80 | | 95 | | | 22:00 | 29 | | 43 | | |
| 10:15 | 60 | | 81 | | | 22:15 | 24 | | 26 | | |
| 10:30 | 77 | | 102 | | | 22:30 | 16 | | 23 | | |
| 10:45 | 89 | 306 | 105 | 383 | 689 | 22:45 | 22 | 91 | 27 | 119 | 210 |
| 11:00 | 86 | | 101 | | | 23:00 | 17 | | 21 | | |
| 11:15 | 77 | | 119 | | | 23:15 | 8 | | 30 | | |
| 11:30 | 83 | | 115 | | | 23:30 | 16 | | 25 | | |
| 11:45 | 99 | 345 | 139 | 474 | 819 | 23:45 | 7 | 48 | 19 | 95 | 143 |
| **Total Vol.** | | 2787 | | 3447 | **6234** | | | 4512 | | 6011 | **10523** |

**Daily Totals**

| NB | SB | Combined |
|---|---|---|
| 7299 | 9458 | **16757** |

| | AM | | | PM | | |
|---|---|---|---|---|---|---|
| **Split %** | 44.7% | 55.3% | **37.2%** | 42.9% | 57.1% | **62.8%** |
| **Peak Hour** | 7:30 | 7:30 | **7:30** | 15:30 | 17:15 | **15:30** |
| **Volume** | 702 | 892 | **1594** | 791 | 849 | **1621** |
| **P.H.F.** | 0.82 | 0.79 | **0.80** | 0.94 | 0.94 | **0.91** |

cs@aimtd.com | Tell. 714 253 7888

Tuesday, October 18, 2022 CITY: Corona PROJECT: SC3686

**ADT K Rimpau south of Olympic.** **Prepared by AimTD LLC tel. 714 253 7888**

| AM Period | NB | | SB | | | PM Period | NB | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0:00 | 4 | | 16 | | | 12:00 | 111 | | 98 | | |
| 0:15 | 10 | | 14 | | | 12:15 | 85 | | 97 | | |
| 0:30 | 4 | | 8 | | | 12:30 | 73 | | 92 | | |
| 0:45 | 8 | 26 | 0 | 38 | 64 | 12:45 | 79 | 348 | 98 | 385 | 733 |
| 1:00 | 5 | | 10 | | | 13:00 | 94 | | 94 | | |
| 1:15 | 9 | | 7 | | | 13:15 | 72 | | 109 | | |
| 1:30 | 3 | | 11 | | | 13:30 | 86 | | 106 | | |
| 1:45 | 6 | 23 | 7 | 35 | 58 | 13:45 | 112 | 364 | 128 | 437 | 801 |
| 2:00 | 4 | | 6 | | | 14:00 | 76 | | 110 | | |
| 2:15 | 5 | | 6 | | | 14:15 | 97 | | 106 | | |
| 2:30 | 3 | | 5 | | | 14:30 | 92 | | 132 | | |
| 2:45 | 1 | 13 | 6 | 23 | 36 | 14:45 | 128 | 393 | 156 | 504 | 897 |
| 3:00 | 5 | | 4 | | | 15:00 | 125 | | 128 | | |
| 3:15 | 9 | | 6 | | | 15:15 | 112 | | 144 | | |
| 3:30 | 15 | | 12 | | | 15:30 | 126 | | 161 | | |
| 3:45 | 15 | 44 | 5 | 27 | 71 | 15:45 | 110 | 473 | 194 | 627 | 1100 |
| 4:00 | 16 | | 5 | | | 16:00 | 148 | | 170 | | |
| 4:15 | 21 | | 7 | | | 16:15 | 125 | | 161 | | |
| 4:30 | 32 | | 15 | | | 16:30 | 121 | | 159 | | |
| 4:45 | 29 | 98 | 8 | 35 | 133 | 16:45 | 136 | 530 | 171 | 661 | 1191 |
| 5:00 | 26 | | 8 | | | 17:00 | 108 | | 178 | | |
| 5:15 | 27 | | 11 | | | 17:15 | 96 | | 160 | | |
| 5:30 | 46 | | 21 | | | 17:30 | 122 | | 184 | | |
| 5:45 | 35 | 134 | 34 | 74 | 208 | 17:45 | 125 | 451 | 182 | 704 | 1155 |
| 6:00 | 31 | | 42 | | | 18:00 | 102 | | 203 | | |
| 6:15 | 52 | | 48 | | | 18:15 | 95 | | 166 | | |
| 6:30 | 52 | | 36 | | | 18:30 | 90 | | 115 | | |
| 6:45 | 80 | 215 | 52 | 178 | 393 | 18:45 | 70 | 357 | 141 | 625 | 982 |
| 7:00 | 88 | | 57 | | | 19:00 | 76 | | 123 | | |
| 7:15 | 105 | | 75 | | | 19:15 | 67 | | 112 | | |
| 7:30 | 112 | | 115 | | | 19:30 | 55 | | 87 | | |
| 7:45 | 107 | 412 | 151 | 398 | 810 | 19:45 | 78 | 276 | 110 | 432 | 708 |
| 8:00 | 130 | | 190 | | | 20:00 | 55 | | 78 | | |
| 8:15 | 119 | | 269 | | | 20:15 | 45 | | 94 | | |
| 8:30 | 126 | | 85 | | | 20:30 | 52 | | 82 | | |
| 8:45 | 89 | 464 | 79 | 623 | 1087 | 20:45 | 65 | 217 | 62 | 316 | 533 |
| 9:00 | 74 | | 77 | | | 21:00 | 32 | | 57 | | |
| 9:15 | 94 | | 85 | | | 21:15 | 32 | | 68 | | |
| 9:30 | 76 | | 66 | | | 21:30 | 26 | | 53 | | |
| 9:45 | 73 | 317 | 63 | 291 | 608 | 21:45 | 25 | 115 | 51 | 229 | 344 |
| 10:00 | 75 | | 64 | | | 22:00 | 28 | | 43 | | |
| 10:15 | 53 | | 65 | | | 22:15 | 25 | | 25 | | |
| 10:30 | 71 | | 73 | | | 22:30 | 15 | | 23 | | |
| 10:45 | 80 | 279 | 80 | 282 | 561 | 22:45 | 20 | 88 | 25 | 116 | 204 |
| 11:00 | 80 | | 76 | | | 23:00 | 18 | | 19 | | |
| 11:15 | 71 | | 94 | | | 23:15 | 8 | | 28 | | |
| 11:30 | 76 | | 93 | | | 23:30 | 10 | | 21 | | |
| 11:45 | 87 | 314 | 106 | 369 | 683 | 23:45 | 7 | 43 | 17 | 85 | 128 |
| **Total Vol.** | | 2339 | | 2373 | **4712** | | | 3655 | | 5121 | **8776** |

**Daily Totals**

| NB | SB | **Combined** |
|---|---|---|
| 5994 | 7494 | **13488** |

| | **AM** | | | **PM** | | |
|---|---|---|---|---|---|---|
| **Split %** | 49.6% | 50.4% | **34.9%** | 41.6% | 58.4% | **65.1%** |
| **Peak Hour** | 7:45 | 7:30 | **7:30** | 16:00 | 17:30 | **15:30** |
| **Volume** | 482 | 725 | **1193** | 530 | 735 | **1195** |
| **P.H.F.** | 0.93 | 0.67 | **0.77** | 0.87 | 0.91 | **0.94** |

cs@aimtd.com Tell. 714 253 7888

Tuesday, October 18, 2022 | CITY: Corona | PROJECT: SC3686

**ADT L Magnolia east of Rimpau.** | **Prepared by AimTD LLC tel. 714 253 7888**

| AM Period | EB | | WB | | | PM Period | EB | | WB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0:00 | 24 | | 52 | | | 12:00 | 302 | | 269 | | |
| 0:15 | 30 | | 39 | | | 12:15 | 308 | | 270 | | |
| 0:30 | 25 | | 41 | | | 12:30 | 302 | | 271 | | |
| 0:45 | 20 | 99 | 30 | 162 | 261 | 12:45 | 275 | 1187 | 273 | 1083 | 2270 |
| 1:00 | 14 | | 37 | | | 13:00 | 303 | | 261 | | |
| 1:15 | 19 | | 31 | | | 13:15 | 267 | | 296 | | |
| 1:30 | 18 | | 26 | | | 13:30 | 302 | | 315 | | |
| 1:45 | 25 | 76 | 26 | 120 | 196 | 13:45 | 256 | 1128 | 302 | 1174 | 2302 |
| 2:00 | 31 | | 27 | | | 14:00 | 286 | | 309 | | |
| 2:15 | 20 | | 20 | | | 14:15 | 316 | | 331 | | |
| 2:30 | 28 | | 18 | | | 14:30 | 341 | | 389 | | |
| 2:45 | 15 | 94 | 30 | 95 | 189 | 14:45 | 367 | 1310 | 465 | 1494 | 2804 |
| 3:00 | 22 | | 17 | | | 15:00 | 392 | | 342 | | |
| 3:15 | 29 | | 22 | | | 15:15 | 374 | | 385 | | |
| 3:30 | 40 | | 35 | | | 15:30 | 424 | | 389 | | |
| 3:45 | 38 | 129 | 54 | 128 | 257 | 15:45 | 396 | 1586 | 361 | 1477 | 3063 |
| 4:00 | 32 | | 30 | | | 16:00 | 464 | | 410 | | |
| 4:15 | 69 | | 45 | | | 16:15 | 402 | | 394 | | |
| 4:30 | 84 | | 66 | | | 16:30 | 428 | | 354 | | |
| 4:45 | 65 | 250 | 85 | 226 | 476 | 16:45 | 408 | 1702 | 343 | 1501 | 3203 |
| 5:00 | 84 | | 60 | | | 17:00 | 444 | | 401 | | |
| 5:15 | 87 | | 54 | | | 17:15 | 410 | | 416 | | |
| 5:30 | 124 | | 100 | | | 17:30 | 389 | | 397 | | |
| 5:45 | 125 | 420 | 161 | 375 | 795 | 17:45 | 362 | 1605 | 367 | 1581 | 3186 |
| 6:00 | 108 | | 133 | | | 18:00 | 368 | | 405 | | |
| 6:15 | 165 | | 127 | | | 18:15 | 312 | | 306 | | |
| 6:30 | 181 | | 170 | | | 18:30 | 308 | | 323 | | |
| 6:45 | 226 | 680 | 249 | 679 | 1359 | 18:45 | 251 | 1239 | 297 | 1331 | 2570 |
| 7:00 | 276 | | 252 | | | 19:00 | 244 | | 248 | | |
| 7:15 | 313 | | 319 | | | 19:15 | 208 | | 223 | | |
| 7:30 | 332 | | 397 | | | 19:30 | 188 | | 206 | | |
| 7:45 | 317 | 1238 | 423 | 1391 | 2629 | 19:45 | 181 | 821 | 199 | 876 | 1697 |
| 8:00 | 324 | | 419 | | | 20:00 | 177 | | 248 | | |
| 8:15 | 420 | | 464 | | | 20:15 | 189 | | 212 | | |
| 8:30 | 360 | | 389 | | | 20:30 | 133 | | 194 | | |
| 8:45 | 295 | 1399 | 315 | 1587 | 2986 | 20:45 | 133 | 632 | 200 | 854 | 1486 |
| 9:00 | 256 | | 273 | | | 21:00 | 152 | | 157 | | |
| 9:15 | 264 | | 279 | | | 21:15 | 95 | | 166 | | |
| 9:30 | 248 | | 254 | | | 21:30 | 124 | | 129 | | |
| 9:45 | 273 | 1041 | 292 | 1098 | 2139 | 21:45 | 93 | 464 | 106 | 558 | 1022 |
| 10:00 | 266 | | 256 | | | 22:00 | 87 | | 94 | | |
| 10:15 | 232 | | 231 | | | 22:15 | 61 | | 84 | | |
| 10:30 | 232 | | 247 | | | 22:30 | 39 | | 82 | | |
| 10:45 | 266 | 996 | 253 | 987 | 1983 | 22:45 | 44 | 231 | 78 | 338 | 569 |
| 11:00 | 264 | | 214 | | | 23:00 | 48 | | 63 | | |
| 11:15 | 273 | | 282 | | | 23:15 | 38 | | 64 | | |
| 11:30 | 305 | | 188 | | | 23:30 | 39 | | 51 | | |
| 11:45 | 292 | 1134 | 313 | 997 | 2131 | 23:45 | 18 | 143 | 52 | 230 | 373 |
| **Total Vol.** | | 7556 | | 7845 | **15401** | | | 12048 | | 12497 | **24545** |

| | **Daily Totals** EB | WB | **Combined** |
|---|---|---|---|
| | 19604 | 20342 | **39946** |

| | **AM** | | | **PM** | | |
|---|---|---|---|---|---|---|
| **Split %** | 49.1% | 50.9% | **38.6%** | 49.1% | 50.9% | **61.4%** |
| **Peak Hour** | 7:45 | 7:30 | **7:45** | 16:00 | 17:15 | **15:30** |
| **Volume** | 1421 | 1703 | **3116** | 1702 | 1585 | **3240** |
| **P.H.F.** | 0.85 | 0.92 | **0.88** | 0.92 | 0.95 | **0.93** |

cs@aimtd.com Tell. 714 253 7888

# INTERSECTION TURNING MOVEMENT COUNTS

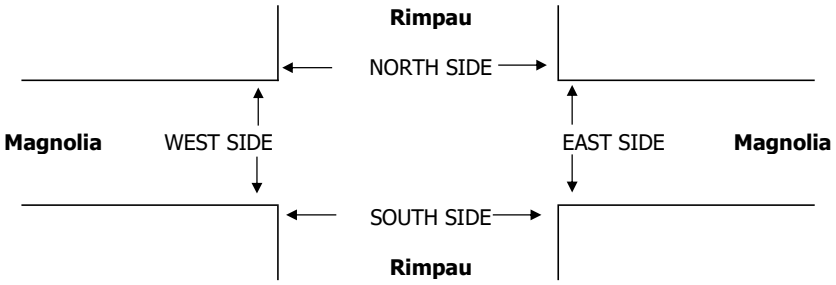
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

| DATE: | LOCATION: | Corona | PROJECT #: | SC3686 |
|---|---|---|---|---|
| Tue, Oct 18, 22 | NORTH & SOUTH: | Rimpau | LOCATION #: | 1 |
| | EAST & WEST: | Magnolia | CONTROL: | SIGNAL |

NOTES:

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

| | | NORTHBOUND Rimpau | | | SOUTHBOUND Rimpau | | | EASTBOUND Magnolia | | | WESTBOUND Magnolia | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL 1 | NT 1 | NR 1 | SL 1 | ST 1 | SR 0 | EL 1 | ET 3 | ER 0 | WL 2 | WT 3 | WR 0 | TOTAL |
| AM | 7:00 AM | 13 | 39 | 104 | 26 | 33 | 5 | 3 | 146 | 10 | 82 | 160 | 10 | 631 |
| | 7:15 AM | 15 | 46 | 128 | 30 | 52 | 3 | 8 | 155 | 17 | 91 | 207 | 21 | 773 |
| | 7:30 AM | 19 | 59 | 123 | 36 | 59 | 15 | 13 | 173 | 15 | 100 | 273 | 24 | 909 |
| | 7:45 AM | 14 | 64 | 99 | 37 | 81 | 8 | 23 | 181 | 26 | 133 | 271 | 19 | 956 |
| | 8:00 AM | 30 | 66 | 118 | 20 | 87 | 7 | 20 | 186 | 35 | 164 | 240 | 15 | 988 |
| | 8:15 AM | 36 | 69 | 141 | 25 | 62 | 11 | 24 | 254 | 18 | 154 | 290 | 20 | 1,104 |
| | 8:30 AM | 21 | 72 | 123 | 33 | 39 | 16 | 21 | 204 | 25 | 91 | 283 | 15 | 943 |
| | 8:45 AM | 15 | 43 | 72 | 35 | 43 | 7 | 13 | 188 | 21 | 70 | 225 | 20 | 752 |
| | VOLUMES | 163 | 458 | 908 | 242 | 456 | 72 | 125 | 1,487 | 167 | 885 | 1,949 | 144 | 7,056 |
| | APPROACH % | 11% | 30% | 59% | 31% | 59% | 9% | 7% | 84% | 9% | 30% | 65% | 5% | |
| | APP/DEPART | 1,529 | / | 725 | 770 | / | 1,508 | 1,779 | / | 2,637 | 2,978 | / | 2,186 | 0 |
| | BEGIN PEAK HR | | 7:45 AM | | | | | | | | | | | |
| | VOLUMES | 101 | 271 | 481 | 115 | 269 | 42 | 88 | 825 | 104 | 542 | 1,084 | 69 | 3,991 |
| | APPROACH % | 12% | 32% | 56% | 27% | 63% | 10% | 9% | 81% | 10% | 32% | 64% | 4% | |
| | PEAK HR FACTOR | | 0.867 | | | 0.845 | | | 0.859 | | | 0.913 | | 0.904 |
| | APP/DEPART | 853 | / | 427 | 426 | / | 915 | 1,017 | / | 1,421 | 1,695 | / | 1,228 | 0 |
| PM | 4:00 PM | 32 | 97 | 165 | 53 | 86 | 10 | 15 | 246 | 16 | 117 | 271 | 22 | 1,130 |
| | 4:15 PM | 32 | 78 | 151 | 46 | 83 | 8 | 22 | 205 | 15 | 118 | 242 | 34 | 1,034 |
| | 4:30 PM | 36 | 92 | 158 | 51 | 73 | 11 | 20 | 219 | 20 | 100 | 232 | 22 | 1,034 |
| | 4:45 PM | 27 | 88 | 141 | 52 | 79 | 11 | 16 | 215 | 21 | 120 | 200 | 23 | 993 |
| | 5:00 PM | 30 | 70 | 165 | 37 | 102 | 6 | 11 | 242 | 18 | 108 | 261 | 32 | 1,082 |
| | 5:15 PM | 31 | 51 | 117 | 43 | 94 | 8 | 17 | 250 | 21 | 110 | 275 | 31 | 1,048 |
| | 5:30 PM | 34 | 45 | 146 | 48 | 91 | 10 | 11 | 195 | 18 | 105 | 262 | 30 | 995 |
| | 5:45 PM | 30 | 74 | 133 | 47 | 96 | 9 | 15 | 182 | 24 | 110 | 229 | 28 | 977 |
| | VOLUMES | 252 | 595 | 1,176 | 377 | 704 | 73 | 127 | 1,754 | 153 | 888 | 1,972 | 222 | 8,293 |
| | APPROACH % | 12% | 29% | 58% | 33% | 61% | 6% | 6% | 86% | 8% | 29% | 64% | 7% | |
| | APP/DEPART | 2,023 | / | 940 | 1,154 | / | 1,746 | 2,034 | / | 3,307 | 3,082 | / | 2,300 | 0 |
| | BEGIN PEAK HR | | 4:00 PM | | | | | | | | | | | |
| | VOLUMES | 127 | 355 | 615 | 202 | 321 | 40 | 73 | 885 | 72 | 455 | 945 | 101 | 4,191 |
| | APPROACH % | 12% | 32% | 56% | 36% | 57% | 7% | 7% | 86% | 7% | 30% | 63% | 7% | |
| | PEAK HR FACTOR | | 0.933 | | | 0.945 | | | 0.930 | | | 0.915 | | 0.927 |
| | APP/DEPART | 1,097 | / | 526 | 563 | / | 849 | 1,030 | / | 1,702 | 1,501 | / | 1,114 | 0 |



# INTERSECTION TURNING MOVEMENT COUNTS

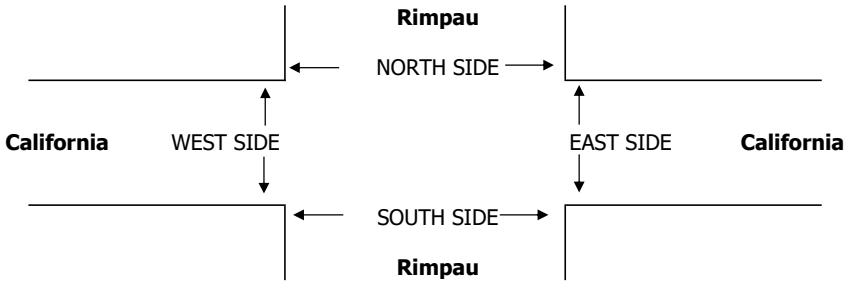
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

| DATE: | LOCATION: | Corona | PROJECT #: | SC3686 |
|---|---|---|---|---|
| Tue, Oct 18, 22 | NORTH & SOUTH: | Rimpau | LOCATION #: | 2 |
| | EAST & WEST: | California | CONTROL: | SIGNAL |

NOTES:

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

| | | NORTHBOUND Rimpau | | | SOUTHBOUND Rimpau | | | EASTBOUND California | | | WESTBOUND California | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL X | NT 3 | NR 0 | SL X | ST 2 | SR X | EL X | ET X | ER X | WL 1 | WT X | WR 1 | TOTAL |
| AM | 7:00 AM | 0 | 117 | 1 | 0 | 119 | 0 | 0 | 0 | 0 | 1 | 0 | 44 | 282 |
| | 7:15 AM | 0 | 154 | 1 | 0 | 155 | 0 | 0 | 0 | 0 | 0 | 0 | 52 | 362 |
| | 7:30 AM | 0 | 130 | 1 | 0 | 163 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 333 |
| | 7:45 AM | 0 | 142 | 5 | 0 | 212 | 0 | 0 | 0 | 0 | 1 | 0 | 36 | 396 |
| | 8:00 AM | 0 | 202 | 1 | 0 | 262 | 0 | 0 | 0 | 0 | 0 | 0 | 57 | 522 |
| | 8:15 AM | 0 | 218 | 4 | 0 | 235 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | 506 |
| | 8:30 AM | 0 | 130 | 3 | 0 | 131 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | 313 |
| | 8:45 AM | 0 | 96 | 2 | 0 | 112 | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 253 |
| | VOLUMES | 0 | 1,189 | 18 | 0 | 1,389 | 0 | 0 | 0 | 0 | 2 | 0 | 369 | 2,968 |
| | APPROACH % | 0% | 98% | 1% | 0% | 100% | 0% | 0% | 0% | 0% | 1% | 0% | 99% | |
| | APP/DEPART | 1,208 | / | 1,558 | 1,389 | / | 1,392 | 0 | / | 18 | 371 | / | 0 | 0 |
| | BEGIN PEAK HR | | 7:30 AM | | | | | | | | | | | |
| | VOLUMES | 0 | 692 | 11 | 0 | 872 | 0 | 0 | 0 | 0 | 1 | 0 | 181 | 1,758 |
| | APPROACH % | 0% | 98% | 2% | 0% | 100% | 0% | 0% | 0% | 0% | 1% | 0% | 99% | |
| | PEAK HR FACTOR | | 0.793 | | | 0.832 | | | 0.000 | | | 0.798 | | 0.842 |
| | APP/DEPART | 704 | / | 873 | 872 | / | 874 | 0 | / | 11 | 182 | / | 0 | 0 |
| PM | 4:00 PM | 0 | 192 | 0 | 0 | 193 | 0 | 0 | 0 | 0 | 5 | 0 | 50 | 440 |
| | 4:15 PM | 0 | 155 | 3 | 0 | 203 | 0 | 0 | 0 | 0 | 3 | 0 | 87 | 451 |
| | 4:30 PM | 0 | 185 | 2 | 0 | 181 | 0 | 0 | 0 | 0 | 6 | 0 | 109 | 483 |
| | 4:45 PM | 0 | 147 | 0 | 0 | 200 | 0 | 0 | 0 | 0 | 1 | 0 | 77 | 425 |
| | 5:00 PM | 0 | 149 | 1 | 0 | 209 | 0 | 0 | 0 | 0 | 3 | 0 | 93 | 455 |
| | 5:15 PM | 0 | 117 | 1 | 0 | 207 | 0 | 0 | 0 | 0 | 2 | 0 | 73 | 400 |
| | 5:30 PM | 0 | 136 | 0 | 0 | 205 | 0 | 0 | 0 | 0 | 0 | 0 | 88 | 429 |
| | 5:45 PM | 0 | 163 | 1 | 0 | 215 | 0 | 0 | 0 | 0 | 1 | 0 | 61 | 441 |
| | VOLUMES | 0 | 1,244 | 8 | 0 | 1,613 | 0 | 0 | 0 | 0 | 21 | 0 | 638 | 3,524 |
| | APPROACH % | 0% | 99% | 1% | 0% | 100% | 0% | 0% | 0% | 0% | 3% | 0% | 97% | |
| | APP/DEPART | 1,252 | / | 1,882 | 1,613 | / | 1,634 | 0 | / | 8 | 659 | / | 0 | 0 |
| | BEGIN PEAK HR | | 4:15 PM | | | | | | | | | | | |
| | VOLUMES | 0 | 636 | 6 | 0 | 793 | 0 | 0 | 0 | 0 | 13 | 0 | 366 | 1,814 |
| | APPROACH % | 0% | 99% | 1% | 0% | 100% | 0% | 0% | 0% | 0% | 3% | 0% | 97% | |
| | PEAK HR FACTOR | | 0.858 | | | 0.949 | | | 0.000 | | | 0.824 | | 0.939 |
| | APP/DEPART | 642 | / | 1,002 | 793 | / | 806 | 0 | / | 6 | 379 | / | 0 | 0 |



# INTERSECTION TURNING MOVEMENT COUNTS

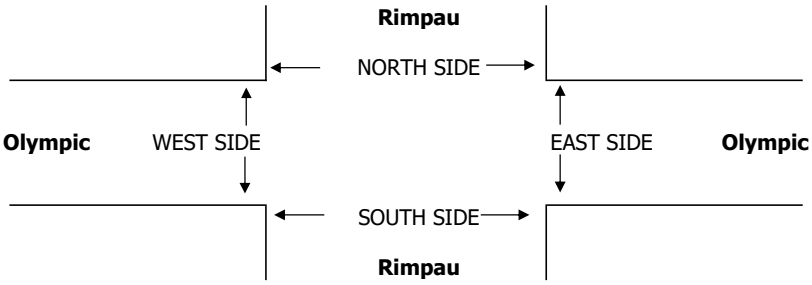
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

| DATE: | LOCATION: | Corona | PROJECT #: | SC3686 |
|---|---|---|---|---|
| Tue, Oct 18, 22 | NORTH & SOUTH: | Rimpau | LOCATION #: | 3 |
| | EAST & WEST: | Olympic | CONTROL: | SIGNAL |

NOTES:

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

| | | NORTHBOUND Rimpau | | | SOUTHBOUND Rimpau | | | EASTBOUND Olympic | | | WESTBOUND Olympic | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL 1 | NT 2 | NR 0 | SL 1 | ST 2 | SR 0 | EL 0.5 | ET 0.5 | ER 1 | WL 0 | WT 1 | WR 0 | TOTAL |
| AM | 7:00 AM | 6 | 81 | 1 | 27 | 59 | 30 | 29 | 2 | 4 | 2 | 3 | 9 | 253 |
| | 7:15 AM | 11 | 93 | 1 | 31 | 68 | 62 | 55 | 2 | 17 | 1 | 6 | 7 | 354 |
| | 7:30 AM | 6 | 103 | 3 | 31 | 95 | 41 | 36 | 2 | 15 | 5 | 8 | 3 | 348 |
| | 7:45 AM | 3 | 101 | 3 | 44 | 121 | 47 | 32 | 0 | 20 | 10 | 4 | 11 | 396 |
| | 8:00 AM | 14 | 108 | 8 | 49 | 129 | 43 | 67 | 6 | 33 | 20 | 17 | 27 | 521 |
| | 8:15 AM | 8 | 108 | 3 | 57 | 172 | 44 | 88 | 6 | 51 | 35 | 7 | 18 | 597 |
| | 8:30 AM | 0 | 124 | 2 | 41 | 82 | 0 | 1 | 0 | 0 | 3 | 0 | 10 | 263 |
| | 8:45 AM | 0 | 84 | 5 | 41 | 76 | 0 | 0 | 0 | 0 | 3 | 0 | 8 | 217 |
| | VOLUMES | 48 | 802 | 26 | 321 | 802 | 267 | 308 | 18 | 140 | 79 | 45 | 93 | 2,949 |
| | APPROACH % | 5% | 92% | 3% | 23% | 58% | 19% | 66% | 4% | 30% | 36% | 21% | 43% | |
| | APP/DEPART | 876 | / | 1,203 | 1,390 | / | 1,021 | 466 | / | 365 | 217 | / | 360 | 0 |
| | BEGIN PEAK HR | | 7:30 AM | | | | | | | | | | | |
| | VOLUMES | 31 | 420 | 17 | 181 | 517 | 175 | 223 | 14 | 119 | 70 | 36 | 59 | 1,862 |
| | APPROACH % | 7% | 90% | 4% | 21% | 59% | 20% | 63% | 4% | 33% | 42% | 22% | 36% | |
| | PEAK HR FACTOR | | 0.900 | | | 0.799 | | | 0.614 | | | 0.645 | | 0.780 |
| | APP/DEPART | 468 | / | 702 | 873 | / | 706 | 356 | / | 212 | 165 | / | 242 | 0 |
| PM | 4:00 PM | 3 | 140 | 5 | 31 | 159 | 16 | 20 | 2 | 6 | 5 | 3 | 36 | 426 |
| | 4:15 PM | 8 | 115 | 2 | 35 | 156 | 19 | 8 | 1 | 4 | 1 | 1 | 27 | 377 |
| | 4:30 PM | 7 | 111 | 3 | 20 | 148 | 16 | 20 | 3 | 9 | 2 | 8 | 54 | 401 |
| | 4:45 PM | 14 | 122 | 0 | 23 | 163 | 20 | 16 | 2 | 7 | 1 | 1 | 11 | 380 |
| | 5:00 PM | 2 | 104 | 2 | 34 | 167 | 15 | 13 | 0 | 5 | 6 | 3 | 31 | 382 |
| | 5:15 PM | 6 | 88 | 2 | 24 | 149 | 21 | 7 | 1 | 11 | 0 | 1 | 21 | 331 |
| | 5:30 PM | 10 | 109 | 3 | 20 | 176 | 21 | 21 | 2 | 7 | 1 | 3 | 13 | 386 |
| | 5:45 PM | 5 | 120 | 0 | 18 | 165 | 30 | 29 | 1 | 16 | 1 | 3 | 14 | 402 |
| | VOLUMES | 55 | 909 | 17 | 205 | 1,283 | 158 | 134 | 12 | 65 | 17 | 23 | 207 | 3,085 |
| | APPROACH % | 6% | 93% | 2% | 12% | 78% | 10% | 64% | 6% | 31% | 7% | 9% | 84% | |
| | APP/DEPART | 981 | / | 1,250 | 1,646 | / | 1,365 | 211 | / | 234 | 247 | / | 236 | 0 |
| | BEGIN PEAK HR | | 4:00 PM | | | | | | | | | | | |
| | VOLUMES | 32 | 488 | 10 | 109 | 626 | 71 | 64 | 8 | 26 | 9 | 13 | 128 | 1,584 |
| | APPROACH % | 6% | 92% | 2% | 14% | 78% | 9% | 65% | 8% | 27% | 6% | 9% | 85% | |
| | PEAK HR FACTOR | | 0.895 | | | 0.960 | | | 0.766 | | | 0.586 | | 0.930 |
| | APP/DEPART | 530 | / | 680 | 806 | / | 661 | 98 | / | 127 | 150 | / | 116 | 0 |



# INTERSECTION TURNING MOVEMENT COUNTS

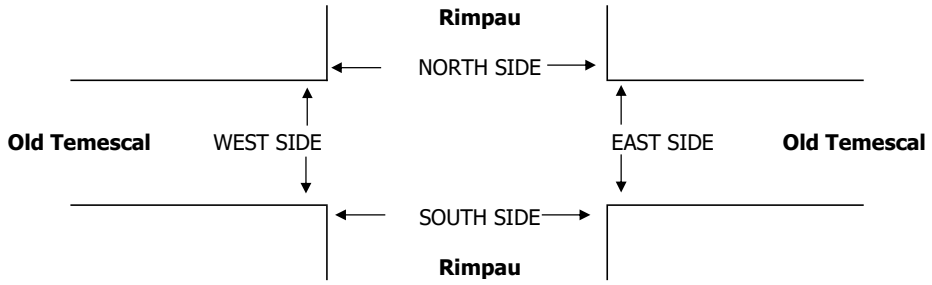
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

| DATE: | LOCATION: | Corona | PROJECT #: | SC3686 |
|---|---|---|---|---|
| Tue, Oct 18, 22 | NORTH & SOUTH: | Rimpau | LOCATION #: | 4 |
| | EAST & WEST: | Old Temescal | CONTROL: | STOP ALL |

NOTES:

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

| | | NORTHBOUND Rimpau | | | SOUTHBOUND Rimpau | | | EASTBOUND Old Temescal | | | WESTBOUND Old Temescal | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL 0 | NT 2 | NR 0 | SL 0 | ST 2 | SR 0 | EL 0 | ET 1 | ER 0 | WL 0 | WT 1 | WR 0 | TOTAL |
| AM | 7:00 AM | 1 | 53 | 3 | 18 | 31 | 2 | 11 | 12 | 6 | 3 | 12 | 9 | 161 |
| | 7:15 AM | 4 | 75 | 3 | 7 | 46 | 6 | 18 | 10 | 6 | 5 | 13 | 21 | 214 |
| | 7:30 AM | 1 | 74 | 4 | 18 | 53 | 5 | 12 | 17 | 7 | 11 | 18 | 17 | 237 |
| | 7:45 AM | 9 | 86 | 13 | 23 | 64 | 16 | 15 | 20 | 3 | 10 | 14 | 16 | 289 |
| | 8:00 AM | 6 | 146 | 8 | 20 | 85 | 35 | 20 | 23 | 10 | 7 | 17 | 37 | 414 |
| | 8:15 AM | 12 | 94 | 12 | 35 | 114 | 49 | 25 | 33 | 12 | 11 | 21 | 26 | 444 |
| | 8:30 AM | 7 | 75 | 14 | 28 | 60 | 8 | 18 | 33 | 13 | 7 | 34 | 13 | 310 |
| | 8:45 AM | 3 | 52 | 10 | 25 | 34 | 6 | 11 | 24 | 6 | 7 | 15 | 8 | 201 |
| | VOLUMES | 43 | 655 | 67 | 174 | 487 | 127 | 130 | 172 | 63 | 61 | 144 | 147 | 2,270 |
| | APPROACH % | 6% | 86% | 9% | 22% | 62% | 16% | 36% | 47% | 17% | 17% | 41% | 42% | |
| | APP/DEPART | 765 | / | 934 | 788 | / | 611 | 365 | / | 411 | 352 | / | 314 | 0 |
| | BEGIN PEAK HR | | 7:45 AM | | | | | | | | | | | |
| | VOLUMES | 34 | 401 | 47 | 106 | 323 | 108 | 78 | 109 | 38 | 35 | 86 | 92 | 1,457 |
| | APPROACH % | 7% | 83% | 10% | 20% | 60% | 20% | 35% | 48% | 17% | 16% | 40% | 43% | |
| | PEAK HR FACTOR | | 0.753 | | | 0.678 | | | 0.804 | | | 0.873 | | 0.820 |
| | APP/DEPART | 482 | / | 572 | 537 | / | 396 | 225 | / | 261 | 213 | / | 228 | 0 |
| PM | 4:00 PM | 7 | 68 | 13 | 27 | 102 | 19 | 5 | 29 | 8 | 7 | 26 | 33 | 344 |
| | 4:15 PM | 6 | 67 | 9 | 23 | 123 | 10 | 8 | 32 | 6 | 11 | 28 | 29 | 352 |
| | 4:30 PM | 9 | 71 | 12 | 29 | 109 | 14 | 6 | 33 | 16 | 7 | 30 | 27 | 363 |
| | 4:45 PM | 1 | 71 | 11 | 20 | 114 | 9 | 7 | 28 | 13 | 8 | 17 | 26 | 325 |
| | 5:00 PM | 6 | 44 | 10 | 26 | 129 | 7 | 12 | 27 | 9 | 10 | 25 | 36 | 341 |
| | 5:15 PM | 3 | 59 | 11 | 40 | 93 | 7 | 8 | 33 | 10 | 9 | 25 | 24 | 322 |
| | 5:30 PM | 9 | 63 | 11 | 28 | 126 | 14 | 10 | 19 | 5 | 7 | 17 | 22 | 331 |
| | 5:45 PM | 10 | 62 | 8 | 30 | 134 | 8 | 11 | 18 | 8 | 7 | 15 | 28 | 339 |
| | VOLUMES | 51 | 505 | 85 | 223 | 930 | 88 | 67 | 219 | 75 | 66 | 183 | 225 | 2,717 |
| | APPROACH % | 8% | 79% | 13% | 18% | 75% | 7% | 19% | 61% | 21% | 14% | 39% | 47% | |
| | APP/DEPART | 641 | / | 797 | 1,241 | / | 1,070 | 361 | / | 528 | 474 | / | 322 | 0 |
| | BEGIN PEAK HR | | 4:00 PM | | | | | | | | | | | |
| | VOLUMES | 23 | 277 | 45 | 99 | 448 | 52 | 26 | 122 | 43 | 33 | 101 | 115 | 1,384 |
| | APPROACH % | 7% | 80% | 13% | 17% | 75% | 9% | 14% | 64% | 23% | 13% | 41% | 46% | |
| | PEAK HR FACTOR | | 0.938 | | | 0.960 | | | 0.868 | | | 0.915 | | 0.953 |
| | APP/DEPART | 345 | / | 418 | 599 | / | 524 | 191 | / | 266 | 249 | / | 176 | 0 |



# INTERSECTION TURNING MOVEMENT COUNTS

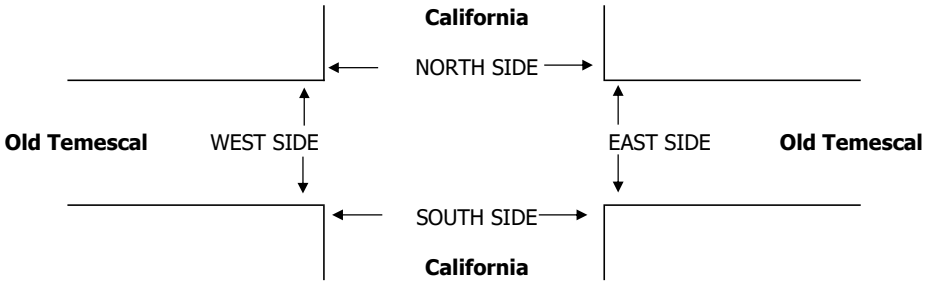
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

| DATE: | LOCATION: | Corona | PROJECT #: | SC3686 |
|---|---|---|---|---|
| Tue, Oct 18, 22 | NORTH & SOUTH: | California | LOCATION #: | 5 |
| | EAST & WEST: | Old Temescal | CONTROL: | STOP ALL |

NOTES:

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

| | | NORTHBOUND California | | | SOUTHBOUND California | | | EASTBOUND Old Temescal | | | WESTBOUND Old Temescal | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL 0 | NT 1 | NR 0 | SL 0 | ST 1 | SR 0 | EL 0 | ET 1 | ER 0 | WL 0 | WT 1 | WR 0 | TOTAL |
| AM | 7:00 AM | 6 | 34 | 6 | 1 | 10 | 0 | 0 | 11 | 19 | 3 | 16 | 13 | 119 |
| | 7:15 AM | 16 | 40 | 6 | 0 | 11 | 1 | 2 | 6 | 22 | 2 | 12 | 12 | 130 |
| | 7:30 AM | 11 | 40 | 7 | 1 | 12 | 4 | 4 | 13 | 26 | 3 | 12 | 10 | 143 |
| | 7:45 AM | 20 | 52 | 3 | 1 | 13 | 2 | 8 | 22 | 26 | 4 | 12 | 13 | 176 |
| | 8:00 AM | 27 | 69 | 7 | 1 | 19 | 1 | 5 | 15 | 22 | 3 | 25 | 24 | 218 |
| | 8:15 AM | 16 | 65 | 5 | 5 | 35 | 0 | 17 | 26 | 33 | 3 | 23 | 21 | 249 |
| | 8:30 AM | 18 | 41 | 6 | 5 | 12 | 2 | 5 | 15 | 36 | 7 | 15 | 11 | 173 |
| | 8:45 AM | 12 | 44 | 6 | 0 | 12 | 0 | 4 | 22 | 22 | 4 | 15 | 4 | 145 |
| | VOLUMES | 126 | 385 | 46 | 14 | 124 | 10 | 45 | 130 | 206 | 29 | 130 | 108 | 1,353 |
| | APPROACH % | 23% | 69% | 8% | 9% | 84% | 7% | 12% | 34% | 54% | 11% | 49% | 40% | |
| | APP/DEPART | 557 | / | 538 | 148 | / | 359 | 381 | / | 190 | 267 | / | 266 | 0 |
| | BEGIN PEAK HR | | 7:45 AM | | | | | | | | | | | |
| | VOLUMES | 81 | 227 | 21 | 12 | 79 | 5 | 35 | 78 | 117 | 17 | 75 | 69 | 816 |
| | APPROACH % | 25% | 69% | 6% | 13% | 82% | 5% | 15% | 34% | 51% | 11% | 47% | 43% | |
| | PEAK HR FACTOR | | 0.799 | | | 0.600 | | | 0.757 | | | 0.774 | | 0.819 |
| | APP/DEPART | 329 | / | 331 | 96 | / | 213 | 230 | / | 111 | 161 | / | 161 | 0 |
| PM | 4:00 PM | 21 | 50 | 5 | 5 | 41 | 7 | 4 | 15 | 50 | 20 | 30 | 11 | 259 |
| | 4:15 PM | 36 | 54 | 6 | 5 | 42 | 8 | 5 | 23 | 38 | 14 | 10 | 7 | 248 |
| | 4:30 PM | 31 | 44 | 8 | 3 | 41 | 7 | 5 | 16 | 53 | 13 | 16 | 10 | 247 |
| | 4:45 PM | 22 | 51 | 7 | 4 | 31 | 4 | 3 | 15 | 36 | 15 | 18 | 10 | 216 |
| | 5:00 PM | 29 | 42 | 5 | 5 | 42 | 6 | 3 | 23 | 42 | 15 | 30 | 17 | 259 |
| | 5:15 PM | 27 | 43 | 5 | 3 | 29 | 1 | 0 | 27 | 50 | 8 | 30 | 7 | 230 |
| | 5:30 PM | 23 | 32 | 5 | 3 | 23 | 1 | 1 | 12 | 34 | 16 | 17 | 9 | 176 |
| | 5:45 PM | 21 | 41 | 4 | 4 | 27 | 4 | 0 | 10 | 44 | 11 | 24 | 6 | 196 |
| | VOLUMES | 210 | 357 | 45 | 32 | 276 | 38 | 21 | 141 | 347 | 112 | 175 | 77 | 1,831 |
| | APPROACH % | 34% | 58% | 7% | 9% | 80% | 11% | 4% | 28% | 68% | 31% | 48% | 21% | |
| | APP/DEPART | 612 | / | 455 | 346 | / | 737 | 509 | / | 218 | 364 | / | 421 | 0 |
| | BEGIN PEAK HR | | 4:15 PM | | | | | | | | | | | |
| | VOLUMES | 118 | 191 | 26 | 17 | 156 | 25 | 16 | 77 | 169 | 57 | 74 | 44 | 970 |
| | APPROACH % | 35% | 57% | 8% | 9% | 79% | 13% | 6% | 29% | 65% | 33% | 42% | 25% | |
| | PEAK HR FACTOR | | 0.872 | | | 0.900 | | | 0.885 | | | 0.706 | | 0.936 |
| | APP/DEPART | 335 | / | 251 | 198 | / | 384 | 262 | / | 120 | 175 | / | 215 | 0 |



# INTERSECTION TURNING MOVEMENT COUNTS

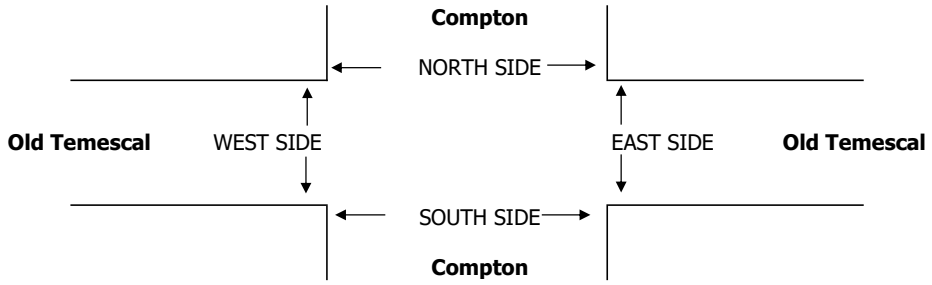
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

| DATE: | LOCATION: | Corona | PROJECT #: | SC3686 |
|---|---|---|---|---|
| Tue, Oct 18, 22 | NORTH & SOUTH: | Compton | LOCATION #: | 6 |
| | EAST & WEST: | Old Temescal | CONTROL: | STOP ALL |

NOTES:

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

| | | NORTHBOUND Compton | | | SOUTHBOUND Compton | | | EASTBOUND Old Temescal | | | WESTBOUND Old Temescal | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL 0 | NT 1 | NR 0 | SL 0 | ST 1 | SR 0 | EL 0 | ET 1 | ER 0 | WL 0 | WT 1 | WR 0 | TOTAL |
| AM | 7:00 AM | 41 | 17 | 2 | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 5 | 0 | 74 |
| | 7:15 AM | 35 | 22 | 0 | 0 | 1 | 0 | 0 | 0 | 8 | 1 | 5 | 1 | 73 |
| | 7:30 AM | 44 | 22 | 1 | 0 | 0 | 0 | 1 | 3 | 12 | 2 | 4 | 2 | 91 |
| | 7:45 AM | 51 | 27 | 4 | 0 | 5 | 0 | 1 | 2 | 9 | 4 | 5 | 1 | 109 |
| | 8:00 AM | 67 | 31 | 1 | 0 | 1 | 0 | 1 | 3 | 14 | 2 | 5 | 3 | 128 |
| | 8:15 AM | 54 | 28 | 7 | 0 | 2 | 0 | 4 | 3 | 25 | 2 | 4 | 1 | 130 |
| | 8:30 AM | 32 | 17 | 6 | 0 | 2 | 1 | 2 | 2 | 14 | 0 | 4 | 1 | 81 |
| | 8:45 AM | 21 | 17 | 3 | 0 | 1 | 1 | 4 | 3 | 17 | 0 | 5 | 1 | 73 |
| | VOLUMES | 345 | 181 | 24 | 0 | 12 | 2 | 13 | 17 | 107 | 11 | 37 | 10 | 759 |
| | APPROACH % | 63% | 33% | 4% | 0% | 86% | 14% | 9% | 12% | 78% | 19% | 64% | 17% | |
| | APP/DEPART | 550 | / | 204 | 14 | / | 130 | 137 | / | 41 | 58 | / | 384 | 0 |
| | BEGIN PEAK HR | | 7:30 AM | | | | | | | | | | | |
| | VOLUMES | 216 | 108 | 13 | 0 | 8 | 0 | 7 | 11 | 60 | 10 | 18 | 7 | 458 |
| | APPROACH % | 64% | 32% | 4% | 0% | 100% | 0% | 9% | 14% | 77% | 29% | 51% | 20% | |
| | PEAK HR FACTOR | | 0.851 | | | 0.400 | | | 0.609 | | | 0.875 | | 0.881 |
| | APP/DEPART | 337 | / | 122 | 8 | / | 78 | 78 | / | 24 | 35 | / | 234 | 0 |
| PM | 4:00 PM | 30 | 22 | 2 | 2 | 3 | 2 | 3 | 3 | 16 | 2 | 3 | 0 | 88 |
| | 4:15 PM | 14 | 14 | 5 | 0 | 2 | 2 | 10 | 6 | 10 | 1 | 0 | 0 | 64 |
| | 4:30 PM | 13 | 17 | 3 | 0 | 4 | 7 | 7 | 7 | 12 | 1 | 5 | 1 | 77 |
| | 4:45 PM | 20 | 11 | 2 | 0 | 6 | 2 | 4 | 9 | 10 | 1 | 7 | 1 | 73 |
| | 5:00 PM | 31 | 31 | 3 | 0 | 2 | 2 | 2 | 4 | 21 | 1 | 5 | 0 | 102 |
| | 5:15 PM | 32 | 21 | 3 | 0 | 9 | 9 | 7 | 4 | 24 | 1 | 5 | 0 | 115 |
| | 5:30 PM | 17 | 22 | 4 | 1 | 8 | 6 | 0 | 4 | 10 | 2 | 4 | 0 | 78 |
| | 5:45 PM | 20 | 10 | 6 | 0 | 4 | 1 | 3 | 3 | 13 | 3 | 9 | 0 | 72 |
| | VOLUMES | 177 | 148 | 28 | 3 | 38 | 31 | 36 | 40 | 116 | 12 | 38 | 2 | 669 |
| | APPROACH % | 50% | 42% | 8% | 4% | 53% | 43% | 19% | 21% | 60% | 23% | 73% | 4% | |
| | APP/DEPART | 353 | / | 186 | 72 | / | 165 | 192 | / | 72 | 52 | / | 246 | 0 |
| | BEGIN PEAK HR | | 4:45 PM | | | | | | | | | | | |
| | VOLUMES | 100 | 85 | 12 | 1 | 25 | 19 | 13 | 21 | 65 | 5 | 21 | 1 | 368 |
| | APPROACH % | 51% | 43% | 6% | 2% | 56% | 42% | 13% | 21% | 66% | 19% | 78% | 4% | |
| | PEAK HR FACTOR | | 0.758 | | | 0.625 | | | 0.707 | | | 0.750 | | 0.800 |
| | APP/DEPART | 197 | / | 99 | 45 | / | 94 | 99 | / | 35 | 27 | / | 140 | 0 |



# INTERSECTION TURNING MOVEMENT COUNTS

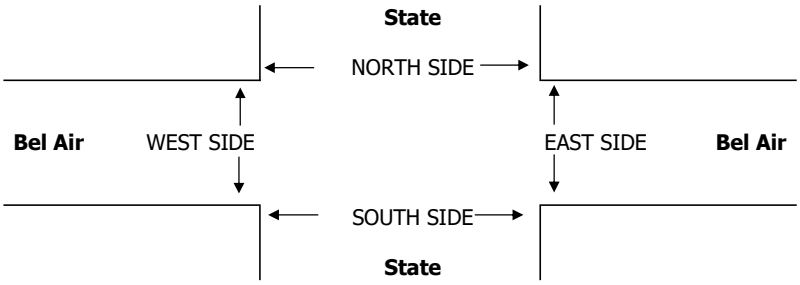
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

| DATE: | LOCATION: | Corona | PROJECT #: | SC3686 |
|---|---|---|---|---|
| Tue, Oct 18, 22 | NORTH & SOUTH: | State | LOCATION #: | 8 |
| | EAST & WEST: | Bel Air | CONTROL: | NO CONTROL |

NOTES:

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

| | | NORTHBOUND Bel Air | | | SOUTHBOUND State | | | EASTBOUND Bel Air | | | WESTBOUND Bel Air | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL 0 | NT 1 | NR X | SL X | ST 1 | SR 0 | EL 0 | ET X | ER 0 | WL X | WT X | WR X | TOTAL |
| AM | 7:00 AM | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| | 7:15 AM | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| | 7:30 AM | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| | 7:45 AM | 0 | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 8 |
| | 8:00 AM | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| | 8:15 AM | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| | 8:30 AM | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| | 8:45 AM | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| | VOLUMES | 3 | 13 | 0 | 0 | 24 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 42 |
| | APPROACH % | 19% | 81% | 0% | 0% | 100% | 0% | 0% | 0% | 100% | 0% | 0% | 0% | |
| | APP/DEPART | 16 | / | 13 | 24 | / | 26 | 2 | / | 0 | 0 | / | 3 | 0 |
| | BEGIN PEAK HR | | 7:00 AM | | | | | | | | | | | |
| | VOLUMES | 2 | 9 | 0 | 0 | 12 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 25 |
| | APPROACH % | 18% | 82% | 0% | 0% | 100% | 0% | 0% | 0% | 100% | 0% | 0% | 0% | |
| | PEAK HR FACTOR | | 0.688 | | | 0.500 | | | 0.500 | | | 0.000 | | 0.781 |
| | APP/DEPART | 11 | / | 9 | 12 | / | 14 | 2 | / | 0 | 0 | / | 2 | 0 |
| PM | 4:00 PM | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5 |
| | 4:15 PM | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 8 |
| | 4:30 PM | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| | 4:45 PM | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| | 5:00 PM | 0 | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 8 |
| | 5:15 PM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| | 5:30 PM | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| | 5:45 PM | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| | VOLUMES | 3 | 11 | 0 | 0 | 20 | 2 | 1 | 0 | 4 | 0 | 0 | 0 | 41 |
| | APPROACH % | 21% | 79% | 0% | 0% | 91% | 9% | 20% | 0% | 80% | 0% | 0% | 0% | |
| | APP/DEPART | 14 | / | 12 | 22 | / | 24 | 5 | / | 0 | 0 | / | 5 | 0 |
| | BEGIN PEAK HR | | 4:15 PM | | | | | | | | | | | |
| | VOLUMES | 1 | 9 | 0 | 0 | 12 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 27 |
| | APPROACH % | 10% | 90% | 0% | 0% | 86% | 14% | 0% | 0% | 100% | 0% | 0% | 0% | |
| | PEAK HR FACTOR | | 0.833 | | | 0.700 | | | 0.375 | | | 0.000 | | 0.844 |
| | APP/DEPART | 10 | / | 9 | 14 | / | 15 | 3 | / | 0 | 0 | / | 3 | 0 |



# INTERSECTION TURNING MOVEMENT COUNTS

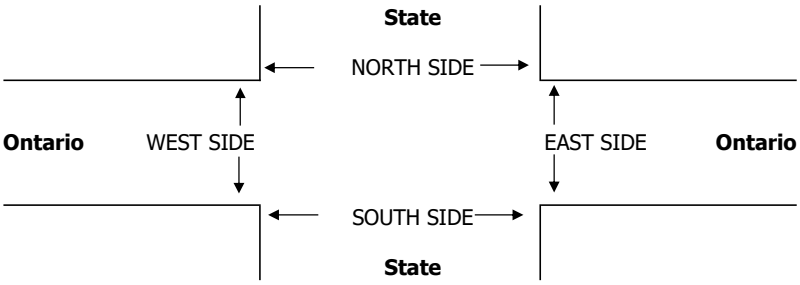
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

| DATE: | LOCATION: | Corona | PROJECT #: | SC3686 |
|---|---|---|---|---|
| Tue, Oct 18, 22 | NORTH & SOUTH: | State | LOCATION #: | 9 |
| | EAST & WEST: | Ontario | CONTROL: | STOP N/S |

NOTES:

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

| | | NORTHBOUND State | | | SOUTHBOUND State | | | EASTBOUND Ontario | | | WESTBOUND Ontario | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL 0 | NT 1 | NR 0 | SL 0 | ST 1 | SR 0 | EL 1 | ET 2 | ER 0 | WL 1 | WT 1 | WR 0 | TOTAL |
| AM | 7:00 AM | 4 | 0 | 0 | 1 | 0 | 9 | 6 | 48 | 1 | 1 | 169 | 0 | 239 |
| | 7:15 AM | 1 | 0 | 0 | 6 | 0 | 11 | 4 | 63 | 1 | 1 | 235 | 2 | 324 |
| | 7:30 AM | 0 | 0 | 0 | 9 | 0 | 7 | 5 | 116 | 0 | 0 | 207 | 3 | 347 |
| | 7:45 AM | 1 | 0 | 0 | 2 | 0 | 20 | 12 | 121 | 0 | 0 | 247 | 5 | 408 |
| | 8:00 AM | 2 | 0 | 1 | 9 | 0 | 18 | 12 | 79 | 1 | 0 | 300 | 2 | 424 |
| | 8:15 AM | 2 | 0 | 0 | 4 | 0 | 15 | 12 | 83 | 0 | 1 | 208 | 4 | 329 |
| | 8:30 AM | 0 | 0 | 0 | 4 | 0 | 22 | 11 | 105 | 1 | 0 | 205 | 1 | 349 |
| | 8:45 AM | 0 | 0 | 0 | 5 | 1 | 12 | 13 | 82 | 0 | 1 | 169 | 3 | 286 |
| | VOLUMES | 10 | 0 | 1 | 40 | 1 | 114 | 75 | 697 | 4 | 4 | 1,740 | 20 | 2,706 |
| | APPROACH % | 91% | 0% | 9% | 26% | 1% | 74% | 10% | 90% | 1% | 0% | 99% | 1% | |
| | APP/DEPART | 11 | / | 95 | 155 | / | 8 | 776 | / | 739 | 1,764 | / | 1,864 | 0 |
| | BEGIN PEAK HR | | 7:45 AM | | | | | | | | | | | |
| | VOLUMES | 5 | 0 | 1 | 19 | 0 | 75 | 47 | 388 | 2 | 1 | 960 | 12 | 1,510 |
| | APPROACH % | 83% | 0% | 17% | 20% | 0% | 80% | 11% | 89% | 0% | 0% | 99% | 1% | |
| | PEAK HR FACTOR | | 0.500 | | | 0.870 | | | 0.821 | | | 0.805 | | 0.890 |
| | APP/DEPART | 6 | / | 59 | 94 | / | 3 | 437 | / | 408 | 973 | / | 1,040 | 0 |
| PM | 4:00 PM | 0 | 0 | 1 | 4 | 0 | 18 | 10 | 227 | 1 | 0 | 119 | 3 | 383 |
| | 4:15 PM | 0 | 0 | 0 | 5 | 0 | 11 | 11 | 233 | 0 | 0 | 130 | 2 | 392 |
| | 4:30 PM | 2 | 0 | 0 | 15 | 0 | 19 | 11 | 238 | 3 | 0 | 120 | 3 | 411 |
| | 4:45 PM | 1 | 0 | 0 | 5 | 0 | 11 | 13 | 243 | 0 | 0 | 125 | 5 | 403 |
| | 5:00 PM | 1 | 0 | 0 | 12 | 0 | 18 | 6 | 222 | 2 | 0 | 153 | 4 | 418 |
| | 5:15 PM | 1 | 0 | 0 | 9 | 0 | 10 | 6 | 232 | 1 | 0 | 130 | 1 | 390 |
| | 5:30 PM | 1 | 0 | 0 | 10 | 0 | 8 | 15 | 223 | 1 | 1 | 111 | 6 | 376 |
| | 5:45 PM | 2 | 0 | 0 | 8 | 0 | 9 | 9 | 229 | 0 | 1 | 131 | 1 | 390 |
| | VOLUMES | 8 | 0 | 1 | 68 | 0 | 104 | 81 | 1,847 | 8 | 2 | 1,019 | 25 | 3,163 |
| | APPROACH % | 89% | 0% | 11% | 40% | 0% | 60% | 4% | 95% | 0% | 0% | 97% | 2% | |
| | APP/DEPART | 9 | / | 106 | 172 | / | 10 | 1,936 | / | 1,916 | 1,046 | / | 1,131 | 0 |
| | BEGIN PEAK HR | | 4:15 PM | | | | | | | | | | | |
| | VOLUMES | 4 | 0 | 0 | 37 | 0 | 59 | 41 | 936 | 5 | 0 | 528 | 14 | 1,624 |
| | APPROACH % | 100% | 0% | 0% | 39% | 0% | 61% | 4% | 95% | 1% | 0% | 97% | 3% | |
| | PEAK HR FACTOR | | 0.500 | | | 0.706 | | | 0.959 | | | 0.863 | | 0.971 |
| | APP/DEPART | 4 | / | 55 | 96 | / | 5 | 982 | / | 973 | 542 | / | 591 | 0 |



# INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

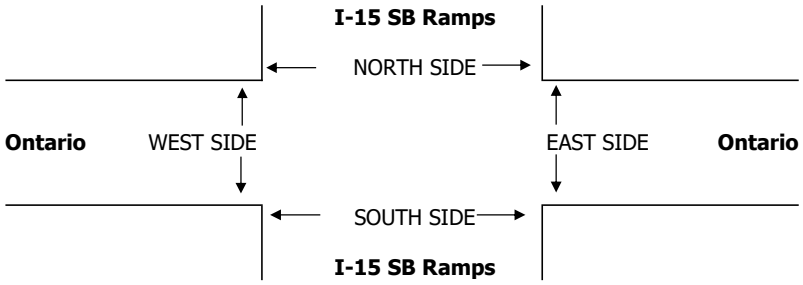
| DATE: | LOCATION: | Corona | PROJECT #: | SC3686 |
|---|---|---|---|---|
| Tue, Oct 18, 22 | NORTH & SOUTH: | I-15 SB Ramps | LOCATION #: | 10 |
| | EAST & WEST: | Ontario | CONTROL: | SIGNAL |

NOTES:

Queue EB/WB PM

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

| | | NORTHBOUND I-15 SB Ramps | | | SOUTHBOUND I-15 SB Ramps | | | EASTBOUND Ontario | | | WESTBOUND Ontario | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL X | NT X | NR X | SL 0,5 | ST 0,5 | SR 2 | EL X | ET 2 | ER 1 | WL 1 | WT 2 | WR X | TOTAL |
| AM | 7:00 AM | 0 | 0 | 0 | 81 | 2 | 109 | 0 | 143 | 69 | 3 | 238 | 0 | 645 |
| | 7:15 AM | 0 | 0 | 0 | 66 | 0 | 128 | 0 | 164 | 70 | 3 | 253 | 0 | 684 |
| | 7:30 AM | 0 | 0 | 0 | 81 | 0 | 145 | 0 | 202 | 77 | 3 | 296 | 0 | 804 |
| | 7:45 AM | 0 | 0 | 0 | 70 | 0 | 224 | 0 | 204 | 108 | 6 | 358 | 0 | 970 |
| | 8:00 AM | 0 | 0 | 0 | 65 | 0 | 271 | 0 | 214 | 121 | 6 | 381 | 0 | 1,058 |
| | 8:15 AM | 0 | 0 | 0 | 65 | 2 | 252 | 0 | 256 | 111 | 10 | 340 | 0 | 1,036 |
| | 8:30 AM | 0 | 0 | 0 | 62 | 0 | 191 | 0 | 276 | 127 | 7 | 266 | 0 | 929 |
| | 8:45 AM | 0 | 0 | 0 | 56 | 0 | 166 | 0 | 210 | 91 | 7 | 255 | 0 | 785 |
| | VOLUMES | 0 | 0 | 0 | 546 | 4 | 1,486 | 0 | 1,669 | 774 | 45 | 2,387 | 0 | 6,911 |
| | APPROACH % | 0% | 0% | 0% | 27% | 0% | 73% | 0% | 68% | 32% | 2% | 98% | 0% | |
| | APP/DEPART | 0 | / | 0 | 2,036 | / | 823 | 2,443 | / | 2,215 | 2,432 | / | 3,873 | 0 |
| | BEGIN PEAK HR | | 7:45 AM | | | | | | | | | | | |
| | VOLUMES | 0 | 0 | 0 | 262 | 2 | 938 | 0 | 950 | 467 | 29 | 1,345 | 0 | 3,993 |
| | APPROACH % | 0% | 0% | 0% | 22% | 0% | 78% | 0% | 67% | 33% | 2% | 98% | 0% | |
| | PEAK HR FACTOR | | 0.000 | | | 0.894 | | | 0.879 | | | 0.888 | | 0.944 |
| | APP/DEPART | 0 | / | 0 | 1,202 | / | 498 | 1,417 | / | 1,212 | 1,374 | / | 2,283 | 0 |
| PM | 4:00 PM | 0 | 0 | 0 | 101 | 0 | 146 | 0 | 320 | 115 | 6 | 180 | 0 | 868 |
| | 4:15 PM | 0 | 0 | 0 | 90 | 0 | 185 | 0 | 323 | 129 | 6 | 190 | 0 | 923 |
| | 4:30 PM | 0 | 0 | 0 | 103 | 0 | 135 | 0 | 280 | 106 | 6 | 180 | 0 | 810 |
| | 4:45 PM | 0 | 0 | 0 | 105 | 2 | 158 | 0 | 259 | 101 | 2 | 205 | 0 | 832 |
| | 5:00 PM | 0 | 0 | 0 | 83 | 0 | 169 | 0 | 299 | 113 | 4 | 213 | 0 | 881 |
| | 5:15 PM | 0 | 0 | 0 | 105 | 1 | 172 | 0 | 268 | 92 | 5 | 202 | 0 | 845 |
| | 5:30 PM | 0 | 0 | 0 | 105 | 0 | 161 | 0 | 282 | 122 | 8 | 203 | 0 | 881 |
| | 5:45 PM | 0 | 0 | 0 | 108 | 1 | 172 | 0 | 245 | 101 | 6 | 222 | 0 | 855 |
| | VOLUMES | 0 | 0 | 0 | 800 | 4 | 1,298 | 0 | 2,276 | 879 | 43 | 1,595 | 0 | 6,895 |
| | APPROACH % | 0% | 0% | 0% | 38% | 0% | 62% | 0% | 72% | 28% | 3% | 97% | 0% | |
| | APP/DEPART | 0 | / | 0 | 2,102 | / | 925 | 3,155 | / | 3,077 | 1,638 | / | 2,893 | 0 |
| | BEGIN PEAK HR | | 5:00 PM | | | | | | | | | | | |
| | VOLUMES | 0 | 0 | 0 | 401 | 2 | 674 | 0 | 1,094 | 428 | 23 | 840 | 0 | 3,462 |
| | APPROACH % | 0% | 0% | 0% | 37% | 0% | 63% | 0% | 72% | 28% | 3% | 97% | 0% | |
| | PEAK HR FACTOR | | 0.000 | | | 0.958 | | | 0.924 | | | 0.946 | | 0.982 |
| | APP/DEPART | 0 | / | 0 | 1,077 | / | 452 | 1,522 | / | 1,496 | 863 | / | 1,514 | 0 |



# INTERSECTION TURNING MOVEMENT COUNTS

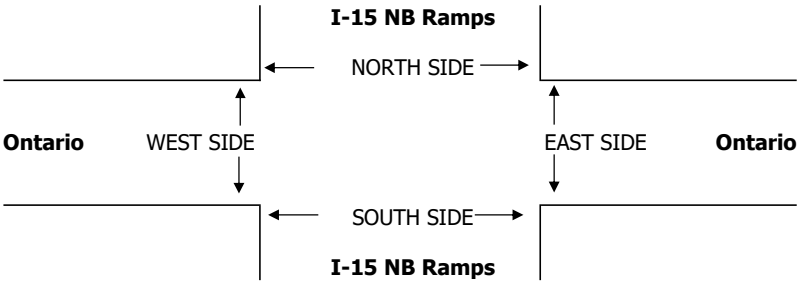
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

| DATE: | LOCATION: | Corona | PROJECT #: | SC3686 |
|---|---|---|---|---|
| Tue, Oct 18, 22 | NORTH & SOUTH: | I-15 NB Ramps | LOCATION #: | 11 |
| | EAST & WEST: | Ontario | CONTROL: | SIGNAL |

NOTES:

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

| | | NORTHBOUND I-15 NB Ramps | | | SOUTHBOUND I-15 NB Ramps | | | EASTBOUND Ontario | | | WESTBOUND Ontario | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL 1.5 | NT 0.5 | NR 1 | SL X | ST X | SR X | EL 2 | ET 1 | ER X | WL X | WT 2 | WR 1 | TOTAL |
| AM | 7:00 AM | 81 | 0 | 0 | 0 | 0 | 0 | 131 | 93 | 0 | 0 | 160 | 72 | 537 |
| | 7:15 AM | 98 | 0 | 8 | 0 | 0 | 0 | 128 | 102 | 0 | 0 | 164 | 81 | 581 |
| | 7:30 AM | 95 | 1 | 9 | 0 | 0 | 0 | 155 | 128 | 0 | 0 | 204 | 82 | 674 |
| | 7:45 AM | 86 | 1 | 8 | 0 | 0 | 0 | 158 | 116 | 0 | 0 | 278 | 65 | 712 |
| | 8:00 AM | 87 | 0 | 7 | 0 | 0 | 0 | 152 | 127 | 0 | 0 | 300 | 62 | 735 |
| | 8:15 AM | 86 | 0 | 9 | 0 | 0 | 0 | 153 | 168 | 0 | 0 | 264 | 61 | 741 |
| | 8:30 AM | 82 | 1 | 8 | 0 | 0 | 0 | 145 | 189 | 0 | 0 | 191 | 55 | 671 |
| | 8:45 AM | 99 | 0 | 6 | 0 | 0 | 0 | 141 | 125 | 0 | 0 | 163 | 48 | 582 |
| | VOLUMES | 714 | 3 | 55 | 0 | 0 | 0 | 1,163 | 1,048 | 0 | 0 | 1,724 | 526 | 5,233 |
| | APPROACH % | 92% | 0% | 7% | 0% | 0% | 0% | 53% | 47% | 0% | 0% | 77% | 23% | |
| | APP/DEPART | 772 | / | 1,692 | 0 | / | 0 | 2,211 | / | 1,103 | 2,250 | / | 2,438 | 0 |
| | BEGIN PEAK HR | | 7:30 AM | | | | | | | | | | | |
| | VOLUMES | 354 | 2 | 33 | 0 | 0 | 0 | 618 | 539 | 0 | 0 | 1,046 | 270 | 2,862 |
| | APPROACH % | 91% | 1% | 8% | 0% | 0% | 0% | 53% | 47% | 0% | 0% | 79% | 21% | |
| | PEAK HR FACTOR | | 0.926 | | | 0.000 | | | 0.901 | | | 0.909 | | 0.966 |
| | APP/DEPART | 389 | / | 890 | 0 | / | 0 | 1,157 | / | 572 | 1,316 | / | 1,400 | 0 |
| PM | 4:00 PM | 78 | 0 | 8 | 0 | 0 | 0 | 163 | 258 | 0 | 0 | 108 | 67 | 682 |
| | 4:15 PM | 106 | 1 | 8 | 0 | 0 | 0 | 120 | 293 | 0 | 0 | 90 | 73 | 691 |
| | 4:30 PM | 86 | 0 | 11 | 0 | 0 | 0 | 131 | 252 | 0 | 0 | 100 | 71 | 651 |
| | 4:45 PM | 84 | 1 | 8 | 0 | 0 | 0 | 135 | 229 | 0 | 0 | 123 | 67 | 647 |
| | 5:00 PM | 90 | 1 | 7 | 0 | 0 | 0 | 123 | 260 | 0 | 0 | 127 | 64 | 672 |
| | 5:15 PM | 85 | 0 | 11 | 0 | 0 | 0 | 122 | 251 | 0 | 0 | 122 | 52 | 643 |
| | 5:30 PM | 81 | 1 | 8 | 0 | 0 | 0 | 117 | 264 | 0 | 0 | 130 | 50 | 651 |
| | 5:45 PM | 112 | 1 | 11 | 0 | 0 | 0 | 108 | 245 | 0 | 0 | 118 | 45 | 640 |
| | VOLUMES | 722 | 5 | 72 | 0 | 0 | 0 | 1,019 | 2,052 | 0 | 0 | 918 | 489 | 5,277 |
| | APPROACH % | 90% | 1% | 9% | 0% | 0% | 0% | 33% | 67% | 0% | 0% | 65% | 35% | |
| | APP/DEPART | 799 | / | 1,513 | 0 | / | 0 | 3,071 | / | 2,124 | 1,407 | / | 1,640 | 0 |
| | BEGIN PEAK HR | | 4:00 PM | | | | | | | | | | | |
| | VOLUMES | 354 | 2 | 35 | 0 | 0 | 0 | 549 | 1,032 | 0 | 0 | 421 | 278 | 2,671 |
| | APPROACH % | 91% | 1% | 9% | 0% | 0% | 0% | 35% | 65% | 0% | 0% | 60% | 40% | |
| | PEAK HR FACTOR | | 0.850 | | | 0.000 | | | 0.939 | | | 0.920 | | 0.966 |
| | APP/DEPART | 391 | / | 829 | 0 | / | 0 | 1,581 | / | 1,067 | 699 | / | 775 | 0 |



# INTERSECTION TURNING MOVEMENT COUNTS

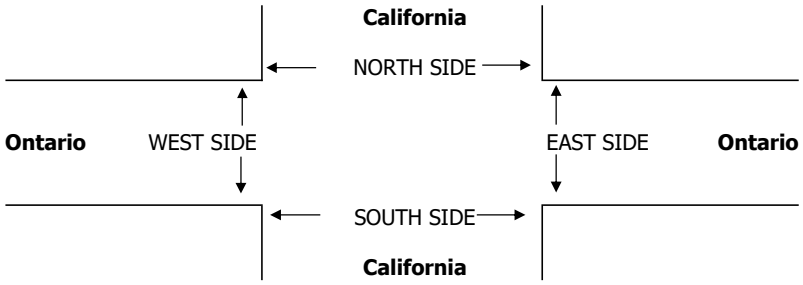
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

| DATE: | LOCATION: | Corona | PROJECT #: | SC3686 |
|---|---|---|---|---|
| Tue, Oct 18, 22 | NORTH & SOUTH: | California | LOCATION #: | 12 |
| | EAST & WEST: | Ontario | CONTROL: | SIGNAL |

NOTES:

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

| | | NORTHBOUND California | | | SOUTHBOUND California | | | EASTBOUND Ontario | | | WESTBOUND Ontario | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL 2 | NT 1 | NR 1 | SL 2 | ST 1 | SR 1 | EL 1 | ET 3 | ER 1 | WL 2 | WT 3 | WR 0 | TOTAL |
| AM | 7:00 AM | 17 | 20 | 11 | 30 | 5 | 3 | 14 | 79 | 5 | 27 | 135 | 50 | 396 |
| | 7:15 AM | 28 | 31 | 12 | 35 | 9 | 9 | 27 | 106 | 8 | 30 | 179 | 41 | 515 |
| | 7:30 AM | 21 | 20 | 10 | 28 | 3 | 9 | 31 | 148 | 5 | 36 | 252 | 43 | 606 |
| | 7:45 AM | 21 | 35 | 17 | 41 | 18 | 10 | 32 | 187 | 8 | 44 | 271 | 76 | 760 |
| | 8:00 AM | 29 | 55 | 15 | 40 | 10 | 9 | 54 | 193 | 24 | 73 | 255 | 80 | 837 |
| | 8:15 AM | 23 | 60 | 31 | 47 | 21 | 22 | 58 | 174 | 12 | 68 | 246 | 69 | 831 |
| | 8:30 AM | 34 | 49 | 40 | 58 | 27 | 17 | 41 | 199 | 19 | 51 | 180 | 65 | 780 |
| | 8:45 AM | 26 | 45 | 22 | 56 | 28 | 24 | 44 | 148 | 15 | 38 | 160 | 37 | 643 |
| | VOLUMES | 199 | 315 | 158 | 335 | 121 | 103 | 301 | 1,234 | 96 | 367 | 1,678 | 461 | 5,368 |
| | APPROACH % | 30% | 47% | 24% | 60% | 22% | 18% | 18% | 76% | 6% | 15% | 67% | 18% | |
| | APP/DEPART | 672 | / | 1,036 | 559 | / | 562 | 1,631 | / | 1,750 | 2,506 | / | 2,020 | 0 |
| | BEGIN PEAK HR | | 7:45 AM | | | | | | | | | | | |
| | VOLUMES | 107 | 199 | 103 | 186 | 76 | 58 | 185 | 753 | 63 | 236 | 952 | 290 | 3,208 |
| | APPROACH % | 26% | 49% | 25% | 58% | 24% | 18% | 18% | 75% | 6% | 16% | 64% | 20% | |
| | PEAK HR FACTOR | | 0.831 | | | 0.784 | | | 0.923 | | | 0.906 | | 0.958 |
| | APP/DEPART | 409 | / | 650 | 320 | / | 355 | 1,001 | / | 1,062 | 1,478 | / | 1,141 | 0 |
| PM | 4:00 PM | 51 | 54 | 46 | 92 | 63 | 21 | 66 | 202 | 50 | 78 | 134 | 32 | 889 |
| | 4:15 PM | 58 | 59 | 39 | 94 | 51 | 31 | 67 | 187 | 42 | 86 | 158 | 29 | 901 |
| | 4:30 PM | 42 | 47 | 25 | 94 | 45 | 34 | 58 | 213 | 39 | 77 | 125 | 20 | 819 |
| | 4:45 PM | 50 | 45 | 29 | 80 | 50 | 32 | 58 | 197 | 32 | 74 | 151 | 38 | 836 |
| | 5:00 PM | 53 | 42 | 36 | 107 | 58 | 34 | 50 | 171 | 31 | 85 | 142 | 38 | 847 |
| | 5:15 PM | 51 | 55 | 29 | 85 | 56 | 33 | 64 | 188 | 23 | 78 | 152 | 26 | 840 |
| | 5:30 PM | 61 | 38 | 36 | 89 | 56 | 28 | 52 | 170 | 30 | 86 | 159 | 41 | 846 |
| | 5:45 PM | 42 | 45 | 33 | 71 | 45 | 27 | 60 | 197 | 30 | 89 | 164 | 17 | 820 |
| | VOLUMES | 408 | 385 | 273 | 712 | 424 | 240 | 475 | 1,525 | 277 | 653 | 1,185 | 241 | 6,798 |
| | APPROACH % | 38% | 36% | 26% | 52% | 31% | 17% | 21% | 67% | 12% | 31% | 57% | 12% | |
| | APP/DEPART | 1,066 | / | 993 | 1,376 | / | 1,245 | 2,277 | / | 2,619 | 2,079 | / | 1,941 | 0 |
| | BEGIN PEAK HR | | 4:00 PM | | | | | | | | | | | |
| | VOLUMES | 201 | 205 | 139 | 360 | 209 | 118 | 249 | 799 | 163 | 315 | 568 | 119 | 3,445 |
| | APPROACH % | 37% | 38% | 26% | 52% | 30% | 17% | 21% | 66% | 13% | 31% | 57% | 12% | |
| | PEAK HR FACTOR | | 0.873 | | | 0.976 | | | 0.952 | | | 0.918 | | 0.956 |
| | APP/DEPART | 545 | / | 518 | 687 | / | 638 | 1,211 | / | 1,347 | 1,002 | / | 942 | 0 |



# INTERSECTION TURNING MOVEMENT COUNTS

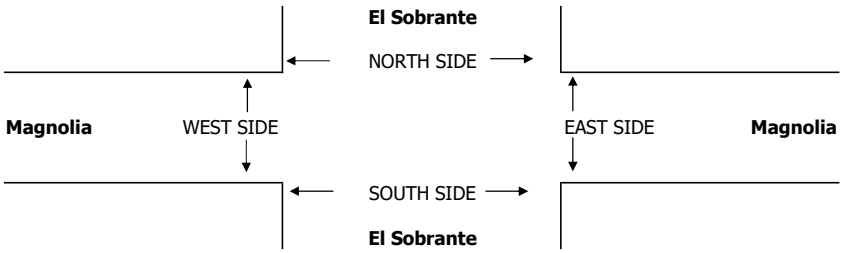
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

| DATE: | LOCATION: | Corona | PROJECT #: | SC3686 |
|---|---|---|---|---|
| Tue, Oct 18, 22 | NORTH & SOUTH: | El Sobrante | LOCATION #: | 13 |
| | EAST & WEST: | Magnolia | CONTROL: | SIGNAL |

NOTES:

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

| | | NORTHBOUND El Sobrante | | | SOUTHBOUND El Sobrante | | | EASTBOUND Magnolia | | | WESTBOUND Magnolia | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL 1 | NT 0.5 | NR 0.5 | SL 2 | ST 0.5 | SR 0.5 | EL 1 | ET 3 | ER 0 | WL 1 | WT 3 | WR 0 | TOTAL |
| AM | 7:00 AM | 2 | 2 | 15 | 22 | 2 | 8 | 10 | 259 | 7 | 10 | 245 | 44 | 626 |
| | 7:15 AM | 6 | 1 | 19 | 25 | 6 | 16 | 11 | 296 | 6 | 17 | 333 | 46 | 782 |
| | 7:30 AM | 2 | 5 | 22 | 28 | 8 | 14 | 13 | 314 | 5 | 17 | 396 | 53 | 877 |
| | 7:45 AM | 4 | 5 | 21 | 38 | 10 | 21 | 10 | 290 | 10 | 21 | 380 | 46 | 856 |
| | 8:00 AM | 4 | 5 | 32 | 33 | 13 | 39 | 24 | 285 | 15 | 29 | 387 | 40 | 906 |
| | 8:15 AM | 5 | 3 | 31 | 19 | 5 | 28 | 12 | 397 | 11 | 29 | 449 | 39 | 1,028 |
| | 8:30 AM | 7 | 3 | 21 | 24 | 1 | 8 | 15 | 331 | 14 | 29 | 363 | 42 | 858 |
| | 8:45 AM | 7 | 2 | 28 | 24 | 4 | 8 | 20 | 261 | 14 | 27 | 336 | 49 | 780 |
| | VOLUMES | 37 | 26 | 189 | 213 | 49 | 142 | 115 | 2,433 | 82 | 179 | 2,889 | 359 | 6,713 |
| | APPROACH % | 15% | 10% | 75% | 53% | 12% | 35% | 4% | 93% | 3% | 5% | 84% | 10% | |
| | APP/DEPART | 252 | / | 499 | 404 | / | 310 | 2,630 | / | 2,835 | 3,427 | / | 3,069 | 0 |
| | BEGIN PEAK HR | | 7:30 AM | | | | | | | | | | | |
| | VOLUMES | 15 | 18 | 106 | 118 | 36 | 102 | 59 | 1,286 | 41 | 96 | 1,612 | 178 | 3,667 |
| | APPROACH % | 11% | 13% | 76% | 46% | 14% | 40% | 4% | 93% | 3% | 5% | 85% | 9% | |
| | PEAK HR FACTOR | | 0.848 | | | 0.753 | | | 0.825 | | | 0.912 | | 0.892 |
| | APP/DEPART | 139 | / | 255 | 256 | / | 173 | 1,386 | / | 1,510 | 1,886 | / | 1,729 | 0 |
| PM | 4:00 PM | 15 | 8 | 51 | 43 | 12 | 33 | 21 | 441 | 24 | 29 | 377 | 42 | 1,096 |
| | 4:15 PM | 25 | 7 | 51 | 41 | 10 | 26 | 12 | 357 | 24 | 36 | 358 | 34 | 981 |
| | 4:30 PM | 14 | 7 | 38 | 36 | 7 | 35 | 19 | 398 | 16 | 30 | 340 | 62 | 1,002 |
| | 4:45 PM | 16 | 6 | 52 | 39 | 15 | 31 | 32 | 346 | 11 | 23 | 320 | 48 | 939 |
| | 5:00 PM | 9 | 6 | 44 | 46 | 7 | 32 | 19 | 392 | 14 | 24 | 404 | 56 | 1,053 |
| | 5:15 PM | 9 | 3 | 37 | 38 | 11 | 23 | 8 | 386 | 16 | 23 | 390 | 53 | 997 |
| | 5:30 PM | 17 | 7 | 48 | 34 | 15 | 18 | 11 | 364 | 15 | 29 | 375 | 52 | 985 |
| | 5:45 PM | 12 | 7 | 31 | 33 | 12 | 26 | 14 | 351 | 15 | 28 | 371 | 54 | 954 |
| | VOLUMES | 117 | 51 | 352 | 310 | 89 | 224 | 136 | 3,035 | 135 | 222 | 2,935 | 401 | 8,007 |
| | APPROACH % | 23% | 10% | 68% | 50% | 14% | 36% | 4% | 92% | 4% | 6% | 82% | 11% | |
| | APP/DEPART | 520 | / | 586 | 623 | / | 444 | 3,306 | / | 3,699 | 3,558 | / | 3,278 | 0 |
| | BEGIN PEAK HR | | 4:00 PM | | | | | | | | | | | |
| | VOLUMES | 70 | 28 | 192 | 159 | 44 | 125 | 84 | 1,542 | 75 | 118 | 1,395 | 186 | 4,018 |
| | APPROACH % | 24% | 10% | 66% | 48% | 13% | 38% | 5% | 91% | 4% | 7% | 82% | 11% | |
| | PEAK HR FACTOR | | 0.873 | | | 0.932 | | | 0.875 | | | 0.948 | | 0.917 |
| | APP/DEPART | 290 | / | 297 | 328 | / | 237 | 1,701 | / | 1,893 | 1,699 | / | 1,591 | 0 |



# INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

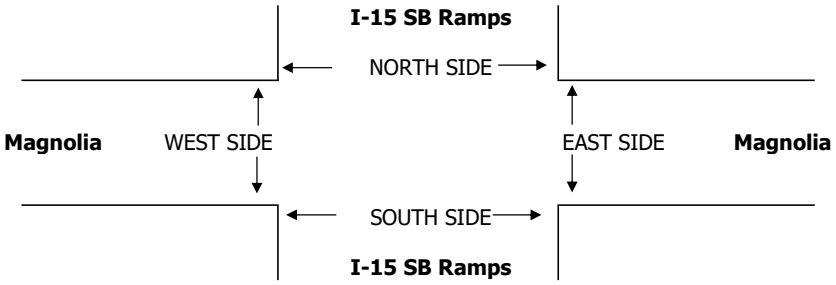
| DATE: | LOCATION: | Corona | PROJECT #: | SC3686 |
|---|---|---|---|---|
| Tue, Oct 18, 22 | NORTH & SOUTH: | I-15 SB Ramps | LOCATION #: | 14 |
| | EAST & WEST: | Magnolia | CONTROL: | SIGNAL |

NOTES:

Queue WB/SB AM/PM

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

| | | NORTHBOUND I-15 SB Ramps | | | SOUTHBOUND I-15 SB Ramps | | | EASTBOUND Magnolia | | | WESTBOUND Magnolia | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL X | NT X | NR X | SL 1.5 | ST 0.5 | SR 2 | EL X | ET 4 | ER 0 | WL 2 | WT 3 | WR X | TOTAL |
| AM | 7:00 AM | 0 | 0 | 0 | 105 | 0 | 204 | 0 | 272 | 24 | 43 | 95 | 0 | 743 |
| | 7:15 AM | 0 | 0 | 0 | 71 | 0 | 249 | 0 | 311 | 29 | 48 | 147 | 0 | 855 |
| | 7:30 AM | 0 | 0 | 0 | 92 | 0 | 289 | 0 | 319 | 45 | 75 | 177 | 0 | 997 |
| | 7:45 AM | 0 | 0 | 0 | 124 | 0 | 270 | 0 | 304 | 45 | 87 | 176 | 0 | 1,006 |
| | 8:00 AM | 0 | 0 | 0 | 134 | 0 | 277 | 0 | 301 | 49 | 90 | 179 | 0 | 1,030 |
| | 8:15 AM | 0 | 0 | 0 | 110 | 0 | 297 | 0 | 407 | 40 | 75 | 225 | 0 | 1,154 |
| | 8:30 AM | 0 | 0 | 0 | 102 | 0 | 298 | 0 | 337 | 32 | 45 | 136 | 0 | 950 |
| | 8:45 AM | 0 | 0 | 0 | 104 | 0 | 249 | 0 | 269 | 44 | 46 | 163 | 0 | 875 |
| | VOLUMES | 0 | 0 | 0 | 842 | 0 | 2,133 | 0 | 2,520 | 308 | 509 | 1,298 | 0 | 7,610 |
| | APPROACH % | 0% | 0% | 0% | 28% | 0% | 72% | 0% | 89% | 11% | 28% | 72% | 0% | |
| | APP/DEPART | 0 | / | 0 | 2,975 | / | 816 | 2,828 | / | 3,363 | 1,807 | / | 3,431 | 0 |
| | BEGIN PEAK HR | | 7:30 AM | | | | | | | | | | | |
| | VOLUMES | 0 | 0 | 0 | 460 | 0 | 1,133 | 0 | 1,331 | 179 | 327 | 757 | 0 | 4,187 |
| | APPROACH % | 0% | 0% | 0% | 29% | 0% | 71% | 0% | 88% | 12% | 30% | 70% | 0% | |
| | PEAK HR FACTOR | | 0.000 | | | 0.969 | | | 0.845 | | | 0.903 | | 0.907 |
| | APP/DEPART | 0 | / | 0 | 1,593 | / | 506 | 1,510 | / | 1,791 | 1,084 | / | 1,890 | 0 |
| PM | 4:00 PM | 0 | 0 | 0 | 71 | 0 | 284 | 0 | 484 | 51 | 111 | 164 | 0 | 1,165 |
| | 4:15 PM | 0 | 0 | 0 | 79 | 0 | 272 | 0 | 402 | 47 | 85 | 156 | 0 | 1,041 |
| | 4:30 PM | 0 | 0 | 0 | 80 | 0 | 289 | 0 | 425 | 47 | 85 | 143 | 0 | 1,069 |
| | 4:45 PM | 0 | 0 | 0 | 98 | 0 | 280 | 0 | 394 | 43 | 86 | 111 | 0 | 1,012 |
| | 5:00 PM | 0 | 0 | 0 | 89 | 0 | 317 | 0 | 445 | 37 | 110 | 167 | 0 | 1,165 |
| | 5:15 PM | 0 | 0 | 0 | 86 | 0 | 281 | 0 | 412 | 49 | 88 | 183 | 0 | 1,099 |
| | 5:30 PM | 0 | 0 | 0 | 96 | 0 | 319 | 0 | 392 | 54 | 66 | 137 | 0 | 1,064 |
| | 5:45 PM | 0 | 0 | 0 | 107 | 0 | 310 | 0 | 375 | 40 | 69 | 147 | 0 | 1,048 |
| | VOLUMES | 0 | 0 | 0 | 706 | 0 | 2,352 | 0 | 3,329 | 368 | 700 | 1,208 | 0 | 8,663 |
| | APPROACH % | 0% | 0% | 0% | 23% | 0% | 77% | 0% | 90% | 10% | 37% | 63% | 0% | |
| | APP/DEPART | 0 | / | 0 | 3,058 | / | 1,066 | 3,697 | / | 4,037 | 1,908 | / | 3,560 | 0 |
| | BEGIN PEAK HR | | 5:00 PM | | | | | | | | | | | |
| | VOLUMES | 0 | 0 | 0 | 378 | 0 | 1,227 | 0 | 1,624 | 180 | 333 | 634 | 0 | 4,376 |
| | APPROACH % | 0% | 0% | 0% | 24% | 0% | 76% | 0% | 90% | 10% | 34% | 66% | 0% | |
| | PEAK HR FACTOR | | 0.000 | | | 0.962 | | | 0.936 | | | 0.873 | | 0.939 |
| | APP/DEPART | 0 | / | 0 | 1,605 | / | 512 | 1,804 | / | 2,003 | 967 | / | 1,861 | 0 |



# INTERSECTION TURNING MOVEMENT COUNTS

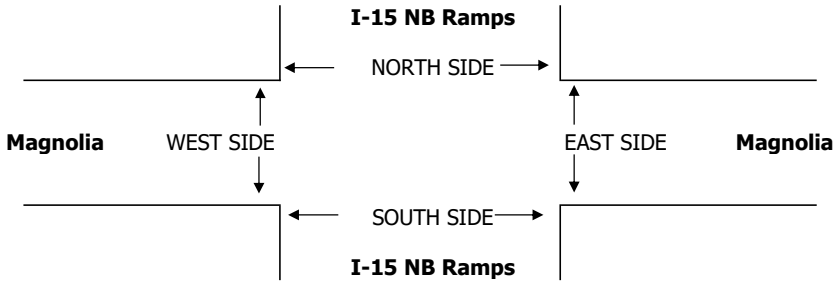
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

| DATE: | LOCATION: | Corona | PROJECT #: | SC3686 |
|---|---|---|---|---|
| Tue, Oct 18, 22 | NORTH & SOUTH: | I-15 NB Ramps | LOCATION #: | 15 |
| | EAST & WEST: | Magnolia | CONTROL: | SIGNAL |

NOTES:

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

| | | NORTHBOUND I-15 NB Ramps | | | SOUTHBOUND I-15 NB Ramps | | | EASTBOUND Magnolia | | | WESTBOUND Magnolia | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL 2 | NT X | NR 1 | SL X | ST X | SR X | EL X | ET 3 | ER 2 | WL X | WT 3 | WR 1 | TOTAL |
| AM | 7:00 AM | 32 | 0 | 138 | 0 | 0 | 0 | 0 | 172 | 205 | 0 | 106 | 92 | 745 |
| | 7:15 AM | 66 | 0 | 108 | 0 | 0 | 0 | 0 | 137 | 245 | 0 | 129 | 85 | 770 |
| | 7:30 AM | 74 | 0 | 126 | 0 | 0 | 0 | 0 | 171 | 240 | 0 | 178 | 70 | 859 |
| | 7:45 AM | 74 | 0 | 144 | 0 | 0 | 0 | 0 | 235 | 193 | 0 | 189 | 72 | 907 |
| | 8:00 AM | 55 | 0 | 104 | 0 | 0 | 0 | 0 | 239 | 196 | 0 | 214 | 98 | 906 |
| | 8:15 AM | 59 | 0 | 97 | 0 | 0 | 0 | 0 | 284 | 231 | 0 | 241 | 83 | 995 |
| | 8:30 AM | 61 | 0 | 131 | 0 | 0 | 0 | 0 | 230 | 209 | 0 | 125 | 101 | 857 |
| | 8:45 AM | 90 | 0 | 125 | 0 | 0 | 0 | 0 | 209 | 164 | 0 | 119 | 96 | 803 |
| | VOLUMES | 511 | 0 | 973 | 0 | 0 | 0 | 0 | 1,677 | 1,683 | 0 | 1,301 | 697 | 6,842 |
| | APPROACH % | 34% | 0% | 66% | 0% | 0% | 0% | 0% | 50% | 50% | 0% | 65% | 35% | |
| | APP/DEPART | 1,484 | / | 697 | 0 | / | 1,683 | 3,360 | / | 2,650 | 1,998 | / | 1,812 | 0 |
| | BEGIN PEAK HR | | 7:30 AM | | | | | | | | | | | |
| | VOLUMES | 262 | 0 | 471 | 0 | 0 | 0 | 0 | 929 | 860 | 0 | 822 | 323 | 3,667 |
| | APPROACH % | 36% | 0% | 64% | 0% | 0% | 0% | 0% | 52% | 48% | 0% | 72% | 28% | |
| | PEAK HR FACTOR | | 0.841 | | | 0.000 | | | 0.868 | | | 0.883 | | 0.921 |
| | APP/DEPART | 733 | / | 323 | 0 | / | 860 | 1,789 | / | 1,400 | 1,145 | / | 1,084 | 0 |
| PM | 4:00 PM | 43 | 0 | 107 | 0 | 0 | 0 | 0 | 289 | 266 | 0 | 229 | 148 | 1,082 |
| | 4:15 PM | 44 | 0 | 106 | 0 | 0 | 0 | 0 | 249 | 232 | 0 | 197 | 138 | 966 |
| | 4:30 PM | 31 | 0 | 104 | 0 | 0 | 0 | 0 | 250 | 255 | 0 | 201 | 118 | 959 |
| | 4:45 PM | 40 | 0 | 86 | 0 | 0 | 0 | 0 | 246 | 246 | 0 | 157 | 147 | 922 |
| | 5:00 PM | 40 | 0 | 85 | 0 | 0 | 0 | 0 | 238 | 296 | 0 | 237 | 112 | 1,008 |
| | 5:15 PM | 37 | 0 | 101 | 0 | 0 | 0 | 0 | 251 | 247 | 0 | 234 | 178 | 1,048 |
| | 5:30 PM | 53 | 0 | 89 | 0 | 0 | 0 | 0 | 229 | 259 | 0 | 155 | 125 | 910 |
| | 5:45 PM | 48 | 0 | 93 | 0 | 0 | 0 | 0 | 219 | 263 | 0 | 168 | 88 | 879 |
| | VOLUMES | 336 | 0 | 771 | 0 | 0 | 0 | 0 | 1,971 | 2,064 | 0 | 1,578 | 1,054 | 7,774 |
| | APPROACH % | 30% | 0% | 70% | 0% | 0% | 0% | 0% | 49% | 51% | 0% | 60% | 40% | |
| | APP/DEPART | 1,107 | / | 1,054 | 0 | / | 2,064 | 4,035 | / | 2,742 | 2,632 | / | 1,914 | 0 |
| | BEGIN PEAK HR | | 4:30 PM | | | | | | | | | | | |
| | VOLUMES | 148 | 0 | 376 | 0 | 0 | 0 | 0 | 985 | 1,044 | 0 | 829 | 555 | 3,937 |
| | APPROACH % | 28% | 0% | 72% | 0% | 0% | 0% | 0% | 49% | 51% | 0% | 60% | 40% | |
| | PEAK HR FACTOR | | 0.949 | | | 0.000 | | | 0.950 | | | 0.840 | | 0.939 |
| | APP/DEPART | 524 | / | 555 | 0 | / | 1,044 | 2,029 | / | 1,361 | 1,384 | / | 977 | 0 |



# INTERSECTION TURNING MOVEMENT COUNTS

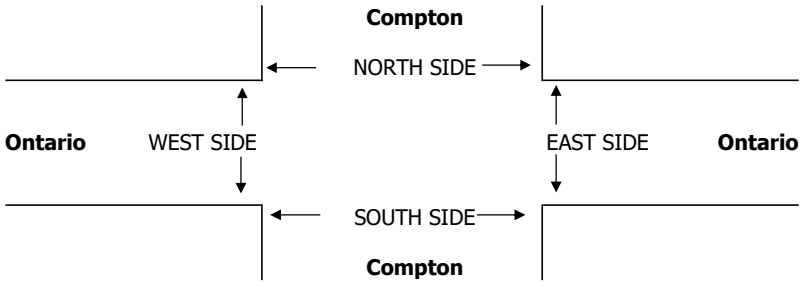
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

| DATE: | LOCATION: | Corona | PROJECT #: | SC3995 |
|---|---|---|---|---|
| Tue, Apr 25, 23 | NORTH & SOUTH: | Compton | LOCATION #: | 16 |
| | EAST & WEST: | Ontario | CONTROL: | SIGNAL |

NOTES:

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

| | | NORTHBOUND Compton | | | SOUTHBOUND Compton | | | EASTBOUND Ontario | | | WESTBOUND Ontario | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LANES: | NL X | NT X | NR 1 | SL X | ST X | SR 1 | EL X | ET 3 | ER 0 | WL 1 | WT 2 | WR 1 | TOTAL |
| AM | 7:00 AM | 0 | 0 | 57 | 0 | 0 | 30 | 0 | 151 | 10 | 26 | 161 | 89 | 524 |
| | 7:15 AM | 0 | 0 | 73 | 0 | 0 | 28 | 0 | 164 | 8 | 37 | 206 | 82 | 598 |
| | 7:30 AM | 0 | 0 | 68 | 0 | 0 | 24 | 0 | 204 | 3 | 42 | 267 | 118 | 726 |
| | 7:45 AM | 0 | 0 | 69 | 0 | 0 | 30 | 0 | 235 | 5 | 52 | 365 | 121 | 877 |
| | 8:00 AM | 0 | 0 | 79 | 0 | 0 | 29 | 0 | 261 | 14 | 81 | 396 | 155 | 1,015 |
| | 8:15 AM | 0 | 0 | 89 | 0 | 0 | 27 | 0 | 285 | 15 | 80 | 404 | 159 | 1,059 |
| | 8:30 AM | 0 | 0 | 86 | 0 | 0 | 48 | 0 | 356 | 24 | 64 | 343 | 137 | 1,058 |
| | 8:45 AM | 0 | 0 | 79 | 0 | 0 | 45 | 0 | 263 | 7 | 52 | 286 | 137 | 869 |
| | VOLUMES | 0 | 0 | 600 | 0 | 0 | 261 | 0 | 1,919 | 86 | 434 | 2,428 | 998 | 6,726 |
| | APPROACH % | 0% | 0% | 100% | 0% | 0% | 100% | 0% | 96% | 4% | 11% | 63% | 26% | |
| | APP/DEPART | 600 | / | 998 | 261 | / | 520 | 2,005 | / | 2,519 | 3,860 | / | 2,689 | 0 |
| | BEGIN PEAK HR | | 7:45 AM | | | | | | | | | | | |
| | VOLUMES | 0 | 0 | 323 | 0 | 0 | 134 | 0 | 1,137 | 58 | 277 | 1,508 | 572 | 4,009 |
| | APPROACH % | 0% | 0% | 100% | 0% | 0% | 100% | 0% | 95% | 5% | 12% | 64% | 24% | |
| | PEAK HR FACTOR | | 0.907 | | | 0.698 | | | 0.786 | | | 0.916 | | 0.946 |
| | APP/DEPART | 323 | / | 572 | 134 | / | 335 | 1,195 | / | 1,460 | 2,357 | / | 1,642 | 0 |
| PM | 4:00 PM | 0 | 0 | 64 | 0 | 0 | 48 | 0 | 353 | 24 | 72 | 228 | 67 | 856 |
| | 4:15 PM | 0 | 0 | 69 | 0 | 0 | 68 | 0 | 311 | 18 | 71 | 231 | 58 | 826 |
| | 4:30 PM | 0 | 0 | 54 | 0 | 0 | 43 | 0 | 342 | 10 | 60 | 209 | 55 | 773 |
| | 4:45 PM | 0 | 0 | 59 | 0 | 0 | 53 | 0 | 312 | 18 | 67 | 218 | 66 | 793 |
| | 5:00 PM | 0 | 0 | 65 | 0 | 0 | 72 | 0 | 348 | 21 | 65 | 222 | 63 | 856 |
| | 5:15 PM | 0 | 0 | 62 | 0 | 0 | 40 | 0 | 322 | 15 | 71 | 218 | 83 | 811 |
| | 5:30 PM | 0 | 0 | 73 | 0 | 0 | 51 | 0 | 310 | 21 | 72 | 225 | 46 | 798 |
| | 5:45 PM | 0 | 0 | 58 | 0 | 0 | 33 | 0 | 276 | 26 | 81 | 232 | 42 | 748 |
| | VOLUMES | 0 | 0 | 504 | 0 | 0 | 408 | 0 | 2,574 | 153 | 559 | 1,783 | 480 | 6,461 |
| | APPROACH % | 0% | 0% | 100% | 0% | 0% | 100% | 0% | 94% | 6% | 20% | 63% | 17% | |
| | APP/DEPART | 504 | / | 480 | 408 | / | 709 | 2,727 | / | 3,081 | 2,822 | / | 2,191 | 0 |
| | BEGIN PEAK HR | | 4:45 PM | | | | | | | | | | | |
| | VOLUMES | 0 | 0 | 259 | 0 | 0 | 216 | 0 | 1,292 | 75 | 275 | 883 | 258 | 3,258 |
| | APPROACH % | 0% | 0% | 100% | 0% | 0% | 100% | 0% | 95% | 5% | 19% | 62% | 18% | |
| | PEAK HR FACTOR | | 0.887 | | | 0.750 | | | 0.926 | | | 0.952 | | 0.952 |
| | APP/DEPART | 259 | / | 258 | 216 | / | 349 | 1,367 | / | 1,552 | 1,416 | / | 1,099 | 0 |



# APPENDIX E

# LEVEL OF SERVICE WORKSHEETS

## Existing

Monte Olivo Phase 1

Vistro File: G:\...\AM E.vistro
Report File: G:\...\AM E.pdf

Scenario 1 Existing
5/9/2023

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Rimpau Ave (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | SB Left | 0.882 | 24.8 | C |
| 2 | Rimpau Ave (NS) at California Ave (EW) | Signalized | HCM 6th Edition | WB Right | 0.436 | 6.2 | A |
| 3 | Rimpau Ave (NS) at Olympic Dr (EW) | Signalized | HCM 6th Edition | WB Left | 0.815 | 19.8 | B |
| 4 | Rimpau Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | SB Left | 0.564 | 16.2 | C |
| 5 | California Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Thru | 0.533 | 11.8 | B |
| 6 | Compton Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Left | 0.429 | 9.9 | A |
| 7 | Laurel Canyon Way (NS) at Project Dwy (EW) | Two-way stop | HCM 6th Edition | SB Thru | 0.000 | 0.0 | A |
| 8 | State St (NS) at Bel Air St/Project Dwy (EW) | Two-way stop | HCM 6th Edition | EB Right | 0.002 | 8.4 | A |
| 9 | State St (NS) at Ontario Ave (EW) | Two-way stop | HCM 6th Edition | NB Left | 0.033 | 29.1 | D |
| 10 | I-15 SB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | WB Left | 0.935 | 20.3 | C |
| 11 | I-15 NB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | NB Left | 0.753 | 17.7 | B |
| 12 | California Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | EB Left | 0.632 | 21.2 | C |
| 13 | El Sobrante Rd (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | EB Left | 0.587 | 38.6 | D |
| 14 | I-15 SB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | WB Left | 0.889 | 26.5 | C |
| 15 | I-15 NB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | NB Right | 0.657 | 12.0 | B |
| 16 | Compton Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | NB Right | 0.708 | 22.4 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For

**Intersection Level Of Service Report**
**Intersection 1: Rimpau Ave (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.882 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 148.00 | 100.00 | 100.00 | 80.00 | 100.00 | 100.00 | 180.00 | 100.00 | 100.00 | 360.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 101 | 271 | 481 | 115 | 269 | 42 | 88 | 825 | 104 | 542 | 1084 | 69 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 101 | 271 | 481 | 115 | 269 | 42 | 88 | 825 | 104 | 542 | 1084 | 69 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 27 | 71 | 127 | 30 | 71 | 11 | 23 | 217 | 27 | 143 | 285 | 18 |
| Total Analysis Volume [veh/h] | 106 | 285 | 506 | 121 | 283 | 44 | 93 | 868 | 109 | 571 | 1141 | 73 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 65 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 2 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | 2,7 | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 7 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 21 | 11 | 21 | 0 | 11 | 21 | 0 | 12 | 22 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | No | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | No | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 13 | 30 | 6 | 14 | 6 | 17 | 17 | 12 | 24 | 24 |
| g / C, Green / Cycle | 0.09 | 0.20 | 0.46 | 0.10 | 0.21 | 0.09 | 0.26 | 0.26 | 0.19 | 0.37 | 0.37 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.15 | 0.32 | 0.07 | 0.18 | 0.05 | 0.18 | 0.18 | 0.17 | 0.23 | 0.23 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1589 | 1781 | 1827 | 1781 | 3560 | 1765 | 3459 | 3560 | 1813 |
| c, Capacity [veh/h] | 164 | 383 | 724 | 171 | 381 | 156 | 941 | 467 | 654 | 1301 | 663 |
| d1, Uniform Delay [s] | 28.50 | 24.26 | 14.15 | 28.52 | 24.81 | 28.55 | 21.55 | 21.57 | 25.62 | 16.91 | 16.92 |
| k, delay calibration | 0.11 | 0.11 | 0.22 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 4.22 | 2.88 | 2.53 | 5.33 | 5.68 | 3.58 | 4.19 | 8.32 | 3.85 | 2.21 | 4.30 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.65 | 0.74 | 0.70 | 0.71 | 0.86 | 0.59 | 0.69 | 0.70 | 0.87 | 0.62 | 0.62 |
| d, Delay for Lane Group [s/veh] | 32.72 | 27.14 | 16.69 | 33.85 | 30.48 | 32.14 | 25.74 | 29.88 | 29.47 | 19.11 | 21.21 |
| Lane Group LOS | C | C | B | C | C | C | C | C | C | B | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 1.69 | 4.09 | 5.49 | 1.97 | 5.06 | 1.44 | 4.53 | 5.04 | 4.21 | 4.61 | 5.09 |
| 50th-Percentile Queue Length [ft/ln] | 42.25 | 102.25 | 137.18 | 49.23 | 126.39 | 36.12 | 113.20 | 126.12 | 105.24 | 115.33 | 127.30 |
| 95th-Percentile Queue Length [veh/ln] | 3.04 | 7.36 | 9.33 | 3.54 | 8.74 | 2.60 | 8.02 | 8.73 | 7.57 | 8.14 | 8.79 |
| 95th-Percentile Queue Length [ft/ln] | 76.05 | 184.05 | 233.22 | 88.61 | 218.57 | 65.02 | 200.45 | 218.21 | 189.36 | 203.40 | 219.82 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 32.72 | 27.14 | 16.69 | 33.85 | 30.48 | 30.48 | 32.14 | 26.77 | 29.88 | 29.47 | 19.73 | 21.21 |
| Movement LOS | C | C | B | C | C | C | C | C | C | C | B | C |
| d_A, Approach Delay [s/veh] | 21.90 | | | 31.39 | | | 27.55 | | | 22.91 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 24.78 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.882 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 22.44 | 22.44 | 22.44 | 22.44 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.705 | 2.263 | 3.014 | 3.241 |
| Crosswalk LOS | B | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 523 | 523 | 523 | 554 |
| d_b, Bicycle Delay [s] | 17.73 | 17.73 | 17.73 | 17.00 |
| l_b,int, Bicycle LOS Score for Intersection | 3.040 | 2.299 | 2.148 | 2.541 |
| Bicycle LOS | C | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Rimpau Ave (NS) at California Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 6.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.436 |

**Intersection Setup**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 50.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 35.00 | | 40.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | Yes | |

**Volumes**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 692 | 11 | 0 | 872 | 1 | 181 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 692 | 11 | 0 | 872 | 1 | 181 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 182 | 3 | 0 | 229 | 0 | 48 |
| Total Analysis Volume [veh/h] | 728 | 12 | 0 | 918 | 1 | 191 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Split | Split |
|---|---|---|---|---|---|---|
| Signal Group | 2 | 0 | 0 | 6 | 7 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 21 | 0 | 0 | 21 | 39 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | C | L | R |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 43 | 43 | 43 | 9 | 9 |
| g / C, Green / Cycle | 0.72 | 0.72 | 0.72 | 0.15 | 0.15 |
| (v / s)_i Volume / Saturation Flow Rate | 0.14 | 0.13 | 0.26 | 0.00 | 0.12 |
| s, saturation flow rate [veh/h] | 3560 | 1854 | 3560 | 1781 | 1589 |
| c, Capacity [veh/h] | 2543 | 1324 | 2543 | 272 | 242 |
| d1, Uniform Delay [s] | 2.84 | 2.83 | 3.30 | 21.58 | 24.52 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.17 | 0.31 | 0.40 | 0.01 | 5.64 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.19 | 0.19 | 0.36 | 0.00 | 0.79 |
| d, Delay for Lane Group [s/veh] | 3.01 | 3.14 | 3.70 | 21.59 | 30.16 |
| Lane Group LOS | A | A | A | C | C |
| Critical Lane Group | No | No | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.53 | 0.58 | 1.16 | 0.01 | 2.73 |
| 50th-Percentile Queue Length [ft/ln] | 13.24 | 14.52 | 28.88 | 0.28 | 68.15 |
| 95th-Percentile Queue Length [veh/ln] | 0.95 | 1.05 | 2.08 | 0.02 | 4.91 |
| 95th-Percentile Queue Length [ft/ln] | 23.84 | 26.14 | 51.99 | 0.50 | 122.67 |

**Movement, Approach, & Intersection Results**

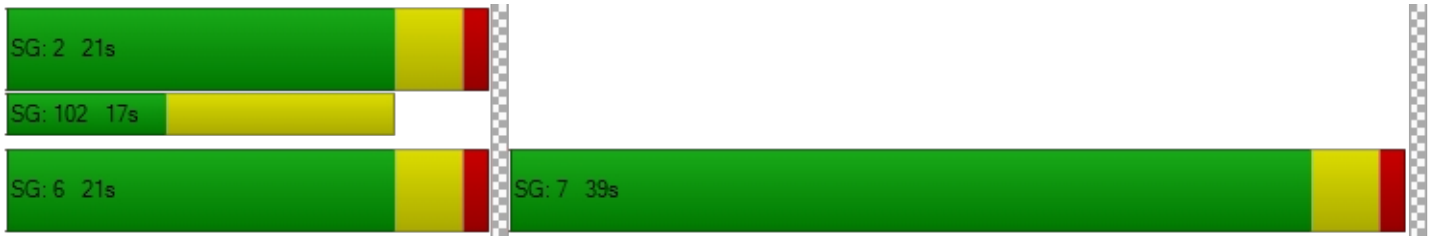
| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 3.05 | 3.14 | 0.00 | 3.70 | 21.59 | 30.16 |
| Movement LOS | A | A | | A | C | C |
| d_A, Approach Delay [s/veh] | 3.06 | | 3.70 | | 30.11 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 6.18 | | | | | |
| Intersection LOS | A | | | | | |
| Intersection V/C | 0.436 | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 20.02 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 0.000 | 2.175 |
| Crosswalk LOS | F | F | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 566 | 566 | 1166 |
| d_b, Bicycle Delay [s] | 15.42 | 15.42 | 5.22 |
| l_b,int, Bicycle LOS Score for Intersection | 1.967 | 2.317 | 1.560 |
| Bicycle LOS | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Rimpau Ave (NS) at Olympic Dr (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 19.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.815 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 140.00 | 100.00 | 100.00 | 140.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 31 | 420 | 17 | 181 | 517 | 175 | 223 | 14 | 119 | 70 | 36 | 59 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 31 | 420 | 17 | 181 | 517 | 175 | 223 | 14 | 119 | 70 | 36 | 59 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 8 | 111 | 4 | 48 | 136 | 46 | 59 | 4 | 31 | 18 | 9 | 16 |
| Total Analysis Volume [veh/h] | 33 | 442 | 18 | 191 | 544 | 184 | 235 | 15 | 125 | 74 | 38 | 62 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 7 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 14 | 24 | 0 | 11 | 25 | 0 | 0 | 14 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | Yes | No | | | No | |
| Maximum Recall | No | No | | No | No | | No | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | C | R | C | R |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 3 | 19 | 19 | 8 | 24 | 24 | 21 | 21 | 10 | 10 |
| g / C, Green / Cycle | 0.05 | 0.32 | 0.32 | 0.13 | 0.40 | 0.40 | 0.35 | 0.35 | 0.17 | 0.17 |
| (v / s)_i Volume / Saturation Flow Rate | 0.02 | 0.12 | 0.12 | 0.11 | 0.20 | 0.20 | 0.28 | 0.08 | 0.26 | 0.04 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1844 | 1781 | 1870 | 1710 | 888 | 1589 | 439 | 1589 |
| c, Capacity [veh/h] | 92 | 590 | 581 | 241 | 746 | 682 | 449 | 556 | 173 | 266 |
| d1, Uniform Delay [s] | 27.58 | 16.11 | 16.11 | 25.21 | 13.66 | 13.66 | 15.82 | 13.80 | 27.06 | 21.72 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.33 | 1.96 | 1.99 | 5.80 | 2.48 | 2.71 | 4.90 | 0.20 | 4.04 | 0.44 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.36 | 0.39 | 0.39 | 0.79 | 0.51 | 0.51 | 0.56 | 0.22 | 0.65 | 0.23 |
| d, Delay for Lane Group [s/veh] | 29.91 | 18.06 | 18.11 | 31.01 | 16.14 | 16.37 | 20.73 | 14.00 | 31.10 | 22.16 |
| Lane Group LOS | C | B | B | C | B | B | C | B | C | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.49 | 2.51 | 2.49 | 2.82 | 3.81 | 3.53 | 2.99 | 1.14 | 1.75 | 0.74 |
| 50th-Percentile Queue Length [ft/ln] | 12.20 | 62.80 | 62.30 | 70.38 | 95.32 | 88.30 | 74.84 | 28.57 | 43.79 | 18.60 |
| 95th-Percentile Queue Length [veh/ln] | 0.88 | 4.52 | 4.49 | 5.07 | 6.86 | 6.36 | 5.39 | 2.06 | 3.15 | 1.34 |
| 95th-Percentile Queue Length [ft/ln] | 21.96 | 113.04 | 112.14 | 126.69 | 171.58 | 158.94 | 134.71 | 51.43 | 78.82 | 33.48 |

**Movement, Approach, & Intersection Results**

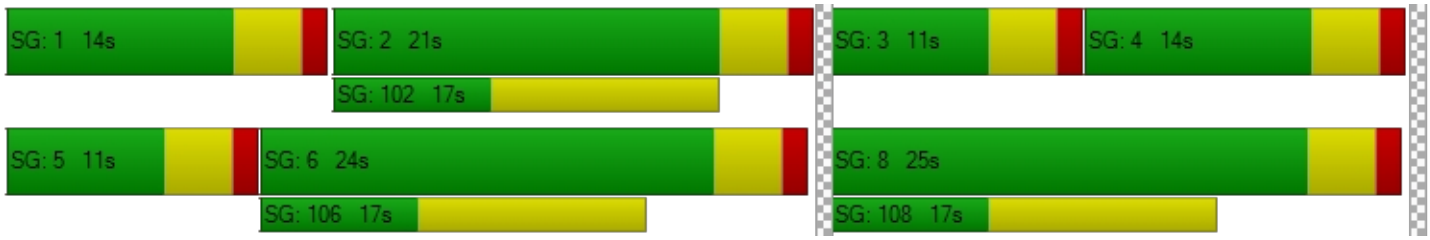
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 29.91 | 18.08 | 18.11 | 31.01 | 16.21 | 16.37 | 20.73 | 20.73 | 14.00 | 31.10 | 31.10 | 22.16 |
| Movement LOS | C | B | B | C | B | B | C | C | B | C | C | C |
| d_A, Approach Delay [s/veh] | 18.88 | | | 19.32 | | | 18.48 | | | 27.92 | | |
| Approach LOS | B | | | B | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 19.81 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.815 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.06 | 0.00 | 20.06 | 20.06 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.664 | 0.000 | 2.088 | 2.047 |
| Crosswalk LOS | B | F | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 566 | 666 | 699 | 333 |
| d_b, Bicycle Delay [s] | 15.46 | 13.38 | 12.72 | 20.88 |
| l_b,int, Bicycle LOS Score for Intersection | 1.966 | 2.318 | 2.178 | 1.847 |
| Bicycle LOS | A | B | B | A |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 4: Rimpau Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 16.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.564 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 34 | 401 | 47 | 106 | 323 | 108 | 78 | 109 | 38 | 35 | 86 | 92 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 34 | 401 | 47 | 106 | 323 | 108 | 78 | 109 | 38 | 35 | 86 | 92 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 106 | 12 | 28 | 85 | 28 | 21 | 29 | 10 | 9 | 23 | 24 |
| Total Analysis Volume [veh/h] | 36 | 422 | 49 | 112 | 340 | 114 | 82 | 115 | 40 | 37 | 91 | 97 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 506 | 521 | 502 | 538 | 453 | 512 | 453 | 507 |
| Degree of Utilization, x | 0.50 | 0.49 | 0.56 | 0.53 | 0.43 | 0.08 | 0.28 | 0.19 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 2.78 | 2.64 | 3.45 | 3.04 | 2.16 | 0.25 | 1.15 | 0.70 |
| 95th-Percentile Queue Length [ft] | 69.43 | 66.05 | 86.15 | 76.04 | 54.05 | 6.33 | 28.73 | 17.52 |
| Approach Delay [s/veh] | 16.41 | | 17.67 | | 15.56 | | 12.77 | |
| Approach LOS | C | | C | | C | | B | |
| Intersection Delay [s/veh] | 16.21 | | | | | | | |
| Intersection LOS | C | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 5: California Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 11.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.533 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | No | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 81 | 227 | 21 | 12 | 79 | 5 | 35 | 78 | 117 | 17 | 75 | 69 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 81 | 227 | 21 | 12 | 79 | 5 | 35 | 78 | 117 | 17 | 75 | 69 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 21 | 60 | 6 | 3 | 21 | 1 | 9 | 21 | 31 | 4 | 20 | 18 |
| Total Analysis Volume [veh/h] | 85 | 239 | 22 | 13 | 83 | 5 | 37 | 82 | 123 | 18 | 79 | 73 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 607 | 707 | 581 | 664 | 575 | 668 | 572 | 655 |
| Degree of Utilization, x | 0.53 | 0.03 | 0.17 | 0.01 | 0.21 | 0.18 | 0.17 | 0.11 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 3.15 | 0.10 | 0.59 | 0.02 | 0.77 | 0.67 | 0.61 | 0.37 |
| 95th-Percentile Queue Length [ft] | 78.75 | 2.41 | 14.70 | 0.57 | 19.30 | 16.79 | 15.16 | 9.36 |
| Approach Delay [s/veh] | 14.74 | | 10.02 | | 9.94 | | 9.68 | |
| Approach LOS | B | | B | | A | | A | |
| Intersection Delay [s/veh] | 11.83 | | | | | | | |
| Intersection LOS | B | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 6: Compton Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 9.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.429 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 216 | 108 | 13 | 0 | 8 | 0 | 7 | 11 | 60 | 10 | 18 | 7 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 216 | 108 | 13 | 0 | 8 | 0 | 7 | 11 | 60 | 10 | 18 | 7 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 57 | 28 | 3 | 0 | 2 | 0 | 2 | 3 | 16 | 3 | 5 | 2 |
| Total Analysis Volume [veh/h] | 227 | 114 | 14 | 0 | 8 | 0 | 7 | 12 | 63 | 11 | 19 | 7 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | |
|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 828 | 778 | 640 | 759 | 634 | 752 |
| Degree of Utilization, x | 0.43 | 0.01 | 0.03 | 0.08 | 0.05 | 0.01 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 2.17 | 0.03 | 0.09 | 0.27 | 0.15 | 0.03 |
| 95th-Percentile Queue Length [ft] | 54.29 | 0.78 | 2.29 | 6.76 | 3.72 | 0.70 |
| Approach Delay [s/veh] | 10.57 | 7.67 | 8.01 | | 8.44 | |
| Approach LOS | B | A | A | | A | |
| Intersection Delay [s/veh] | 9.92 | | | | | |
| Intersection LOS | A | | | | | |

**Intersection Level Of Service Report**
**Intersection 7: Laurel Canyon Way (NS) at Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 0.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.000 |

**Intersection Setup**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**Volumes**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 24 | 0 | 0 | 35 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 24 | 0 | 0 | 35 | 0 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 6 | 0 | 0 | 9 | 0 | 0 |
| Total Analysis Volume [veh/h] | 25 | 0 | 0 | 37 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop |
|---|---|---|---|
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 7.26 | 0.00 | 8.81 | 8.42 |
| Movement LOS | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.00 | | 8.62 | |
| Approach LOS | A | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.00 | | | | | |
| Intersection LOS | A | | | | | |

**Intersection Level Of Service Report**
**Intersection 8: State St (NS) at Bel Air St/Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 8.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.002 |

**Intersection Setup**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 25.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 9 | 0 | 0 | 12 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 9 | 0 | 0 | 12 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 2 | 9 | 0 | 0 | 13 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.25 | 0.00 | 0.00 | 7.23 | 0.00 | 0.00 | 8.67 | 9.16 | 8.38 | 8.67 | 9.16 | 8.36 |
| Movement LOS | A | A | A | A | A | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.09 | 0.09 | 0.09 | 0.00 | 0.00 | 0.00 | 0.14 | 0.14 | 0.14 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 1.32 | | | 0.00 | | | 8.38 | | | 8.73 | | |
| Approach LOS | A | | | A | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 1.20 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 29.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.033 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 5 | 0 | 1 | 19 | 0 | 75 | 47 | 388 | 2 | 1 | 960 | 12 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 0 | 1 | 19 | 0 | 75 | 47 | 388 | 2 | 1 | 960 | 12 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 5 | 0 | 20 | 12 | 102 | 1 | 0 | 253 | 3 |
| Total Analysis Volume [veh/h] | 5 | 0 | 1 | 20 | 0 | 79 | 49 | 408 | 2 | 1 | 1011 | 13 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | Yes | | |
| Number of Storage Spaces in Median | 0 | 2 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.03 | 0.00 | 0.00 | 0.09 | 0.00 | 0.15 | 0.07 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 29.12 | 39.35 | 10.20 | 21.75 | 19.85 | 13.31 | 10.76 | 0.00 | 0.00 | 8.15 | 0.00 | 0.00 |
| Movement LOS | D | E | B | C | C | B | B | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.10 | 0.10 | 0.10 | 0.28 | 0.28 | 0.54 | 0.23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 2.61 | 2.61 | 2.61 | 6.91 | 6.91 | 13.55 | 5.87 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 25.97 | | | 15.02 | | | 1.15 | | | 0.01 | | |
| Approach LOS | D | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 1.37 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 10: I-15 SB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 20.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.935 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 67.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 262 | 2 | 938 | 0 | 950 | 467 | 29 | 1345 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 262 | 2 | 938 | 0 | 950 | 467 | 29 | 1345 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 69 | 1 | 247 | 0 | 250 | 123 | 8 | 354 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 276 | 2 | 987 | 0 | 1000 | 492 | 31 | 1416 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 21 | 0 | 13 | 34 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 22 | 22 | 23 | 23 | 3 | 30 |
| g / C, Green / Cycle | | 0.37 | 0.37 | 0.39 | 0.39 | 0.05 | 0.50 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.16 | 0.35 | 0.28 | 0.31 | 0.02 | 0.40 |
| s, saturation flow rate [veh/h] | | 1782 | 2813 | 3560 | 1589 | 1781 | 3560 |
| c, Capacity [veh/h] | | 652 | 1030 | 1371 | 612 | 88 | 1783 |
| d1, Uniform Delay [s] | | 14.32 | 18.62 | 15.82 | 16.47 | 27.67 | 12.44 |
| k, delay calibration | | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.44 | 6.43 | 3.44 | 10.74 | 2.40 | 3.74 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.43 | 0.96 | 0.73 | 0.80 | 0.35 | 0.79 |
| d, Delay for Lane Group [s/veh] | | 14.76 | 25.05 | 19.26 | 27.21 | 30.08 | 16.19 |
| Lane Group LOS | | B | C | B | C | C | B |
| Critical Lane Group | | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | | 2.61 | 6.77 | 5.31 | 6.59 | 0.45 | 6.54 |
| 50th-Percentile Queue Length [ft/ln] | | 65.33 | 169.15 | 132.64 | 164.80 | 11.18 | 163.42 |
| 95th-Percentile Queue Length [veh/ln] | | 4.70 | 11.03 | 9.08 | 10.80 | 0.80 | 10.73 |
| 95th-Percentile Queue Length [ft/ln] | | 117.59 | 275.79 | 227.07 | 270.07 | 20.12 | 268.24 |

**Movement, Approach, & Intersection Results**

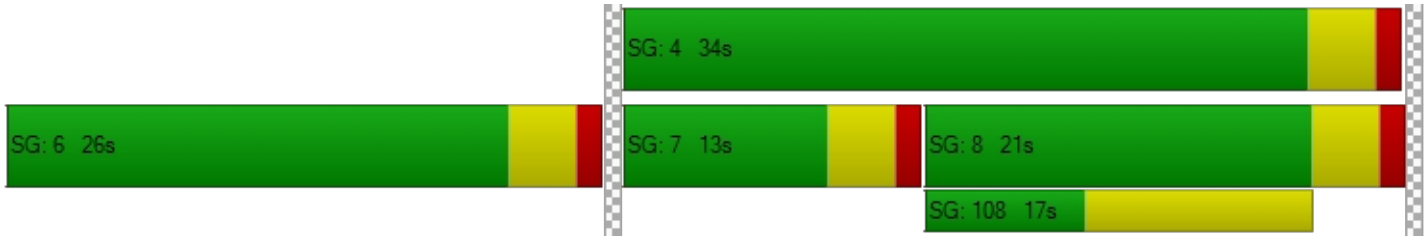
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 14.76 | 14.76 | 25.05 | 0.00 | 19.26 | 27.21 | 30.08 | 16.19 | 0.00 |
| Movement LOS | | | | B | B | C | | B | C | C | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 22.79 | | | 21.88 | | | 16.48 | | |
| Approach LOS | A | | | C | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 20.29 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.935 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.05 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 1.913 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | A | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 732 | 566 | 999 |
| d_b, Bicycle Delay [s] | 30.04 | 12.07 | 15.45 | 7.53 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 3.647 | 2.791 | 2.753 |
| Bicycle LOS | D | D | C | C |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 11: I-15 NB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 17.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.753 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 354 | 2 | 33 | 0 | 0 | 0 | 618 | 539 | 0 | 0 | 1046 | 270 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 354 | 2 | 33 | 0 | 0 | 0 | 618 | 539 | 0 | 0 | 1046 | 270 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 93 | 1 | 9 | 0 | 0 | 0 | 163 | 142 | 0 | 0 | 275 | 71 |
| Total Analysis Volume [veh/h] | 373 | 2 | 35 | 0 | 0 | 0 | 651 | 567 | 0 | 0 | 1101 | 284 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 28 | 0 | 0 | 0 | 0 | 11 | 32 | 0 | 0 | 21 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 9 | 9 | 9 | | 14 | 43 | 25 | 25 |
| g / C, Green / Cycle | 0.15 | 0.15 | 0.15 | | 0.24 | 0.72 | 0.42 | 0.42 |
| (v / s)_i Volume / Saturation Flow Rate | 0.11 | 0.11 | 0.02 | | 0.19 | 0.30 | 0.31 | 0.18 |
| s, saturation flow rate [veh/h] | 1781 | 1782 | 1589 | | 3459 | 1870 | 3560 | 1589 |
| c, Capacity [veh/h] | 267 | 267 | 238 | | 817 | 1341 | 1476 | 659 |
| d1, Uniform Delay [s] | 24.31 | 24.31 | 22.24 | | 21.61 | 3.45 | 14.93 | 12.56 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.37 | 3.37 | 0.28 | | 1.82 | 0.98 | 3.48 | 2.05 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.70 | 0.70 | 0.15 | | 0.80 | 0.42 | 0.75 | 0.43 |
| d, Delay for Lane Group [s/veh] | 27.68 | 27.67 | 22.52 | | 23.43 | 4.43 | 18.41 | 14.61 |
| Lane Group LOS | C | C | C | | C | A | B | B |
| Critical Lane Group | Yes | No | No | | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 2.62 | 2.62 | 0.42 | | 3.89 | 1.29 | 5.65 | 2.52 |
| 50th-Percentile Queue Length [ft/ln] | 65.53 | 65.56 | 10.59 | | 97.26 | 32.35 | 141.17 | 62.92 |
| 95th-Percentile Queue Length [veh/ln] | 4.72 | 4.72 | 0.76 | | 7.00 | 2.33 | 9.54 | 4.53 |
| 95th-Percentile Queue Length [ft/ln] | 117.95 | 118.00 | 19.07 | | 175.08 | 58.23 | 238.60 | 113.25 |

**Movement, Approach, & Intersection Results**

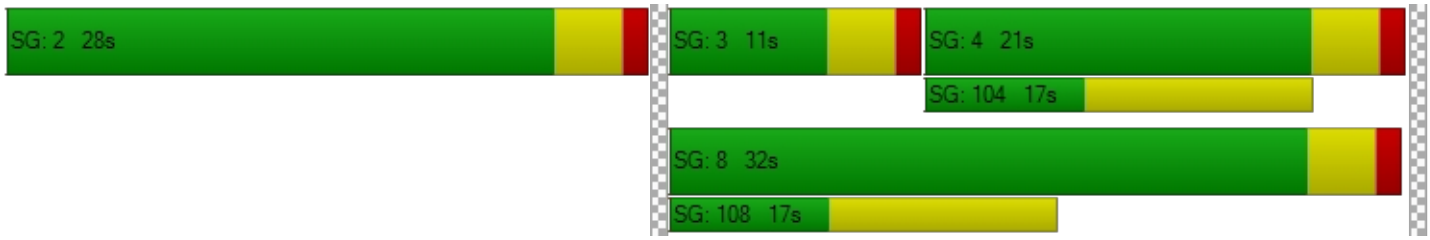
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 27.67 | 27.67 | 22.52 | 0.00 | 0.00 | 0.00 | 23.43 | 4.43 | 0.00 | 0.00 | 18.41 | 14.61 |
| Movement LOS | C | C | C | | | | C | A | | | B | B |
| d_A, Approach Delay [s/veh] | 27.23 | | | 0.00 | | | 14.59 | | | 17.63 | | |
| Approach LOS | C | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 17.71 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.753 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.05 | 20.05 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.051 | 2.149 | 0.000 | 0.000 |
| Crosswalk LOS | B | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 799 | 0 | 932 | 566 |
| d_b, Bicycle Delay [s] | 10.83 | 30.04 | 8.57 | 15.45 |
| l_b,int, Bicycle LOS Score for Intersection | 2.236 | 4.132 | 3.569 | 2.702 |
| Bicycle LOS | B | D | D | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 12: California Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 21.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.632 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 195.00 | 100.00 | 100.00 | 212.00 | 100.00 | 150.00 | 268.00 | 100.00 | 115.00 | 217.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 107 | 199 | 103 | 186 | 76 | 58 | 185 | 753 | 63 | 236 | 952 | 290 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 107 | 199 | 103 | 186 | 76 | 58 | 185 | 753 | 63 | 236 | 952 | 290 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 28 | 52 | 27 | 49 | 20 | 15 | 49 | 198 | 17 | 62 | 251 | 76 |
| Total Analysis Volume [veh/h] | 113 | 209 | 108 | 196 | 80 | 61 | 195 | 793 | 66 | 248 | 1002 | 305 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 64 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 11 | 21 | 0 | 11 | 21 | 0 | 11 | 21 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 9 | 9 | 7 | 10 | 10 | 9 | 25 | 25 | 7 | 23 | 23 |
| g / C, Green / Cycle | 0.10 | 0.15 | 0.15 | 0.11 | 0.16 | 0.16 | 0.14 | 0.39 | 0.39 | 0.11 | 0.36 | 0.36 |
| (v / s)_i Volume / Saturation Flow Rate | 0.03 | 0.11 | 0.07 | 0.06 | 0.04 | 0.04 | 0.11 | 0.16 | 0.04 | 0.07 | 0.20 | 0.19 |
| s, saturation flow rate [veh/h] | 3459 | 1870 | 1589 | 3459 | 1870 | 1589 | 1781 | 5094 | 1589 | 3459 | 5094 | 1589 |
| c, Capacity [veh/h] | 334 | 276 | 234 | 371 | 296 | 251 | 245 | 1978 | 617 | 374 | 1829 | 571 |
| d1, Uniform Delay [s] | 27.12 | 26.30 | 25.07 | 27.15 | 23.80 | 23.69 | 26.86 | 14.25 | 12.55 | 27.54 | 16.43 | 16.33 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.59 | 4.26 | 1.41 | 1.17 | 0.49 | 0.50 | 5.88 | 0.61 | 0.35 | 2.02 | 1.18 | 3.56 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.34 | 0.76 | 0.46 | 0.53 | 0.27 | 0.24 | 0.80 | 0.40 | 0.11 | 0.66 | 0.55 | 0.53 |
| d, Delay for Lane Group [s/veh] | 27.72 | 30.57 | 26.48 | 28.32 | 24.29 | 24.18 | 32.74 | 14.85 | 12.90 | 29.55 | 17.62 | 19.89 |
| Lane Group LOS | C | C | C | C | C | C | C | B | B | C | B | B |
| Critical Lane Group | No | Yes | No | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.76 | 3.06 | 1.44 | 1.37 | 1.02 | 0.77 | 2.99 | 2.40 | 0.56 | 1.75 | 3.46 | 3.52 |
| 50th-Percentile Queue Length [ft/ln] | 19.01 | 76.62 | 36.01 | 34.17 | 25.38 | 19.37 | 74.65 | 60.07 | 14.10 | 43.78 | 86.44 | 88.01 |
| 95th-Percentile Queue Length [veh/ln] | 1.37 | 5.52 | 2.59 | 2.46 | 1.83 | 1.39 | 5.37 | 4.33 | 1.01 | 3.15 | 6.22 | 6.34 |
| 95th-Percentile Queue Length [ft/ln] | 34.22 | 137.91 | 64.82 | 61.51 | 45.69 | 34.87 | 134.36 | 108.13 | 25.37 | 78.80 | 155.60 | 158.43 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 27.72 | 30.57 | 26.48 | 28.32 | 24.29 | 24.18 | 32.74 | 14.85 | 12.90 | 29.55 | 17.62 | 19.89 |
| Movement LOS | C | C | C | C | C | C | C | B | B | C | B | B |
| d_A, Approach Delay [s/veh] | 28.79 | | | 26.62 | | | 18.04 | | | 19.97 | | |
| Approach LOS | C | | | C | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 21.15 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.632 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 22.01 | 22.01 | 22.01 | 22.01 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.737 | 2.661 | 3.114 | 3.261 |
| Crosswalk LOS | B | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 530 | 530 | 530 | 530 |
| d_b, Bicycle Delay [s] | 17.32 | 17.32 | 17.32 | 17.32 |
| l_b,int, Bicycle LOS Score for Intersection | 2.269 | 2.116 | 2.139 | 2.415 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 13: El Sobrante Rd (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 38.6 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.587 |

**Intersection Setup**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 65.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 78.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 45.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 15 | 18 | 106 | 118 | 36 | 102 | 59 | 1286 | 41 | 96 | 1612 | 178 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 15 | 18 | 106 | 118 | 36 | 102 | 59 | 1286 | 41 | 96 | 1612 | 178 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 4 | 5 | 28 | 31 | 9 | 27 | 16 | 338 | 11 | 25 | 424 | 47 |
| Total Analysis Volume [veh/h] | 16 | 19 | 112 | 124 | 38 | 107 | 62 | 1354 | 43 | 101 | 1697 | 187 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 116 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 9 | 11 | 0 | 44 | 46 | 0 | 24 | 49 | 0 | 12 | 37 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 35 | 0 | 0 | 18 | 0 | 0 | 26 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 2 | 44 | 6 | 48 | 5 | 42 | 42 | 8 | 45 | 45 |
| g / C, Green / Cycle | 0.02 | 0.38 | 0.05 | 0.41 | 0.05 | 0.36 | 0.36 | 0.07 | 0.39 | 0.39 |
| (v / s)_i Volume / Saturation Flow Rate | 0.01 | 0.08 | 0.04 | 0.09 | 0.03 | 0.26 | 0.26 | 0.06 | 0.35 | 0.35 |
| s, saturation flow rate [veh/h] | 1781 | 1625 | 3459 | 1655 | 1781 | 3560 | 1841 | 1781 | 3560 | 1777 |
| c, Capacity [veh/h] | 32 | 611 | 189 | 683 | 81 | 1289 | 666 | 123 | 1374 | 685 |
| d1, Uniform Delay [s] | 56.47 | 24.56 | 53.80 | 21.92 | 54.75 | 31.85 | 31.85 | 53.28 | 33.79 | 33.91 |
| k, delay calibration | 0.11 | 0.50 | 0.11 | 0.50 | 0.11 | 0.11 | 0.22 | 0.11 | 0.11 | 0.37 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 11.75 | 0.80 | 3.87 | 0.71 | 13.68 | 0.75 | 2.87 | 12.32 | 2.77 | 15.32 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | 0.50 | 0.21 | 0.66 | 0.21 | 0.76 | 0.71 | 0.71 | 0.82 | 0.91 | 0.92 |
|---|---|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | 68.22 | 25.36 | 57.67 | 22.63 | 68.43 | 32.60 | 34.72 | 65.60 | 36.57 | 49.23 |
| Lane Group LOS | E | C | E | C | E | C | C | E | D | D |
| Critical Lane Group | No | Yes | Yes | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.57 | 2.62 | 1.83 | 2.58 | 2.07 | 10.82 | 11.58 | 3.28 | 16.44 | 18.96 |
| 50th-Percentile Queue Length [ft/ln] | 14.30 | 65.57 | 45.80 | 64.40 | 51.76 | 270.46 | 289.47 | 81.93 | 411.00 | 473.96 |
| 95th-Percentile Queue Length [veh/ln] | 1.03 | 4.72 | 3.30 | 4.64 | 3.73 | 16.21 | 17.16 | 5.90 | 23.09 | 26.10 |
| 95th-Percentile Queue Length [ft/ln] | 25.74 | 118.03 | 82.43 | 115.93 | 93.17 | 405.31 | 428.99 | 147.48 | 577.24 | 652.47 |

**Movement, Approach, & Intersection Results**

| d_M, Delay for Movement [s/veh] | 68.22 | 25.36 | 25.36 | 57.67 | 22.63 | 22.63 | 68.43 | 33.28 | 34.72 | 65.60 | 39.87 | 49.23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement LOS | E | C | C | E | C | C | E | C | C | E | D | D |
| d_A, Approach Delay [s/veh] | 30.02 | | | 38.78 | | | 34.81 | | | 42.06 | | |
| Approach LOS | C | | | D | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 38.64 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.587 | | | | | | | | | | | |

**Other Modes**

| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
|---|---|---|---|---|
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 47.53 | 47.53 | 47.53 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.041 | 2.340 | 3.215 | 0.000 |
| Crosswalk LOS | B | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 121 | 724 | 776 | 569 |
| d_b, Bicycle Delay [s] | 51.22 | 23.61 | 21.74 | 29.70 |
| l_b,int, Bicycle LOS Score for Intersection | 1.802 | 2.003 | 2.362 | 2.651 |
| Bicycle LOS | A | B | B | B |

## Sequence

| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 14: I-15 SB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 26.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.889 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 310.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 460 | 0 | 1133 | 0 | 1331 | 179 | 327 | 757 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 460 | 0 | 1133 | 0 | 1331 | 179 | 327 | 757 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 121 | 0 | 298 | 0 | 350 | 47 | 86 | 199 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 484 | 0 | 1193 | 0 | 1401 | 188 | 344 | 797 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 81 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Split | Split | Overlap | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4 | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 40 | 40 | 0 | 28 | 0 | 13 | 41 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | No | | No | | No | No | |
| Maximum Recall | | | | | No | No | | No | | No | No | |
| Pedestrian Recall | | | | | No | No | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | C | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 81 | 81 | 81 | 81 | 81 | 81 | 81 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 36 | 36 | 36 | 24 | 24 | 9 | 37 |
| g / C, Green / Cycle | | 0.44 | 0.44 | 0.44 | 0.30 | 0.30 | 0.11 | 0.46 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.14 | 0.14 | 0.42 | 0.23 | 0.23 | 0.10 | 0.16 |
| s, saturation flow rate [veh/h] | | 1781 | 1781 | 2813 | 5094 | 1726 | 3459 | 5094 |
| c, Capacity [veh/h] | | 787 | 787 | 1243 | 1515 | 513 | 391 | 2341 |
| d1, Uniform Delay [s] | | 14.63 | 14.63 | 21.95 | 26.15 | 26.02 | 35.46 | 14.05 |
| k, delay calibration | | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.22 | 0.22 | 5.68 | 4.20 | 10.85 | 6.56 | 0.40 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | | 0.31 | 0.31 | 0.96 | 0.79 | 0.77 | 0.88 | 0.34 |
|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | | 14.85 | 14.85 | 27.63 | 30.35 | 36.87 | 42.03 | 14.45 |
| Lane Group LOS | | B | B | C | C | D | D | B |
| Critical Lane Group | | No | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 2.76 | 2.76 | 11.01 | 7.06 | 7.98 | 3.54 | 2.87 |
| 50th-Percentile Queue Length [ft/ln] | | 68.99 | 68.99 | 275.18 | 176.45 | 199.61 | 88.46 | 71.76 |
| 95th-Percentile Queue Length [veh/ln] | | 4.97 | 4.97 | 16.45 | 11.42 | 12.62 | 6.37 | 5.17 |
| 95th-Percentile Queue Length [ft/ln] | | 124.17 | 124.17 | 411.21 | 285.38 | 315.46 | 159.23 | 129.17 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 14.85 | 14.85 | 27.63 | 0.00 | 31.32 | 36.87 | 42.03 | 14.45 | 0.00 |
| Movement LOS | | | | B | B | C | | C | D | D | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 23.94 | | | 31.98 | | | 22.76 | | |
| Approach LOS | A | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 26.53 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.889 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 30.29 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 2.621 | 0.000 | 0.000 |
| Crosswalk LOS | F | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 888 | 592 | 913 |
| d_b, Bicycle Delay [s] | 40.54 | 12.53 | 20.09 | 11.98 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 4.327 | 2.215 | 2.187 |
| Bicycle LOS | D | E | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 15: I-15 NB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 12.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.657 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 262 | 0 | 471 | 0 | 0 | 0 | 0 | 929 | 860 | 0 | 822 | 323 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 262 | 0 | 471 | 0 | 0 | 0 | 0 | 929 | 860 | 0 | 822 | 323 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 69 | 0 | 124 | 0 | 0 | 0 | 0 | 244 | 0 | 0 | 216 | 85 |
| Total Analysis Volume [veh/h] | 276 | 0 | 496 | 0 | 0 | 0 | 0 | 978 | 0 | 0 | 865 | 340 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Split | Permiss | Split | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 18 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | | | | | No | | | No | |
| Maximum Recall | No | | | | | | | No | | | No | |
| Pedestrian Recall | No | | | | | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | | C | R | C | R |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 22 | 22 | | 30 | 30 | 30 | 30 |
| g / C, Green / Cycle | 0.36 | 0.36 | | 0.51 | 0.51 | 0.51 | 0.51 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.31 | | 0.19 | 0.00 | 0.17 | 0.21 |
| s, saturation flow rate [veh/h] | 3459 | 1589 | | 5094 | 2813 | 5094 | 1589 |
| c, Capacity [veh/h] | 1252 | 576 | | 2572 | 1420 | 2572 | 802 |
| d1, Uniform Delay [s] | 13.29 | 17.78 | | 9.12 | 0.00 | 8.88 | 9.38 |
| k, delay calibration | 0.11 | 0.11 | | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.09 | 3.96 | | 0.43 | 0.00 | 0.35 | 1.64 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.22 | 0.86 | | 0.38 | 0.00 | 0.34 | 0.42 |
| d, Delay for Lane Group [s/veh] | 13.38 | 21.74 | | 9.55 | 0.00 | 9.23 | 11.02 |
| Lane Group LOS | B | C | | A | A | A | B |
| Critical Lane Group | No | Yes | | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 1.18 | 6.23 | | 2.09 | 0.00 | 1.79 | 2.49 |
| 50th-Percentile Queue Length [ft/ln] | 29.51 | 155.85 | | 52.14 | 0.00 | 44.79 | 62.29 |
| 95th-Percentile Queue Length [veh/ln] | 2.12 | 10.33 | | 3.75 | 0.00 | 3.23 | 4.48 |
| 95th-Percentile Queue Length [ft/ln] | 53.11 | 258.22 | | 93.85 | 0.00 | 80.63 | 112.12 |

**Movement, Approach, & Intersection Results**

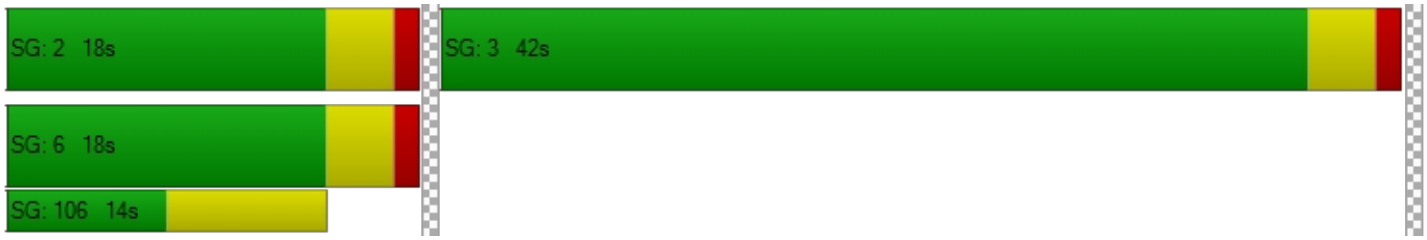
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 13.38 | 0.00 | 21.74 | 0.00 | 0.00 | 0.00 | 0.00 | 9.55 | 0.00 | 0.00 | 9.23 | 11.02 |
| Movement LOS | B | | C | | | | | A | A | | A | B |
| d_A, Approach Delay [s/veh] | 18.75 | | | 0.00 | | | 9.55 | | | 9.74 | | |
| Approach LOS | B | | | A | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 12.03 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.657 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 20.04 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 1.732 | 0.000 | 0.000 |
| Crosswalk LOS | F | A | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1265 | 0 | 466 | 466 |
| d_b, Bicycle Delay [s] | 4.05 | 30.03 | 17.66 | 17.66 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 4.132 | 2.098 | 2.222 |
| Bicycle LOS | A | D | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 16: Compton Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 22.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.708 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 197.00 | 100.00 | 83.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 323 | 0 | 0 | 134 | 0 | 1137 | 58 | 277 | 1508 | 572 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 323 | 0 | 0 | 134 | 0 | 1137 | 58 | 277 | 1508 | 572 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 85 | 0 | 0 | 35 | 0 | 299 | 15 | 73 | 397 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 340 | 0 | 0 | 141 | 0 | 1197 | 61 | 292 | 1587 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 7 | 0 | 5 | 0 | 0 |
| Maximum Green [s] | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 0 | 30 | 0 | 0 |
| Amber [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 0.0 |
| Split [s] | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 26 | 0 | 16 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | No | | | | | No | | | | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| Minimum Recall | | | No | | | | | No | | No | | |
| Maximum Recall | | | No | | | | | No | | No | | |
| Pedestrian Recall | | | No | | | | | No | | No | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | R | | C | C | L |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 14 | | 23 | 23 | 12 |
| g / C, Green / Cycle | 0.23 | | 0.37 | 0.37 | 0.19 |
| (v / s)_i Volume / Saturation Flow Rate | 0.21 | | 0.24 | 0.23 | 0.16 |
| s, saturation flow rate [veh/h] | 1589 | | 3560 | 1823 | 1781 |
| c, Capacity [veh/h] | 372 | | 1331 | 682 | 344 |
| d1, Uniform Delay [s] | 22.47 | | 15.43 | 15.32 | 23.44 |
| k, delay calibration | 0.11 | | 0.50 | 0.50 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 9.12 | | 2.27 | 4.12 | 5.89 |
| d3, Initial Queue Delay [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.92 | | 0.63 | 0.62 | 0.85 |
| d, Delay for Lane Group [s/veh] | 31.58 | | 17.70 | 19.44 | 29.33 |
| Lane Group LOS | C | | B | B | C |
| Critical Lane Group | Yes | | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 5.23 | | 4.19 | 4.52 | 4.03 |
| 50th-Percentile Queue Length [ft/ln] | 130.65 | | 104.73 | 113.07 | 100.67 |
| 95th-Percentile Queue Length [veh/ln] | 8.98 | | 7.54 | 8.01 | 7.25 |
| 95th-Percentile Queue Length [ft/ln] | 224.38 | | 188.52 | 200.27 | 181.20 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 31.58 | 0.00 | 0.00 | 0.00 | 0.00 | 18.22 | 19.44 | 29.33 | 0.00 | 0.00 |
| Movement LOS | | | C | | | | | B | B | C | | |
| d_A, Approach Delay [s/veh] | 31.58 | | | 0.00 | | | 18.28 | | | 29.33 | | |
| Approach LOS | C | | | A | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 22.38 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.708 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.05 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.030 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | B | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 466 | 0 | 732 | 0 |
| d_b, Bicycle Delay [s] | 17.67 | 30.04 | 12.07 | 30.04 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 1.560 | 2.252 | 1.560 |
| Bicycle LOS | A | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Monte Olivo Phase 1

Vistro File: G:\...\PM E.vistro
Report File: G:\...\PM E.pdf

Scenario 1 Existing
5/9/2023

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Rimpau Ave (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | SB Left | 0.961 | 30.1 | C |
| 2 | Rimpau Ave (NS) at California Ave (EW) | Signalized | HCM 6th Edition | WB Right | 0.550 | 10.6 | B |
| 3 | Rimpau Ave (NS) at Olympic Dr (EW) | Signalized | HCM 6th Edition | WB Right | 0.463 | 16.6 | B |
| 4 | Rimpau Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | SB Left | 0.572 | 14.7 | B |
| 5 | California Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Thru | 0.574 | 13.1 | B |
| 6 | Compton Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Left | 0.251 | 8.3 | A |
| 7 | Laurel Canyon Way (NS) at Project Dwy (EW) | Two-way stop | HCM 6th Edition | NB Thru | 0.000 | 0.0 | A |
| 8 | State St (NS) at Bel Air St/Project Dwy (EW) | Two-way stop | HCM 6th Edition | EB Right | 0.003 | 8.4 | A |
| 9 | State St (NS) at Ontario Ave (EW) | Two-way stop | HCM 6th Edition | NB Left | 0.040 | 42.3 | E |
| 10 | I-15 SB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | WB Left | 0.719 | 16.0 | B |
| 11 | I-15 NB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | NB Left | 0.836 | 16.0 | B |
| 12 | California Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | SB Left | 0.623 | 24.0 | C |
| 13 | El Sobrante Rd (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | NB Left | 0.669 | 42.3 | D |
| 14 | I-15 SB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | WB Left | 0.988 | 36.1 | D |
| 15 | I-15 NB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | NB Right | 0.770 | 10.7 | B |
| 16 | Compton Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | WB Left | 0.643 | 16.4 | B |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For

**Intersection Level Of Service Report**
**Intersection 1: Rimpau Ave (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 30.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.961 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 148.00 | 100.00 | 100.00 | 80.00 | 100.00 | 100.00 | 180.00 | 100.00 | 100.00 | 360.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 127 | 355 | 615 | 202 | 321 | 40 | 73 | 885 | 72 | 455 | 945 | 101 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 127 | 355 | 615 | 202 | 321 | 40 | 73 | 885 | 72 | 455 | 945 | 101 |
| Peak Hour Factor | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 33 | 93 | 161 | 53 | 84 | 10 | 19 | 232 | 19 | 119 | 248 | 26 |
| Total Analysis Volume [veh/h] | 133 | 373 | 645 | 212 | 337 | 42 | 77 | 929 | 76 | 477 | 992 | 106 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 68 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 2 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | 2,7 | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 7 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 21 | 13 | 23 | 0 | 11 | 21 | 0 | 13 | 23 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | No | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | No | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 16 | 30 | 9 | 18 | 5 | 17 | 17 | 10 | 22 | 22 |
| g / C, Green / Cycle | 0.09 | 0.23 | 0.44 | 0.13 | 0.27 | 0.08 | 0.25 | 0.25 | 0.15 | 0.32 | 0.32 |
| (v / s)_i Volume / Saturation Flow Rate | 0.07 | 0.20 | 0.41 | 0.12 | 0.21 | 0.04 | 0.19 | 0.19 | 0.14 | 0.21 | 0.21 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1589 | 1781 | 1834 | 1781 | 3560 | 1799 | 3459 | 3560 | 1779 |
| c, Capacity [veh/h] | 169 | 433 | 704 | 236 | 494 | 141 | 884 | 447 | 527 | 1144 | 572 |
| d1, Uniform Delay [s] | 30.12 | 25.09 | 17.78 | 29.07 | 22.91 | 30.16 | 23.66 | 23.68 | 28.37 | 19.73 | 19.73 |
| k, delay calibration | 0.11 | 0.11 | 0.39 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 7.76 | 5.12 | 15.56 | 11.60 | 2.54 | 3.26 | 5.94 | 11.34 | 6.19 | 2.75 | 5.41 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.79 | 0.86 | 0.92 | 0.90 | 0.77 | 0.55 | 0.75 | 0.76 | 0.91 | 0.64 | 0.64 |
| d, Delay for Lane Group [s/veh] | 37.88 | 30.21 | 33.34 | 40.67 | 25.45 | 33.42 | 29.60 | 35.02 | 34.56 | 22.47 | 25.14 |
| Lane Group LOS | D | C | C | D | C | C | C | D | C | C | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.38 | 5.93 | 11.11 | 3.96 | 5.46 | 1.26 | 5.18 | 5.92 | 3.97 | 4.81 | 5.23 |
| 50th-Percentile Queue Length [ft/ln] | 59.42 | 148.22 | 277.81 | 98.94 | 136.40 | 31.50 | 129.59 | 148.05 | 99.18 | 120.23 | 130.79 |
| 95th-Percentile Queue Length [veh/ln] | 4.28 | 9.92 | 16.58 | 7.12 | 9.29 | 2.27 | 8.92 | 9.91 | 7.14 | 8.41 | 8.98 |
| 95th-Percentile Queue Length [ft/ln] | 106.95 | 248.05 | 414.49 | 178.09 | 232.17 | 56.69 | 222.94 | 247.82 | 178.52 | 210.15 | 224.56 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 37.88 | 30.21 | 33.34 | 40.67 | 25.45 | 25.45 | 33.42 | 31.13 | 35.02 | 34.56 | 23.17 | 25.14 |
| Movement LOS | D | C | C | D | C | C | C | C | D | C | C | C |
| d_A, Approach Delay [s/veh] | 32.85 | | | 30.91 | | | 31.56 | | | 26.75 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 30.09 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.961 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 23.91 | 23.91 | 23.91 | 23.91 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.749 | 2.360 | 2.996 | 3.256 |
| Crosswalk LOS | B | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 500 | 559 | 500 | 559 |
| d_b, Bicycle Delay [s] | 19.14 | 17.67 | 19.14 | 17.67 |
| l_b,int, Bicycle LOS Score for Intersection | 3.459 | 2.535 | 2.155 | 2.426 |
| Bicycle LOS | C | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Rimpau Ave (NS) at California Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 10.6 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.550 |

**Intersection Setup**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 50.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 35.00 | | 40.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | Yes | |

**Volumes**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 636 | 6 | 0 | 793 | 13 | 366 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 636 | 6 | 0 | 793 | 13 | 366 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 167 | 2 | 0 | 209 | 3 | 96 |
| Total Analysis Volume [veh/h] | 669 | 6 | 0 | 835 | 14 | 385 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Split | Split |
|---|---|---|---|---|---|---|
| Signal Group | 2 | 0 | 0 | 6 | 7 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 21 | 0 | 0 | 21 | 39 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | C | L | R |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 35 | 35 | 35 | 17 | 17 |
| g / C, Green / Cycle | 0.59 | 0.59 | 0.59 | 0.28 | 0.28 |
| (v / s)_i Volume / Saturation Flow Rate | 0.13 | 0.12 | 0.23 | 0.01 | 0.24 |
| s, saturation flow rate [veh/h] | 3560 | 1861 | 3560 | 1781 | 1589 |
| c, Capacity [veh/h] | 2082 | 1089 | 2082 | 502 | 448 |
| d1, Uniform Delay [s] | 5.93 | 5.89 | 6.77 | 15.62 | 20.45 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.24 | 0.43 | 0.58 | 0.02 | 4.90 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.22 | 0.21 | 0.40 | 0.03 | 0.86 |
| d, Delay for Lane Group [s/veh] | 6.17 | 6.32 | 7.34 | 15.64 | 25.35 |
| Lane Group LOS | A | A | A | B | C |
| Critical Lane Group | No | No | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 1.05 | 1.10 | 2.24 | 0.13 | 5.01 |
| 50th-Percentile Queue Length [ft/ln] | 26.22 | 27.60 | 56.05 | 3.13 | 125.16 |
| 95th-Percentile Queue Length [veh/ln] | 1.89 | 1.99 | 4.04 | 0.23 | 8.68 |
| 95th-Percentile Queue Length [ft/ln] | 47.20 | 49.68 | 100.90 | 5.63 | 216.89 |

**Movement, Approach, & Intersection Results**

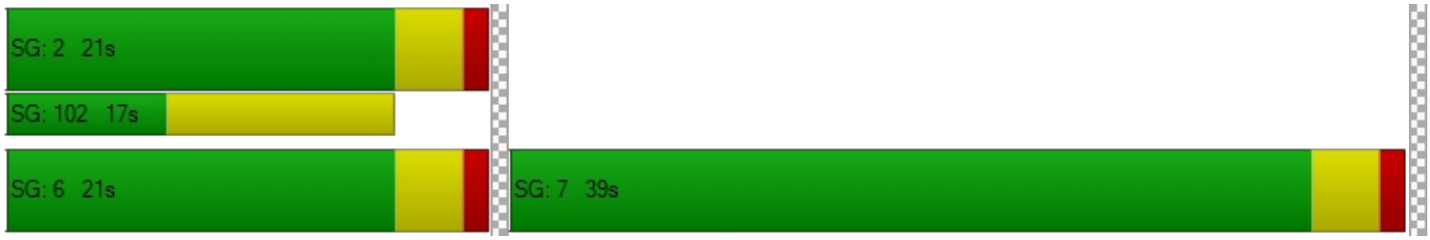
| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 6.22 | 6.32 | 0.00 | 7.34 | 15.64 | 25.35 |
| Movement LOS | A | A | | A | B | C |
| d_A, Approach Delay [s/veh] | 6.22 | | 7.34 | | 25.01 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 10.64 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.550 | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 20.04 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 0.000 | 2.240 |
| Crosswalk LOS | F | F | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 566 | 566 | 1165 |
| d_b, Bicycle Delay [s] | 15.44 | 15.44 | 5.23 |
| l_b,int, Bicycle LOS Score for Intersection | 1.931 | 2.248 | 1.560 |
| Bicycle LOS | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Rimpau Ave (NS) at Olympic Dr (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 16.6 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.463 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 140.00 | 100.00 | 100.00 | 140.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 32 | 488 | 10 | 109 | 626 | 71 | 64 | 8 | 26 | 9 | 13 | 128 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 32 | 488 | 10 | 109 | 626 | 71 | 64 | 8 | 26 | 9 | 13 | 128 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 8 | 128 | 3 | 29 | 165 | 19 | 17 | 2 | 7 | 2 | 3 | 34 |
| Total Analysis Volume [veh/h] | 34 | 514 | 11 | 115 | 659 | 75 | 67 | 8 | 27 | 9 | 14 | 135 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 7 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 11 | 21 | 0 | 11 | 28 | 0 | 0 | 17 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | Yes | No | | | No | |
| Maximum Recall | No | No | | No | No | | No | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | C | R | C | R |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 3 | 24 | 24 | 6 | 27 | 27 | 18 | 18 | 7 | 7 |
| g / C, Green / Cycle | 0.05 | 0.41 | 0.41 | 0.10 | 0.45 | 0.45 | 0.29 | 0.29 | 0.11 | 0.11 |
| (v / s)_i Volume / Saturation Flow Rate | 0.02 | 0.14 | 0.14 | 0.06 | 0.20 | 0.20 | 0.05 | 0.02 | 0.02 | 0.08 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1856 | 1781 | 1870 | 1804 | 1402 | 1589 | 1493 | 1589 |
| c, Capacity [veh/h] | 94 | 755 | 750 | 181 | 846 | 816 | 553 | 470 | 251 | 179 |
| d1, Uniform Delay [s] | 27.53 | 12.45 | 12.45 | 25.98 | 11.28 | 11.28 | 15.64 | 15.20 | 24.00 | 25.90 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.31 | 1.27 | 1.28 | 3.69 | 1.67 | 1.73 | 0.11 | 0.05 | 0.16 | 6.29 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.36 | 0.35 | 0.35 | 0.64 | 0.44 | 0.44 | 0.14 | 0.06 | 0.09 | 0.75 |
| d, Delay for Lane Group [s/veh] | 29.84 | 13.72 | 13.74 | 29.67 | 12.95 | 13.02 | 15.75 | 15.25 | 24.16 | 32.19 |
| Lane Group LOS | C | B | B | C | B | B | B | B | C | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.50 | 2.36 | 2.34 | 1.65 | 3.20 | 3.10 | 0.73 | 0.26 | 0.29 | 2.08 |
| 50th-Percentile Queue Length [ft/ln] | 12.54 | 58.90 | 58.61 | 41.22 | 79.88 | 77.46 | 18.27 | 6.43 | 7.23 | 51.89 |
| 95th-Percentile Queue Length [veh/ln] | 0.90 | 4.24 | 4.22 | 2.97 | 5.75 | 5.58 | 1.32 | 0.46 | 0.52 | 3.74 |
| 95th-Percentile Queue Length [ft/ln] | 22.56 | 106.02 | 105.50 | 74.20 | 143.79 | 139.42 | 32.89 | 11.57 | 13.01 | 93.41 |

**Movement, Approach, & Intersection Results**

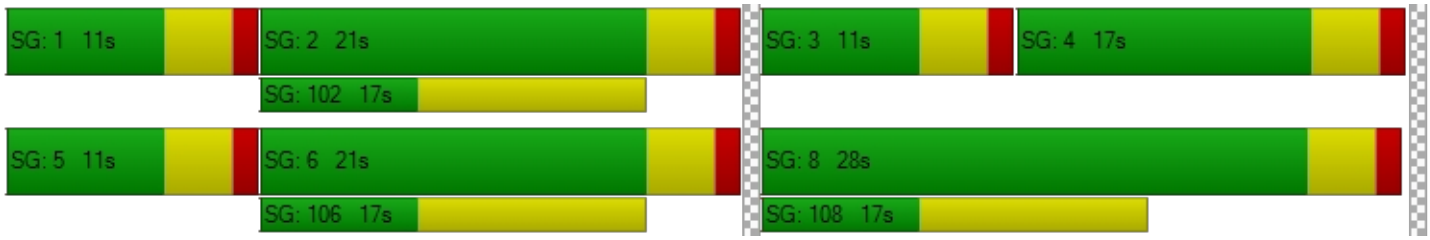
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 29.84 | 13.73 | 13.74 | 29.67 | 12.98 | 13.02 | 15.75 | 15.75 | 15.25 | 24.16 | 24.16 | 32.19 |
| Movement LOS | C | B | B | C | B | B | B | B | B | C | C | C |
| d_A, Approach Delay [s/veh] | 14.71 | | | 15.24 | | | 15.62 | | | 31.02 | | |
| Approach LOS | B | | | B | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 16.58 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.463 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.06 | 0.00 | 20.06 | 20.06 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.575 | 0.000 | 1.979 | 2.013 |
| Crosswalk LOS | B | F | A | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 566 | 566 | 799 | 433 |
| d_b, Bicycle Delay [s] | 15.46 | 15.46 | 10.84 | 18.46 |
| l_b,int, Bicycle LOS Score for Intersection | 2.021 | 2.260 | 1.728 | 1.820 |
| Bicycle LOS | B | B | A | A |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 4: Rimpau Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 14.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.572 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 23 | 277 | 45 | 99 | 448 | 52 | 26 | 122 | 43 | 33 | 101 | 115 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 23 | 277 | 45 | 99 | 448 | 52 | 26 | 122 | 43 | 33 | 101 | 115 |
| Peak Hour Factor | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 6 | 71 | 12 | 25 | 115 | 13 | 7 | 31 | 11 | 8 | 26 | 29 |
| Total Analysis Volume [veh/h] | 24 | 284 | 46 | 101 | 459 | 53 | 27 | 125 | 44 | 34 | 103 | 118 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 516 | 535 | 536 | 560 | 477 | 532 | 480 | 540 |
| Degree of Utilization, x | 0.34 | 0.33 | 0.57 | 0.55 | 0.32 | 0.08 | 0.29 | 0.22 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 1.51 | 1.44 | 3.56 | 3.29 | 1.36 | 0.27 | 1.17 | 0.83 |
| 95th-Percentile Queue Length [ft] | 37.81 | 35.91 | 89.09 | 82.20 | 33.97 | 6.73 | 29.14 | 20.66 |
| Approach Delay [s/veh] | 13.00 | | 17.32 | | 12.92 | | 12.27 | |
| Approach LOS | B | | C | | B | | B | |
| Intersection Delay [s/veh] | 14.72 | | | | | | | |
| Intersection LOS | B | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 5: California Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 13.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.574 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | No | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 118 | 191 | 26 | 17 | 156 | 25 | 16 | 77 | 169 | 57 | 74 | 44 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 118 | 191 | 26 | 17 | 156 | 25 | 16 | 77 | 169 | 57 | 74 | 44 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 31 | 50 | 7 | 4 | 41 | 7 | 4 | 20 | 44 | 15 | 19 | 12 |
| Total Analysis Volume [veh/h] | 124 | 201 | 27 | 18 | 164 | 26 | 17 | 81 | 178 | 60 | 78 | 46 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 566 | 659 | 557 | 631 | 544 | 618 | 524 | 606 |
| Degree of Utilization, x | 0.57 | 0.04 | 0.33 | 0.04 | 0.18 | 0.29 | 0.26 | 0.08 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 3.61 | 0.13 | 1.41 | 0.13 | 0.65 | 1.19 | 1.05 | 0.25 |
| 95th-Percentile Queue Length [ft] | 90.33 | 3.20 | 35.31 | 3.22 | 16.30 | 29.73 | 26.22 | 6.14 |
| Approach Delay [s/veh] | 16.61 | | 11.81 | | 10.84 | | 11.28 | |
| Approach LOS | C | | B | | B | | B | |
| Intersection Delay [s/veh] | 13.11 | | | | | | | |
| Intersection LOS | B | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 6: Compton Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 8.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.251 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 100 | 85 | 12 | 1 | 25 | 19 | 13 | 21 | 65 | 5 | 21 | 1 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 100 | 85 | 12 | 1 | 25 | 19 | 13 | 21 | 65 | 5 | 21 | 1 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 26 | 22 | 3 | 0 | 7 | 5 | 3 | 6 | 17 | 1 | 6 | 0 |
| Total Analysis Volume [veh/h] | 105 | 89 | 13 | 1 | 26 | 20 | 14 | 22 | 68 | 5 | 22 | 1 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | |
|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 825 | 851 | 672 | 808 | 677 | 796 |
| Degree of Utilization, x | 0.25 | 0.06 | 0.05 | 0.08 | 0.04 | 0.00 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 0.99 | 0.17 | 0.17 | 0.27 | 0.12 | 0.00 |
| 95th-Percentile Queue Length [ft] | 24.82 | 4.37 | 4.23 | 6.87 | 3.11 | 0.09 |
| Approach Delay [s/veh] | 8.82 | 7.48 | 7.84 | | 8.21 | |
| Approach LOS | A | A | A | | A | |
| Intersection Delay [s/veh] | 8.35 | | | | | |
| Intersection LOS | A | | | | | |

**Intersection Level Of Service Report**
**Intersection 7: Laurel Canyon Way (NS) at Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 0.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.000 |

**Intersection Setup**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**Volumes**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 34 | 0 | 0 | 27 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 34 | 0 | 0 | 27 | 0 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 0 | 0 | 7 | 0 | 0 |
| Total Analysis Volume [veh/h] | 36 | 0 | 0 | 28 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|---|---|---|---|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 7.29 | 0.00 | 8.82 | 8.47 |
| Movement LOS | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.00 | | 8.65 | |
| Approach LOS | A | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.00 | | | | | |
| Intersection LOS | A | | | | | |

**Intersection Level Of Service Report**
**Intersection 8: State St (NS) at Bel Air St/Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 8.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.003 |

**Intersection Setup**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 25.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 1 | 9 | 0 | 0 | 12 | 2 | 0 | 0 | 3 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 1 | 9 | 0 | 0 | 12 | 2 | 0 | 0 | 3 | 0 | 0 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 2 | 0 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 1 | 9 | 0 | 0 | 13 | 2 | 0 | 0 | 3 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.25 | 0.00 | 0.00 | 7.23 | 0.00 | 0.00 | 8.66 | 9.16 | 8.39 | 8.67 | 9.15 | 8.36 |
| Movement LOS | A | A | A | A | A | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 0.05 | 0.05 | 0.05 | 0.00 | 0.00 | 0.00 | 0.21 | 0.21 | 0.21 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 0.72 | | | 0.00 | | | 8.39 | | | 8.73 | | |
| Approach LOS | A | | | A | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 1.16 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 42.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.040 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 4 | 0 | 0 | 37 | 0 | 59 | 41 | 936 | 5 | 0 | 528 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 0 | 0 | 37 | 0 | 59 | 41 | 936 | 5 | 0 | 528 | 14 |
| Peak Hour Factor | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 10 | 0 | 15 | 11 | 242 | 1 | 0 | 137 | 4 |
| Total Analysis Volume [veh/h] | 4 | 0 | 0 | 38 | 0 | 61 | 42 | 968 | 5 | 0 | 546 | 14 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | Yes | | |
| Number of Storage Spaces in Median | 0 | 2 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.04 | 0.00 | 0.00 | 0.11 | 0.00 | 0.08 | 0.04 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 42.33 | 42.99 | 13.32 | 16.55 | 20.59 | 10.42 | 8.73 | 0.00 | 0.00 | 10.11 | 0.00 | 0.00 |
| Movement LOS | E | E | B | C | C | B | A | A | A | B | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.12 | 0.12 | 0.12 | 0.36 | 0.36 | 0.27 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 3.08 | 3.08 | 3.08 | 9.06 | 9.06 | 6.87 | 3.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 42.33 | | | 12.77 | | | 0.36 | | | 0.00 | | |
| Approach LOS | E | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 1.07 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 10: I-15 SB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 16.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.719 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 67.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 401 | 2 | 674 | 0 | 1094 | 428 | 23 | 840 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 401 | 2 | 674 | 0 | 1094 | 428 | 23 | 840 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9730 | 0.9730 | 0.9730 | 0.9500 | 0.9730 | 0.9730 | 0.9730 | 0.9730 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 103 | 1 | 173 | 0 | 281 | 110 | 6 | 216 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 412 | 2 | 693 | 0 | 1124 | 440 | 24 | 863 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 21 | 0 | 19 | 40 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 16 | 16 | 30 | 30 | 2 | 36 |
| g / C, Green / Cycle | | 0.27 | 0.27 | 0.49 | 0.49 | 0.04 | 0.60 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.23 | 0.25 | 0.32 | 0.28 | 0.01 | 0.24 |
| s, saturation flow rate [veh/h] | | 1781 | 2813 | 3560 | 1589 | 1781 | 3560 |
| c, Capacity [veh/h] | | 475 | 751 | 1755 | 784 | 72 | 2137 |
| d1, Uniform Delay [s] | | 21.07 | 21.45 | 11.30 | 10.69 | 28.06 | 6.35 |
| k, delay calibration | | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 5.08 | 5.38 | 1.81 | 2.90 | 2.64 | 0.57 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | | 0.87 | 0.92 | 0.64 | 0.56 | 0.33 | 0.40 |
|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | | 26.14 | 26.83 | 13.10 | 13.59 | 30.70 | 6.92 |
| Lane Group LOS | | C | C | B | B | C | A |
| Critical Lane Group | | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 5.72 | 4.86 | 4.45 | 3.60 | 0.36 | 1.94 |
| 50th-Percentile Queue Length [ft/ln] | | 142.88 | 121.53 | 111.22 | 90.02 | 8.91 | 48.50 |
| 95th-Percentile Queue Length [veh/ln] | | 9.64 | 8.48 | 7.91 | 6.48 | 0.64 | 3.49 |
| 95th-Percentile Queue Length [ft/ln] | | 240.89 | 211.92 | 197.70 | 162.03 | 16.03 | 87.29 |

**Movement, Approach, & Intersection Results**

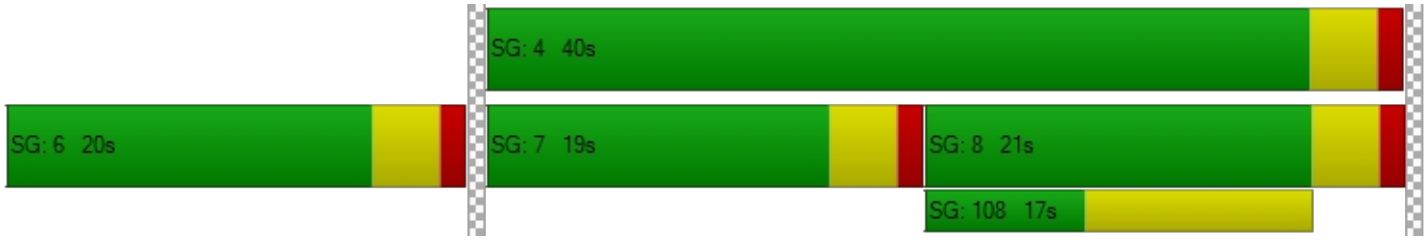
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 26.14 | 26.14 | 26.83 | 0.00 | 13.10 | 13.59 | 30.70 | 6.92 | 0.00 |
| Movement LOS | | | | C | C | C | | B | B | C | A | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 26.58 | | | 13.24 | | | 7.56 | | |
| Approach LOS | A | | | C | | | B | | | A | | |
| d_I, Intersection Delay [s/veh] | 15.97 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.719 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.05 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 1.855 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | A | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 533 | 566 | 1198 |
| d_b, Bicycle Delay [s] | 30.04 | 16.17 | 15.45 | 4.83 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 3.386 | 2.850 | 2.291 |
| Bicycle LOS | D | C | C | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 11: I-15 NB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 16.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.836 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 354 | 2 | 35 | 0 | 0 | 0 | 549 | 1032 | 0 | 0 | 421 | 278 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 354 | 2 | 35 | 0 | 0 | 0 | 549 | 1032 | 0 | 0 | 421 | 278 |
| Peak Hour Factor | 0.9740 | 0.9740 | 0.9740 | 0.9500 | 0.9500 | 0.9500 | 0.9740 | 0.9740 | 0.9500 | 0.9500 | 0.9740 | 0.9740 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 91 | 1 | 9 | 0 | 0 | 0 | 141 | 265 | 0 | 0 | 108 | 71 |
| Total Analysis Volume [veh/h] | 363 | 2 | 36 | 0 | 0 | 0 | 564 | 1060 | 0 | 0 | 432 | 285 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 28 | 0 | 0 | 0 | 0 | 11 | 32 | 0 | 0 | 21 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 9 | 9 | 9 | | 13 | 43 | 27 | 27 |
| g / C, Green / Cycle | 0.15 | 0.15 | 0.15 | | 0.21 | 0.72 | 0.44 | 0.44 |
| (v / s)_i Volume / Saturation Flow Rate | 0.10 | 0.10 | 0.02 | | 0.16 | 0.57 | 0.12 | 0.18 |
| s, saturation flow rate [veh/h] | 1781 | 1782 | 1589 | | 3459 | 1870 | 3560 | 1589 |
| c, Capacity [veh/h] | 261 | 261 | 233 | | 729 | 1347 | 1577 | 704 |
| d1, Uniform Delay [s] | 24.40 | 24.40 | 22.41 | | 22.39 | 5.43 | 10.62 | 11.37 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.36 | 3.36 | 0.30 | | 1.79 | 4.71 | 0.43 | 1.73 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.70 | 0.70 | 0.15 | | 0.77 | 0.79 | 0.27 | 0.40 |
| d, Delay for Lane Group [s/veh] | 27.76 | 27.76 | 22.71 | | 24.18 | 10.14 | 11.05 | 13.10 |
| Lane Group LOS | C | C | C | | C | B | B | B |
| Critical Lane Group | Yes | No | No | | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.56 | 2.56 | 0.44 | | 3.42 | 4.43 | 1.50 | 2.32 |
| 50th-Percentile Queue Length [ft/ln] | 63.88 | 63.91 | 10.96 | | 85.52 | 110.84 | 37.47 | 58.05 |
| 95th-Percentile Queue Length [veh/ln] | 4.60 | 4.60 | 0.79 | | 6.16 | 7.89 | 2.70 | 4.18 |
| 95th-Percentile Queue Length [ft/ln] | 114.99 | 115.04 | 19.73 | | 153.94 | 197.17 | 67.44 | 104.49 |

**Movement, Approach, & Intersection Results**

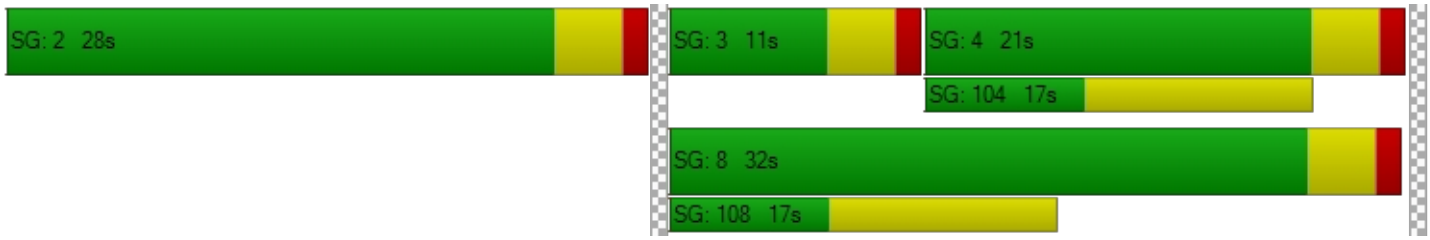
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 27.76 | 27.76 | 22.71 | 0.00 | 0.00 | 0.00 | 24.18 | 10.14 | 0.00 | 0.00 | 11.05 | 13.10 |
| Movement LOS | C | C | C | | | | C | B | | | B | B |
| d_A, Approach Delay [s/veh] | 27.31 | | | 0.00 | | | 15.01 | | | 11.86 | | |
| Approach LOS | C | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 15.99 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.836 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.05 | 20.05 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.048 | 2.107 | 0.000 | 0.000 |
| Crosswalk LOS | B | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 799 | 0 | 932 | 566 |
| d_b, Bicycle Delay [s] | 10.83 | 30.04 | 8.57 | 15.45 |
| l_b,int, Bicycle LOS Score for Intersection | 2.221 | 4.132 | 4.239 | 2.151 |
| Bicycle LOS | B | D | D | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 12: California Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.623 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 195.00 | 100.00 | 100.00 | 212.00 | 100.00 | 150.00 | 268.00 | 100.00 | 115.00 | 217.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 201 | 205 | 139 | 360 | 209 | 118 | 249 | 799 | 163 | 315 | 568 | 119 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 201 | 205 | 139 | 360 | 209 | 118 | 249 | 799 | 163 | 315 | 568 | 119 |
| Peak Hour Factor | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 51 | 52 | 35 | 91 | 53 | 30 | 63 | 202 | 41 | 80 | 143 | 30 |
| Total Analysis Volume [veh/h] | 203 | 207 | 140 | 364 | 211 | 119 | 252 | 807 | 165 | 318 | 574 | 120 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 65 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 12 | 22 | 0 | 11 | 21 | 0 | 11 | 21 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 7 | 10 | 10 | 8 | 11 | 11 | 11 | 23 | 23 | 8 | 21 | 21 |
| g / C, Green / Cycle | 0.11 | 0.15 | 0.15 | 0.12 | 0.16 | 0.16 | 0.17 | 0.36 | 0.36 | 0.13 | 0.32 | 0.32 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.11 | 0.09 | 0.11 | 0.11 | 0.07 | 0.14 | 0.16 | 0.10 | 0.09 | 0.11 | 0.08 |
| s, saturation flow rate [veh/h] | 3459 | 1870 | 1589 | 3459 | 1870 | 1589 | 1781 | 5094 | 1589 | 3459 | 5094 | 1589 |
| c, Capacity [veh/h] | 367 | 274 | 233 | 428 | 308 | 261 | 300 | 1819 | 568 | 440 | 1609 | 502 |
| d1, Uniform Delay [s] | 27.71 | 26.72 | 26.06 | 28.00 | 25.68 | 24.63 | 26.30 | 16.03 | 15.05 | 27.38 | 17.21 | 16.52 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.30 | 4.20 | 2.47 | 4.79 | 2.71 | 1.24 | 6.29 | 0.79 | 1.29 | 2.27 | 0.62 | 1.12 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.55 | 0.75 | 0.60 | 0.85 | 0.69 | 0.46 | 0.84 | 0.44 | 0.29 | 0.72 | 0.36 | 0.24 |
| d, Delay for Lane Group [s/veh] | 29.01 | 30.92 | 28.53 | 32.79 | 28.39 | 25.87 | 32.59 | 16.81 | 16.35 | 29.65 | 17.83 | 17.64 |
| Lane Group LOS | C | C | C | C | C | C | C | B | B | C | B | B |
| Critical Lane Group | No | Yes | No | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 1.43 | 3.09 | 1.98 | 2.83 | 3.04 | 1.61 | 3.89 | 2.71 | 1.69 | 2.28 | 1.99 | 1.30 |
| 50th-Percentile Queue Length [ft/ln] | 35.68 | 77.16 | 49.62 | 70.80 | 75.89 | 40.16 | 97.28 | 67.68 | 42.18 | 57.00 | 49.82 | 32.51 |
| 95th-Percentile Queue Length [veh/ln] | 2.57 | 5.56 | 3.57 | 5.10 | 5.46 | 2.89 | 7.00 | 4.87 | 3.04 | 4.10 | 3.59 | 2.34 |
| 95th-Percentile Queue Length [ft/ln] | 64.22 | 138.89 | 89.32 | 127.45 | 136.60 | 72.28 | 175.10 | 121.82 | 75.92 | 102.60 | 89.67 | 58.52 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 29.01 | 30.92 | 28.53 | 32.79 | 28.39 | 25.87 | 32.59 | 16.81 | 16.35 | 29.65 | 17.83 | 17.64 |
| Movement LOS | C | C | C | C | C | C | C | B | B | C | B | B |
| d_A, Approach Delay [s/veh] | 29.61 | | | 30.27 | | | 20.00 | | | 21.52 | | |
| Approach LOS | C | | | C | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 24.01 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.623 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 22.50 | 22.50 | 22.50 | 22.50 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.793 | 2.711 | 3.095 | 3.209 |
| Crosswalk LOS | C | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 522 | 553 | 522 | 522 |
| d_b, Bicycle Delay [s] | 17.79 | 17.06 | 17.79 | 17.79 |
| l_b,int, Bicycle LOS Score for Intersection | 2.467 | 2.705 | 2.233 | 2.116 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 13: El Sobrante Rd (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 42.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.669 |

**Intersection Setup**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 65.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 78.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 45.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 70 | 28 | 192 | 159 | 44 | 125 | 84 | 1542 | 75 | 118 | 1395 | 186 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 70 | 28 | 192 | 159 | 44 | 125 | 84 | 1542 | 75 | 118 | 1395 | 186 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 18 | 7 | 51 | 42 | 12 | 33 | 22 | 406 | 20 | 31 | 367 | 49 |
| Total Analysis Volume [veh/h] | 74 | 29 | 202 | 167 | 46 | 132 | 88 | 1623 | 79 | 124 | 1468 | 196 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 116 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 10 | 22 | 0 | 34 | 46 | 0 | 11 | 43 | 0 | 17 | 49 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 35 | 0 | 0 | 18 | 0 | 0 | 26 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 42 | 8 | 44 | 7 | 40 | 40 | 10 | 43 | 43 |
| g / C, Green / Cycle | 0.05 | 0.37 | 0.07 | 0.38 | 0.06 | 0.34 | 0.34 | 0.08 | 0.37 | 0.37 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.14 | 0.05 | 0.11 | 0.05 | 0.32 | 0.32 | 0.07 | 0.31 | 0.31 |
| s, saturation flow rate [veh/h] | 1781 | 1620 | 3459 | 1654 | 1781 | 3560 | 1826 | 1781 | 3560 | 1760 |
| c, Capacity [veh/h] | 93 | 594 | 235 | 632 | 108 | 1220 | 626 | 151 | 1306 | 646 |
| d1, Uniform Delay [s] | 54.39 | 27.16 | 52.95 | 24.80 | 53.85 | 36.65 | 36.67 | 52.21 | 33.82 | 33.87 |
| k, delay calibration | 0.11 | 0.50 | 0.11 | 0.50 | 0.11 | 0.11 | 0.37 | 0.11 | 0.11 | 0.32 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 14.26 | 1.92 | 3.92 | 1.11 | 13.54 | 3.43 | 17.03 | 10.32 | 1.67 | 9.26 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | 0.80 | 0.39 | 0.71 | 0.28 | 0.81 | 0.92 | 0.92 | 0.82 | 0.85 | 0.85 |
|---|---|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | 68.65 | 29.08 | 56.86 | 25.91 | 67.39 | 40.07 | 53.70 | 62.53 | 35.49 | 43.13 |
| Lane Group LOS | E | C | E | C | E | D | D | E | D | D |
| Critical Lane Group | No | Yes | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.52 | 5.10 | 2.45 | 3.46 | 2.90 | 15.23 | 18.01 | 3.92 | 14.09 | 15.35 |
| 50th-Percentile Queue Length [ft/ln] | 63.04 | 127.60 | 61.27 | 86.41 | 72.51 | 380.82 | 450.36 | 98.00 | 352.31 | 383.79 |
| 95th-Percentile Queue Length [veh/ln] | 4.54 | 8.81 | 4.41 | 6.22 | 5.22 | 21.63 | 24.98 | 7.06 | 20.25 | 21.78 |
| 95th-Percentile Queue Length [ft/ln] | 113.46 | 220.23 | 110.29 | 155.54 | 130.52 | 540.84 | 624.38 | 176.41 | 506.22 | 544.43 |

**Movement, Approach, & Intersection Results**

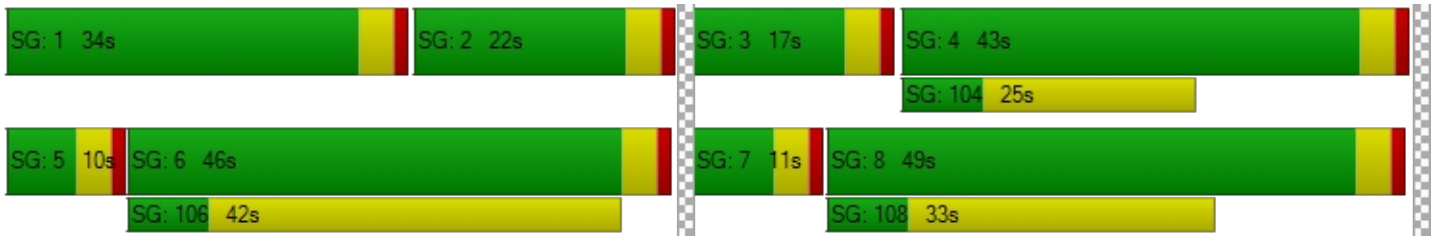
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 68.65 | 29.08 | 29.08 | 56.86 | 25.91 | 25.91 | 67.39 | 44.26 | 53.70 | 62.53 | 37.34 | 43.13 |
| Movement LOS | E | C | C | E | C | C | E | D | D | E | D | D |
| d_A, Approach Delay [s/veh] | 38.68 | | | 40.90 | | | 45.81 | | | 39.72 | | |
| Approach LOS | D | | | D | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 42.32 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.669 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 47.53 | 47.53 | 47.53 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.102 | 2.384 | 3.249 | 0.000 |
| Crosswalk LOS | B | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 310 | 724 | 672 | 776 |
| d_b, Bicycle Delay [s] | 41.41 | 23.61 | 25.56 | 21.74 |
| l_b,int, Bicycle LOS Score for Intersection | 2.063 | 2.129 | 2.544 | 2.543 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 14: I-15 SB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 36.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.988 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 310.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 378 | 0 | 1227 | 0 | 1624 | 180 | 333 | 634 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 378 | 0 | 1227 | 0 | 1624 | 180 | 333 | 634 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 99 | 0 | 323 | 0 | 427 | 47 | 88 | 167 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 398 | 0 | 1292 | 0 | 1709 | 189 | 351 | 667 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 80 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Split | Split | Overlap | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4 | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 40 | 40 | 0 | 28 | 0 | 12 | 40 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | No | | No | | No | No | |
| Maximum Recall | | | | | No | No | | No | | No | No | |
| Pedestrian Recall | | | | | No | No | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | C | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 36 | 36 | 36 | 24 | 24 | 8 | 36 |
| g / C, Green / Cycle | | 0.45 | 0.45 | 0.45 | 0.30 | 0.30 | 0.10 | 0.45 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.11 | 0.11 | 0.46 | 0.28 | 0.27 | 0.10 | 0.13 |
| s, saturation flow rate [veh/h] | | 1781 | 1781 | 2813 | 5094 | 1747 | 3459 | 5094 |
| c, Capacity [veh/h] | | 799 | 799 | 1262 | 1528 | 524 | 353 | 2301 |
| d1, Uniform Delay [s] | | 13.73 | 13.73 | 22.11 | 27.26 | 26.97 | 35.98 | 13.86 |
| k, delay calibration | | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.16 | 0.16 | 18.54 | 11.64 | 21.74 | 21.28 | 0.32 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.25 | 0.25 | 1.02 | 0.93 | 0.91 | 1.00 | 0.29 |
| d, Delay for Lane Group [s/veh] | | 13.89 | 13.89 | 40.65 | 38.90 | 48.71 | 57.26 | 14.18 |
| Lane Group LOS | | B | B | F | D | D | E | B |
| Critical Lane Group | | No | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 2.13 | 2.13 | 13.96 | 9.70 | 11.13 | 4.30 | 2.34 |
| 50th-Percentile Queue Length [ft/ln] | | 53.37 | 53.37 | 349.03 | 242.58 | 278.37 | 107.41 | 58.48 |
| 95th-Percentile Queue Length [veh/ln] | | 3.84 | 3.84 | 20.43 | 14.81 | 16.61 | 7.70 | 4.21 |
| 95th-Percentile Queue Length [ft/ln] | | 96.07 | 96.07 | 510.77 | 370.29 | 415.19 | 192.39 | 105.26 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 13.89 | 13.89 | 40.65 | 0.00 | 40.54 | 48.71 | 57.26 | 14.18 | 0.00 |
| Movement LOS | | | | B | B | F | | D | D | E | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 34.35 | | | 41.35 | | | 29.03 | | |
| Approach LOS | A | | | C | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 36.06 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.988 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 29.80 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 2.623 | 0.000 | 0.000 |
| Crosswalk LOS | F | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 899 | 599 | 899 |
| d_b, Bicycle Delay [s] | 40.04 | 12.13 | 19.64 | 12.13 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 4.348 | 2.343 | 2.120 |
| Bicycle LOS | D | E | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 15: I-15 NB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 10.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.770 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 148 | 0 | 376 | 0 | 0 | 0 | 0 | 985 | 1044 | 0 | 829 | 555 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 148 | 0 | 376 | 0 | 0 | 0 | 0 | 985 | 1044 | 0 | 829 | 555 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 39 | 0 | 99 | 0 | 0 | 0 | 0 | 259 | 0 | 0 | 218 | 146 |
| Total Analysis Volume [veh/h] | 156 | 0 | 396 | 0 | 0 | 0 | 0 | 1037 | 0 | 0 | 873 | 584 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Split | Permiss | Split | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 18 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | | | | | No | | | No | |
| Maximum Recall | No | | | | | | | No | | | No | |
| Pedestrian Recall | No | | | | | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | | C | R | C | R |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 18 | 18 | | 34 | 34 | 34 | 34 |
| g / C, Green / Cycle | 0.29 | 0.29 | | 0.57 | 0.57 | 0.57 | 0.57 |
| (v / s)_i Volume / Saturation Flow Rate | 0.05 | 0.25 | | 0.20 | 0.00 | 0.17 | 0.37 |
| s, saturation flow rate [veh/h] | 3459 | 1589 | | 5094 | 2813 | 5094 | 1589 |
| c, Capacity [veh/h] | 1021 | 469 | | 2912 | 1608 | 2912 | 909 |
| d1, Uniform Delay [s] | 15.64 | 19.89 | | 6.92 | 0.00 | 6.66 | 8.72 |
| k, delay calibration | 0.11 | 0.11 | | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.07 | 4.22 | | 0.34 | 0.00 | 0.26 | 3.49 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.15 | 0.84 | | 0.36 | 0.00 | 0.30 | 0.64 |
| d, Delay for Lane Group [s/veh] | 15.71 | 24.11 | | 7.27 | 0.00 | 6.92 | 12.20 |
| Lane Group LOS | B | C | | A | A | A | B |
| Critical Lane Group | No | Yes | | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.74 | 5.24 | | 1.74 | 0.00 | 1.41 | 4.39 |
| 50th-Percentile Queue Length [ft/ln] | 18.39 | 130.92 | | 43.52 | 0.00 | 35.14 | 109.69 |
| 95th-Percentile Queue Length [veh/ln] | 1.32 | 8.99 | | 3.13 | 0.00 | 2.53 | 7.82 |
| 95th-Percentile Queue Length [ft/ln] | 33.10 | 224.74 | | 78.34 | 0.00 | 63.25 | 195.57 |

**Movement, Approach, & Intersection Results**

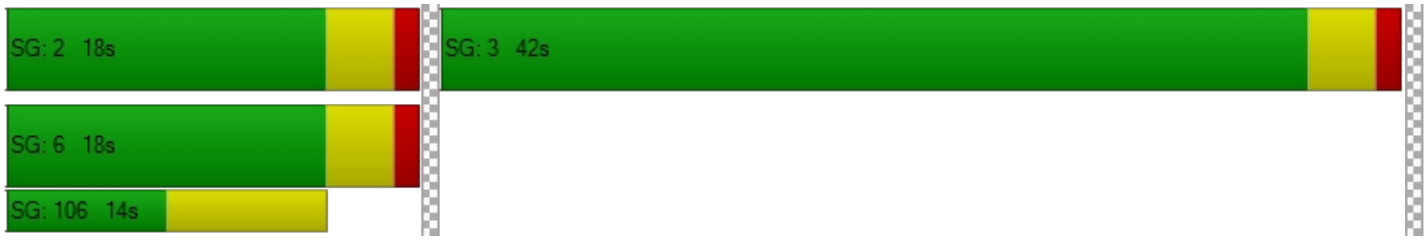
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 15.71 | 0.00 | 24.11 | 0.00 | 0.00 | 0.00 | 0.00 | 7.27 | 0.00 | 0.00 | 6.92 | 12.20 |
| Movement LOS | B | | C | | | | | A | A | | A | B |
| d_A, Approach Delay [s/veh] | 21.73 | | | 0.00 | | | 7.27 | | | 9.04 | | |
| Approach LOS | C | | | A | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 10.74 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.770 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 20.04 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 1.970 | 0.000 | 0.000 |
| Crosswalk LOS | F | A | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1265 | 0 | 466 | 466 |
| d_b, Bicycle Delay [s] | 4.05 | 30.03 | 17.66 | 17.66 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 4.132 | 2.130 | 2.361 |
| Bicycle LOS | A | D | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 16: Compton Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 16.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.643 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 197.00 | 100.00 | 83.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 259 | 0 | 0 | 216 | 0 | 1292 | 75 | 275 | 883 | 258 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 259 | 0 | 0 | 216 | 0 | 1292 | 75 | 275 | 883 | 258 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 68 | 0 | 0 | 57 | 0 | 340 | 20 | 72 | 232 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 273 | 0 | 0 | 227 | 0 | 1360 | 79 | 289 | 929 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 |
| Maximum Green [s] | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 0 | 30 | 0 | 0 |
| Amber [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 0.0 |
| Split [s] | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 25 | 0 | 64 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | No | | | | | No | | | | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| Minimum Recall | | | No | | | | | No | | No | | |
| Maximum Recall | | | No | | | | | No | | No | | |
| Pedestrian Recall | | | No | | | | | No | | No | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | R | | C | C | L |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 25 | | 25 | 25 | 25 |
| L, Total Lost Time per Cycle [s] | 4.00 | | 4.00 | 4.00 | 0.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | | 2.00 | 2.00 | 0.00 |
| g_i, Effective Green Time [s] | 6 | | 11 | 11 | 0 |
| g / C, Green / Cycle | 0.24 | | 0.45 | 0.45 | 0.00 |
| (v / s)_i Volume / Saturation Flow Rate | 0.17 | | 0.27 | 0.26 | 0.78 |
| s, saturation flow rate [veh/h] | 1589 | | 3560 | 1817 | 371 |
| c, Capacity [veh/h] | 378 | | 1600 | 817 | 281 |
| d1, Uniform Delay [s] | 8.97 | | 5.31 | 5.27 | 12.79 |
| k, delay calibration | 0.11 | | 0.11 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.62 | | 0.36 | 0.68 | 60.79 |
| d3, Initial Queue Delay [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.72 | | 0.60 | 0.59 | 1.03 |
| d, Delay for Lane Group [s/veh] | 11.59 | | 5.67 | 5.94 | 73.59 |
| Lane Group LOS | B | | A | A | F |
| Critical Lane Group | Yes | | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 1.10 | | 0.30 | 0.37 | 6.74 |
| 50th-Percentile Queue Length [ft/ln] | 27.58 | | 7.52 | 9.29 | 168.57 |
| 95th-Percentile Queue Length [veh/ln] | 1.99 | | 0.54 | 0.67 | 11.00 |
| 95th-Percentile Queue Length [ft/ln] | 49.64 | | 13.53 | 16.72 | 275.03 |

**Movement, Approach, & Intersection Results**

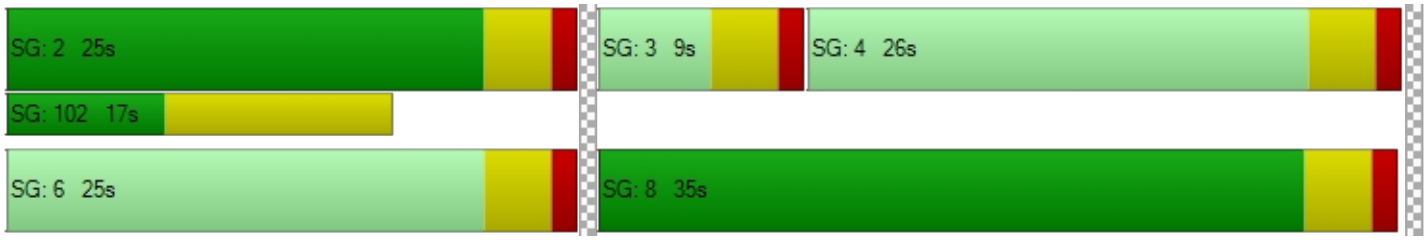
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 11.59 | 0.00 | 0.00 | 0.00 | 0.00 | 5.75 | 5.94 | 73.59 | 0.00 | 0.00 |
| Movement LOS | | | B | | | | | A | A | F | | |
| d_A, Approach Delay [s/veh] | 11.59 | | | 0.00 | | | 5.76 | | | 73.59 | | |
| Approach LOS | B | | | A | | | A | | | E | | |
| d_I, Intersection Delay [s/veh] | 16.35 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.643 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 4.11 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.352 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | B | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 2434 | 0 | 1649 | 0 |
| d_b, Bicycle Delay [s] | 0.60 | 12.73 | 0.39 | 12.73 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 1.560 | 2.351 | 1.560 |
| Bicycle LOS | A | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



## Existing Plus Project

Monte Olivo Phase 1

Vistro File: G:\...\AM E.vistro
Report File: G:\...\AM EP.pdf

Scenario 2 Existing Plus Project
6/13/2023

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Rimpau Ave (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | SB Left | 0.888 | 24.9 | C |
| 2 | Rimpau Ave (NS) at California Ave (EW) | Signalized | HCM 6th Edition | WB Right | 0.443 | 6.4 | A |
| 3 | Rimpau Ave (NS) at Olympic Dr (EW) | Signalized | HCM 6th Edition | WB Left | 0.816 | 19.8 | B |
| 4 | Rimpau Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | SB Left | 0.567 | 16.3 | C |
| 5 | California Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Thru | 0.540 | 12.0 | B |
| 6 | Compton Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Left | 0.439 | 10.1 | B |
| 7 | Laurel Canyon Way (NS) at Project Dwy (EW) | Two-way stop | HCM 6th Edition | WB Left | 0.027 | 8.9 | A |
| 8 | State St (NS) at Bel Air St/Project Dwy (EW) | Two-way stop | HCM 6th Edition | WB Left | 0.033 | 8.8 | A |
| 9 | State St (NS) at Ontario Ave (EW) | Two-way stop | HCM 6th Edition | NB Left | 0.036 | 31.8 | D |
| 10 | I-15 SB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | WB Left | 0.937 | 20.7 | C |
| 11 | I-15 NB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | NB Left | 0.758 | 17.8 | B |
| 12 | California Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | EB Left | 0.635 | 21.2 | C |
| 13 | El Sobrante Rd (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | EB Left | 0.587 | 38.7 | D |
| 14 | I-15 SB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | WB Left | 0.892 | 27.9 | C |
| 15 | I-15 NB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | NB Right | 0.657 | 12.0 | B |
| 16 | Compton Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | NB Right | 0.709 | 22.4 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For

**Intersection Level Of Service Report**
**Intersection 1: Rimpau Ave (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.888 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 148.00 | 100.00 | 100.00 | 80.00 | 100.00 | 100.00 | 180.00 | 100.00 | 100.00 | 360.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 101 | 271 | 481 | 115 | 269 | 42 | 88 | 825 | 104 | 542 | 1084 | 69 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 3 | 6 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 104 | 274 | 487 | 115 | 270 | 42 | 88 | 825 | 105 | 544 | 1084 | 69 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 27 | 72 | 128 | 30 | 71 | 11 | 23 | 217 | 28 | 143 | 285 | 18 |
| Total Analysis Volume [veh/h] | 109 | 288 | 513 | 121 | 284 | 44 | 93 | 868 | 111 | 573 | 1141 | 73 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 65 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 2 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | 2,7 | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 7 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 21 | 11 | 21 | 0 | 11 | 21 | 0 | 12 | 22 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | No | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | No | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 13 | 30 | 6 | 14 | 6 | 17 | 17 | 12 | 24 | 24 |
| g / C, Green / Cycle | 0.09 | 0.21 | 0.46 | 0.10 | 0.21 | 0.09 | 0.26 | 0.26 | 0.19 | 0.36 | 0.36 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.15 | 0.32 | 0.07 | 0.18 | 0.05 | 0.18 | 0.18 | 0.17 | 0.23 | 0.23 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1589 | 1781 | 1827 | 1781 | 3560 | 1764 | 3459 | 3560 | 1813 |
| c, Capacity [veh/h] | 165 | 385 | 724 | 171 | 382 | 156 | 941 | 466 | 649 | 1297 | 660 |
| d1, Uniform Delay [s] | 28.50 | 24.22 | 14.24 | 28.52 | 24.79 | 28.55 | 21.56 | 21.58 | 25.72 | 16.98 | 16.99 |
| k, delay calibration | 0.11 | 0.11 | 0.23 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 4.41 | 2.91 | 2.73 | 5.33 | 5.69 | 3.58 | 4.23 | 8.39 | 4.17 | 2.24 | 4.35 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.66 | 0.75 | 0.71 | 0.71 | 0.86 | 0.59 | 0.69 | 0.70 | 0.88 | 0.62 | 0.62 |
| d, Delay for Lane Group [s/veh] | 32.91 | 27.13 | 16.97 | 33.85 | 30.48 | 32.14 | 25.79 | 29.98 | 29.89 | 19.21 | 21.34 |
| Lane Group LOS | C | C | B | C | C | C | C | C | C | B | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 1.74 | 4.13 | 5.63 | 1.97 | 5.07 | 1.44 | 4.54 | 5.06 | 4.26 | 4.63 | 5.11 |
| 50th-Percentile Queue Length [ft/ln] | 43.59 | 103.34 | 140.69 | 49.23 | 126.78 | 36.12 | 113.61 | 126.53 | 106.50 | 115.73 | 127.79 |
| 95th-Percentile Queue Length [veh/ln] | 3.14 | 7.44 | 9.52 | 3.54 | 8.76 | 2.60 | 8.04 | 8.75 | 7.64 | 8.16 | 8.82 |
| 95th-Percentile Queue Length [ft/ln] | 78.47 | 186.02 | 237.96 | 88.61 | 219.11 | 65.02 | 201.01 | 218.77 | 191.12 | 203.95 | 220.49 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 32.91 | 27.13 | 16.97 | 33.85 | 30.48 | 30.48 | 32.14 | 26.82 | 29.98 | 29.89 | 19.84 | 21.34 |
| Movement LOS | C | C | B | C | C | C | C | C | C | C | B | C |
| d_A, Approach Delay [s/veh] | 22.09 | | | 31.39 | | | 27.61 | | | 23.12 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 24.92 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.888 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 22.44 | 22.44 | 22.44 | 22.44 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.709 | 2.265 | 3.015 | 3.242 |
| Crosswalk LOS | B | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 523 | 523 | 523 | 554 |
| d_b, Bicycle Delay [s] | 17.73 | 17.73 | 17.73 | 17.00 |
| l_b,int, Bicycle LOS Score for Intersection | 3.061 | 2.300 | 2.149 | 2.542 |
| Bicycle LOS | C | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Rimpau Ave (NS) at California Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 6.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.443 |

**Intersection Setup**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 50.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 35.00 | | 40.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | Yes | |

**Volumes**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 692 | 11 | 0 | 872 | 1 | 181 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 0 | 3 | 1 | 0 | 9 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 695 | 11 | 3 | 873 | 1 | 190 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 183 | 3 | 1 | 230 | 0 | 50 |
| Total Analysis Volume [veh/h] | 732 | 12 | 3 | 919 | 1 | 200 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Split | Split |
|---|---|---|---|---|---|---|
| Signal Group | 2 | 0 | 0 | 6 | 7 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 21 | 0 | 0 | 21 | 39 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | C | L | R |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 43 | 43 | 43 | 9 | 9 |
| g / C, Green / Cycle | 0.71 | 0.71 | 0.71 | 0.16 | 0.16 |
| (v / s)_i Volume / Saturation Flow Rate | 0.14 | 0.13 | 0.26 | 0.00 | 0.13 |
| s, saturation flow rate [veh/h] | 3560 | 1854 | 3560 | 1781 | 1589 |
| c, Capacity [veh/h] | 2521 | 1313 | 2521 | 283 | 252 |
| d1, Uniform Delay [s] | 2.97 | 2.96 | 3.45 | 21.26 | 24.31 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.17 | 0.32 | 0.41 | 0.00 | 5.55 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.20 | 0.19 | 0.36 | 0.00 | 0.79 |
| d, Delay for Lane Group [s/veh] | 3.15 | 3.27 | 3.86 | 21.27 | 29.86 |
| Lane Group LOS | A | A | A | C | C |
| Critical Lane Group | No | No | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.56 | 0.62 | 1.23 | 0.01 | 2.84 |
| 50th-Percentile Queue Length [ft/ln] | 14.11 | 15.41 | 30.63 | 0.28 | 70.94 |
| 95th-Percentile Queue Length [veh/ln] | 1.02 | 1.11 | 2.21 | 0.02 | 5.11 |
| 95th-Percentile Queue Length [ft/ln] | 25.40 | 27.74 | 55.13 | 0.50 | 127.70 |

**Movement, Approach, & Intersection Results**

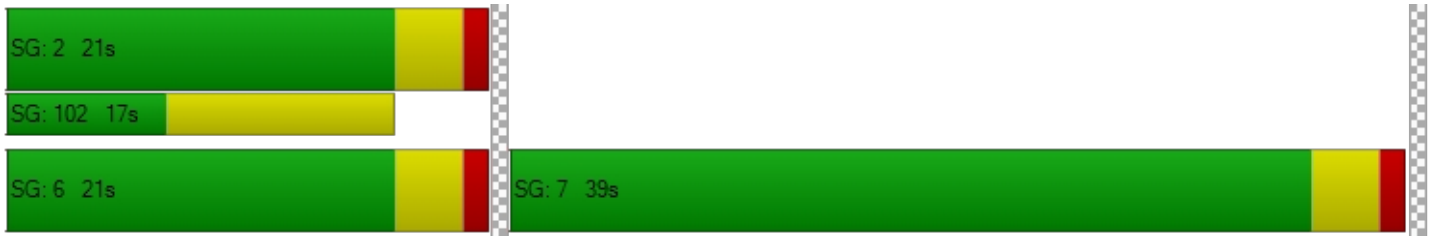
| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 3.19 | 3.27 | 0.00 | 3.86 | 21.27 | 29.86 |
| Movement LOS | A | A | | A | C | C |
| d_A, Approach Delay [s/veh] | 3.19 | | 3.86 | | 29.82 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 6.39 | | | | | |
| Intersection LOS | A | | | | | |
| Intersection V/C | 0.443 | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 20.02 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 0.000 | 2.178 |
| Crosswalk LOS | F | F | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 566 | 566 | 1166 |
| d_b, Bicycle Delay [s] | 15.42 | 15.42 | 5.22 |
| l_b,int, Bicycle LOS Score for Intersection | 1.969 | 2.318 | 1.560 |
| Bicycle LOS | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Rimpau Ave (NS) at Olympic Dr (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 19.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.816 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 140.00 | 100.00 | 100.00 | 140.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 31 | 420 | 17 | 181 | 517 | 175 | 223 | 14 | 119 | 70 | 36 | 59 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 31 | 423 | 17 | 181 | 518 | 175 | 223 | 14 | 119 | 70 | 36 | 59 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 8 | 111 | 4 | 48 | 136 | 46 | 59 | 4 | 31 | 18 | 9 | 16 |
| Total Analysis Volume [veh/h] | 33 | 445 | 18 | 191 | 545 | 184 | 235 | 15 | 125 | 74 | 38 | 62 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 7 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 14 | 24 | 0 | 11 | 25 | 0 | 0 | 14 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | Yes | No | | | No | |
| Maximum Recall | No | No | | No | No | | No | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | C | R | C | R |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 3 | 19 | 19 | 8 | 24 | 24 | 21 | 21 | 10 | 10 |
| g / C, Green / Cycle | 0.05 | 0.32 | 0.32 | 0.13 | 0.40 | 0.40 | 0.35 | 0.35 | 0.17 | 0.17 |
| (v / s)_i Volume / Saturation Flow Rate | 0.02 | 0.12 | 0.12 | 0.11 | 0.20 | 0.20 | 0.28 | 0.08 | 0.26 | 0.04 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1845 | 1781 | 1870 | 1711 | 888 | 1589 | 439 | 1589 |
| c, Capacity [veh/h] | 92 | 590 | 582 | 241 | 746 | 682 | 449 | 556 | 173 | 266 |
| d1, Uniform Delay [s] | 27.58 | 16.12 | 16.13 | 25.21 | 13.66 | 13.66 | 15.82 | 13.80 | 27.06 | 21.72 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.33 | 1.98 | 2.01 | 5.80 | 2.49 | 2.72 | 4.90 | 0.20 | 4.04 | 0.44 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.36 | 0.39 | 0.40 | 0.79 | 0.51 | 0.51 | 0.56 | 0.22 | 0.65 | 0.23 |
| d, Delay for Lane Group [s/veh] | 29.91 | 18.10 | 18.14 | 31.01 | 16.15 | 16.38 | 20.73 | 14.00 | 31.10 | 22.16 |
| Lane Group LOS | C | B | B | C | B | B | C | B | C | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.49 | 2.53 | 2.51 | 2.82 | 3.82 | 3.54 | 2.99 | 1.14 | 1.75 | 0.74 |
| 50th-Percentile Queue Length [ft/ln] | 12.20 | 63.29 | 62.79 | 70.38 | 95.49 | 88.47 | 74.84 | 28.57 | 43.79 | 18.60 |
| 95th-Percentile Queue Length [veh/ln] | 0.88 | 4.56 | 4.52 | 5.07 | 6.88 | 6.37 | 5.39 | 2.06 | 3.15 | 1.34 |
| 95th-Percentile Queue Length [ft/ln] | 21.96 | 113.93 | 113.02 | 126.69 | 171.89 | 159.24 | 134.71 | 51.43 | 78.82 | 33.48 |

**Movement, Approach, & Intersection Results**

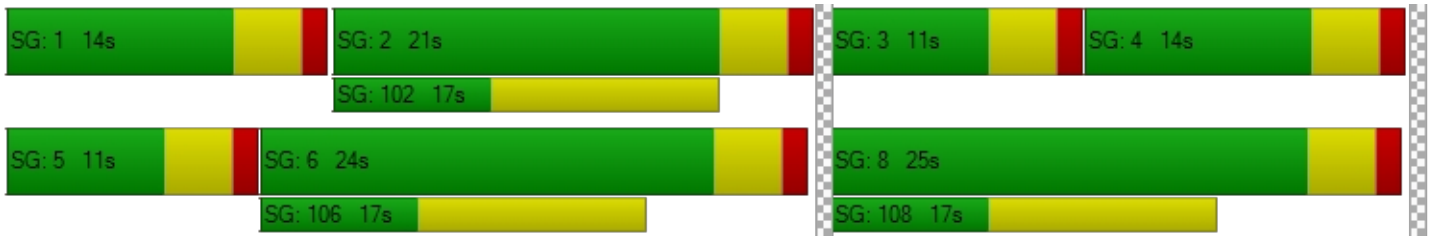
| d_M, Delay for Movement [s/veh] | 29.91 | 18.12 | 18.14 | 31.01 | 16.22 | 16.38 | 20.73 | 20.73 | 14.00 | 31.10 | 31.10 | 22.16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement LOS | C | B | B | C | B | B | C | C | B | C | C | C |
| d_A, Approach Delay [s/veh] | 18.90 | | | 19.32 | | | 18.48 | | | 27.92 | | |
| Approach LOS | B | | | B | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 19.82 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.816 | | | | | | | | | | | |

**Other Modes**

| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 11.0 | 11.0 |
|---|---|---|---|---|
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.06 | 0.00 | 20.06 | 20.06 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.665 | 0.000 | 2.088 | 2.047 |
| Crosswalk LOS | B | F | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 566 | 666 | 699 | 333 |
| d_b, Bicycle Delay [s] | 15.46 | 13.38 | 12.72 | 20.88 |
| l_b,int, Bicycle LOS Score for Intersection | 1.969 | 2.319 | 2.178 | 1.847 |
| Bicycle LOS | A | B | B | A |

## Sequence

| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 4: Rimpau Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 16.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.567 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 34 | 401 | 47 | 106 | 323 | 108 | 78 | 109 | 38 | 35 | 86 | 92 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 34 | 401 | 48 | 107 | 323 | 108 | 78 | 109 | 38 | 37 | 87 | 95 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 106 | 13 | 28 | 85 | 28 | 21 | 29 | 10 | 10 | 23 | 25 |
| Total Analysis Volume [veh/h] | 36 | 422 | 51 | 113 | 340 | 114 | 82 | 115 | 40 | 39 | 92 | 100 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 504 | 519 | 500 | 536 | 452 | 510 | 452 | 506 |
| Degree of Utilization, x | 0.51 | 0.49 | 0.57 | 0.53 | 0.44 | 0.08 | 0.29 | 0.20 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 2.81 | 2.67 | 3.48 | 3.07 | 2.17 | 0.25 | 1.19 | 0.73 |
| 95th-Percentile Queue Length [ft] | 70.36 | 66.86 | 87.09 | 76.85 | 54.33 | 6.36 | 29.74 | 18.22 |
| Approach Delay [s/veh] | 16.55 | | 17.83 | | 15.63 | | 12.88 | |
| Approach LOS | C | | C | | C | | B | |
| Intersection Delay [s/veh] | 16.33 | | | | | | | |
| Intersection LOS | C | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 5: California Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 12.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.540 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | No | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 81 | 227 | 21 | 12 | 79 | 5 | 35 | 78 | 117 | 17 | 75 | 69 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 2 | 0 | 4 | 6 | 9 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 81 | 227 | 23 | 15 | 79 | 5 | 35 | 80 | 117 | 21 | 81 | 78 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 21 | 60 | 6 | 4 | 21 | 1 | 9 | 21 | 31 | 6 | 21 | 21 |
| Total Analysis Volume [veh/h] | 85 | 239 | 24 | 16 | 83 | 5 | 37 | 84 | 123 | 22 | 85 | 82 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 600 | 697 | 573 | 655 | 571 | 660 | 568 | 651 |
| Degree of Utilization, x | 0.54 | 0.03 | 0.17 | 0.01 | 0.21 | 0.19 | 0.19 | 0.13 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 3.22 | 0.11 | 0.62 | 0.02 | 0.80 | 0.68 | 0.69 | 0.43 |
| 95th-Percentile Queue Length [ft] | 80.44 | 2.67 | 15.50 | 0.58 | 19.92 | 17.01 | 17.20 | 10.74 |
| Approach Delay [s/veh] | 14.99 | | 10.19 | | 10.05 | | 9.86 | |
| Approach LOS | B | | B | | B | | A | |
| Intersection Delay [s/veh] | 11.97 | | | | | | | |
| Intersection LOS | B | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 6: Compton Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 10.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.439 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 216 | 108 | 13 | 0 | 8 | 0 | 7 | 11 | 60 | 10 | 18 | 7 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 7 | 0 | 5 | 19 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 216 | 108 | 15 | 0 | 8 | 0 | 7 | 18 | 60 | 15 | 37 | 7 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 57 | 28 | 4 | 0 | 2 | 0 | 2 | 5 | 16 | 4 | 10 | 2 |
| Total Analysis Volume [veh/h] | 227 | 114 | 16 | 0 | 8 | 0 | 7 | 19 | 63 | 16 | 39 | 7 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | |
|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 812 | 761 | 639 | 751 | 635 | 748 |
| Degree of Utilization, x | 0.44 | 0.01 | 0.04 | 0.08 | 0.09 | 0.01 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 2.26 | 0.03 | 0.13 | 0.27 | 0.28 | 0.03 |
| 95th-Percentile Queue Length [ft] | 56.53 | 0.80 | 3.18 | 6.84 | 7.08 | 0.71 |
| Approach Delay [s/veh] | 10.86 | 7.78 | 8.12 | | 8.75 | |
| Approach LOS | B | A | A | | A | |
| Intersection Delay [s/veh] | 10.08 | | | | | |
| Intersection LOS | B | | | | | |

**Intersection Level Of Service Report**
**Intersection 7: Laurel Canyon Way (NS) at Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 8.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.027 |

**Intersection Setup**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**Volumes**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 24 | 0 | 0 | 35 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 9 | 0 | 0 | 24 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 24 | 9 | 0 | 35 | 24 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 6 | 2 | 0 | 9 | 6 | 0 |
| Total Analysis Volume [veh/h] | 25 | 9 | 0 | 37 | 25 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop |
|---|---|---|---|
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 7.28 | 0.00 | 8.94 | 8.55 |
| Movement LOS | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.08 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 2.05 | 2.05 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.00 | | 8.94 | |
| Approach LOS | A | | A | | A | |
| d_I, Intersection Delay [s/veh] | 2.33 | | | | | |
| Intersection LOS | A | | | | | |

**Intersection Level Of Service Report**
**Intersection 8: State St (NS) at Bel Air St/Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 8.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.033 |

**Intersection Setup**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 25.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 9 | 0 | 0 | 12 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 9 | 12 | 0 | 12 | 0 | 0 | 0 | 2 | 30 | 0 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 2 | 3 | 0 | 3 | 0 | 0 | 0 | 1 | 8 | 0 | 0 |
| Total Analysis Volume [veh/h] | 2 | 9 | 13 | 0 | 13 | 0 | 0 | 0 | 2 | 32 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.25 | 0.00 | 0.00 | 7.26 | 0.00 | 0.00 | 8.70 | 9.23 | 8.38 | 8.84 | 9.32 | 8.51 |
| Movement LOS | A | A | A | A | A | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.10 | 0.10 | 0.10 |
| 95th-Percentile Queue Length [ft/ln] | 0.09 | 0.09 | 0.09 | 0.00 | 0.00 | 0.00 | 0.14 | 0.14 | 0.14 | 2.55 | 2.55 | 2.55 |
| d_A, Approach Delay [s/veh] | 0.60 | | | 0.00 | | | 8.38 | | | 8.84 | | |
| Approach LOS | A | | | A | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 4.42 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 31.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.036 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 5 | 0 | 1 | 19 | 0 | 75 | 47 | 388 | 2 | 1 | 960 | 12 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 8 | 0 | 22 | 9 | 0 | 0 | 0 | 0 | 3 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 0 | 1 | 27 | 0 | 97 | 56 | 388 | 2 | 1 | 960 | 15 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 7 | 0 | 26 | 15 | 102 | 1 | 0 | 253 | 4 |
| Total Analysis Volume [veh/h] | 5 | 0 | 1 | 28 | 0 | 102 | 59 | 408 | 2 | 1 | 1011 | 16 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | Yes | | |
| Number of Storage Spaces in Median | 0 | 2 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.04 | 0.00 | 0.00 | 0.12 | 0.00 | 0.20 | 0.09 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 31.76 | 41.19 | 10.35 | 22.50 | 20.68 | 13.77 | 10.87 | 0.00 | 0.00 | 8.15 | 0.00 | 0.00 |
| Movement LOS | D | E | B | C | C | B | B | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.12 | 0.12 | 0.12 | 0.40 | 0.40 | 0.74 | 0.29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 2.88 | 2.88 | 2.88 | 10.06 | 10.06 | 18.40 | 7.19 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 28.19 | | | 15.65 | | | 1.37 | | | 0.01 | | |
| Approach LOS | D | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 1.75 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**

**Intersection 10: I-15 SB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 20.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.937 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 67.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 262 | 2 | 938 | 0 | 950 | 467 | 29 | 1345 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 2 | 7 | 6 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 266 | 2 | 938 | 0 | 952 | 469 | 36 | 1351 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 70 | 1 | 247 | 0 | 251 | 123 | 9 | 356 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 280 | 2 | 987 | 0 | 1002 | 494 | 38 | 1422 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 21 | 0 | 13 | 34 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 22 | 22 | 23 | 23 | 3 | 30 |
| g / C, Green / Cycle | | 0.37 | 0.37 | 0.38 | 0.38 | 0.06 | 0.50 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.16 | 0.35 | 0.28 | 0.31 | 0.02 | 0.40 |
| s, saturation flow rate [veh/h] | | 1782 | 2813 | 3560 | 1589 | 1781 | 3560 |
| c, Capacity [veh/h] | | 652 | 1030 | 1344 | 600 | 101 | 1783 |
| d1, Uniform Delay [s] | | 14.36 | 18.62 | 16.22 | 16.92 | 27.34 | 12.48 |
| k, delay calibration | | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.45 | 6.43 | 3.80 | 12.13 | 2.28 | 3.81 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.43 | 0.96 | 0.75 | 0.82 | 0.37 | 0.80 |
| d, Delay for Lane Group [s/veh] | | 14.81 | 25.05 | 20.02 | 29.05 | 29.62 | 16.29 |
| Lane Group LOS | | B | C | C | C | C | B |
| Critical Lane Group | | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | | 2.66 | 6.77 | 5.46 | 6.91 | 0.54 | 6.59 |
| 50th-Percentile Queue Length [ft/ln] | | 66.46 | 169.15 | 136.54 | 172.70 | 13.44 | 164.86 |
| 95th-Percentile Queue Length [veh/ln] | | 4.79 | 11.03 | 9.29 | 11.22 | 0.97 | 10.81 |
| 95th-Percentile Queue Length [ft/ln] | | 119.63 | 275.79 | 232.35 | 280.46 | 24.20 | 270.15 |

**Movement, Approach, & Intersection Results**

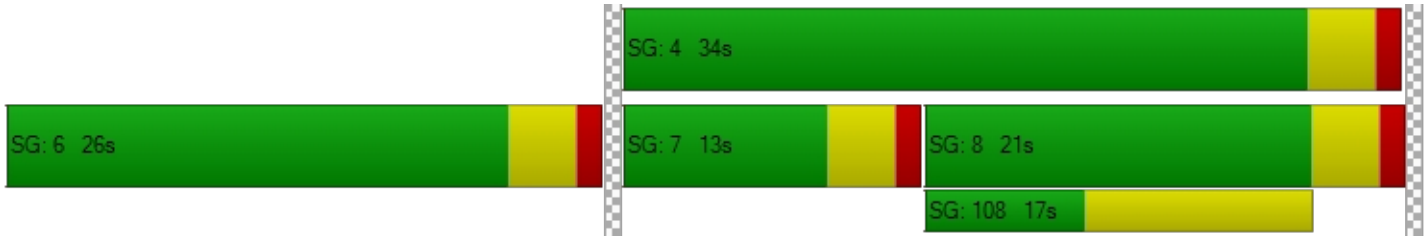
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 14.81 | 14.81 | 25.05 | 0.00 | 20.02 | 29.05 | 29.62 | 16.29 | 0.00 |
| Movement LOS | | | | B | B | C | | C | C | C | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 22.77 | | | 23.00 | | | 16.64 | | |
| Approach LOS | A | | | C | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 20.73 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.937 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.05 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 1.922 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | A | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 732 | 566 | 999 |
| d_b, Bicycle Delay [s] | 30.04 | 12.07 | 15.45 | 7.53 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 3.653 | 2.794 | 2.764 |
| Bicycle LOS | D | D | C | C |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 11: I-15 NB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 17.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.758 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 354 | 2 | 33 | 0 | 0 | 0 | 618 | 539 | 0 | 0 | 1046 | 270 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 11 | 11 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 355 | 2 | 36 | 0 | 0 | 0 | 618 | 545 | 0 | 0 | 1057 | 281 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 93 | 1 | 9 | 0 | 0 | 0 | 163 | 143 | 0 | 0 | 278 | 74 |
| Total Analysis Volume [veh/h] | 374 | 2 | 38 | 0 | 0 | 0 | 651 | 574 | 0 | 0 | 1113 | 296 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 28 | 0 | 0 | 0 | 0 | 11 | 32 | 0 | 0 | 21 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 9 | 9 | 9 | | 14 | 43 | 25 | 25 |
| g / C, Green / Cycle | 0.15 | 0.15 | 0.15 | | 0.24 | 0.72 | 0.42 | 0.42 |
| (v / s)_i Volume / Saturation Flow Rate | 0.11 | 0.11 | 0.02 | | 0.19 | 0.31 | 0.31 | 0.19 |
| s, saturation flow rate [veh/h] | 1781 | 1782 | 1589 | | 3459 | 1870 | 3560 | 1589 |
| c, Capacity [veh/h] | 267 | 268 | 239 | | 817 | 1341 | 1474 | 658 |
| d1, Uniform Delay [s] | 24.29 | 24.29 | 22.26 | | 21.61 | 3.48 | 15.02 | 12.69 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.36 | 3.36 | 0.31 | | 1.83 | 1.00 | 3.64 | 2.22 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.70 | 0.70 | 0.16 | | 0.80 | 0.43 | 0.75 | 0.45 |
| d, Delay for Lane Group [s/veh] | 27.65 | 27.65 | 22.57 | | 23.44 | 4.48 | 18.66 | 14.91 |
| Lane Group LOS | C | C | C | | C | A | B | B |
| Critical Lane Group | Yes | No | No | | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 2.63 | 2.63 | 0.46 | | 3.89 | 1.32 | 5.76 | 2.66 |
| 50th-Percentile Queue Length [ft/ln] | 65.66 | 65.69 | 11.52 | | 97.27 | 33.12 | 144.08 | 66.49 |
| 95th-Percentile Queue Length [veh/ln] | 4.73 | 4.73 | 0.83 | | 7.00 | 2.38 | 9.70 | 4.79 |
| 95th-Percentile Queue Length [ft/ln] | 118.20 | 118.25 | 20.74 | | 175.09 | 59.61 | 242.51 | 119.68 |

**Movement, Approach, & Intersection Results**

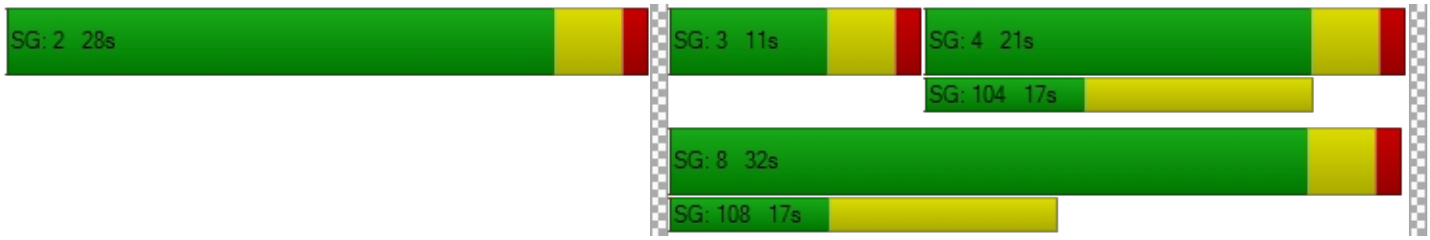
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 27.65 | 27.65 | 22.57 | 0.00 | 0.00 | 0.00 | 23.44 | 4.48 | 0.00 | 0.00 | 18.66 | 14.91 |
| Movement LOS | C | C | C | | | | C | A | | | B | B |
| d_A, Approach Delay [s/veh] | 27.18 | | | 0.00 | | | 14.55 | | | 17.87 | | |
| Approach LOS | C | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 17.80 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.758 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.05 | 20.05 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.052 | 2.155 | 0.000 | 0.000 |
| Crosswalk LOS | B | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 799 | 0 | 932 | 566 |
| d_b, Bicycle Delay [s] | 10.83 | 30.04 | 8.57 | 15.45 |
| l_b,int, Bicycle LOS Score for Intersection | 2.243 | 4.132 | 3.581 | 2.722 |
| Bicycle LOS | B | D | D | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 12: California Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 21.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.635 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 195.00 | 100.00 | 100.00 | 212.00 | 100.00 | 150.00 | 268.00 | 100.00 | 115.00 | 217.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 107 | 199 | 103 | 186 | 76 | 58 | 185 | 753 | 63 | 236 | 952 | 290 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 1 | 1 | 2 | 2 | 0 | 0 | 1 | 0 | 2 | 3 | 1 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 107 | 200 | 104 | 188 | 78 | 58 | 185 | 754 | 63 | 238 | 955 | 291 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 28 | 53 | 27 | 49 | 21 | 15 | 49 | 198 | 17 | 63 | 251 | 77 |
| Total Analysis Volume [veh/h] | 113 | 211 | 109 | 198 | 82 | 61 | 195 | 794 | 66 | 251 | 1005 | 306 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 64 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 11 | 21 | 0 | 11 | 21 | 0 | 11 | 21 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 9 | 9 | 7 | 10 | 10 | 9 | 25 | 25 | 7 | 23 | 23 |
| g / C, Green / Cycle | 0.10 | 0.15 | 0.15 | 0.11 | 0.16 | 0.16 | 0.14 | 0.39 | 0.39 | 0.11 | 0.36 | 0.36 |
| (v / s)_i Volume / Saturation Flow Rate | 0.03 | 0.11 | 0.07 | 0.06 | 0.04 | 0.04 | 0.11 | 0.16 | 0.04 | 0.07 | 0.20 | 0.19 |
| s, saturation flow rate [veh/h] | 3459 | 1870 | 1589 | 3459 | 1870 | 1589 | 1781 | 5094 | 1589 | 3459 | 5094 | 1589 |
| c, Capacity [veh/h] | 334 | 278 | 236 | 371 | 298 | 253 | 245 | 1971 | 615 | 375 | 1823 | 569 |
| d1, Uniform Delay [s] | 27.12 | 26.27 | 25.02 | 27.16 | 23.76 | 23.62 | 26.86 | 14.31 | 12.61 | 27.55 | 16.51 | 16.41 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.59 | 4.27 | 1.41 | 1.19 | 0.50 | 0.49 | 5.89 | 0.61 | 0.35 | 2.08 | 1.21 | 3.62 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | 0.34 | 0.76 | 0.46 | 0.53 | 0.28 | 0.24 | 0.80 | 0.40 | 0.11 | 0.67 | 0.55 | 0.54 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | 27.72 | 30.53 | 26.43 | 28.35 | 24.25 | 24.11 | 32.75 | 14.93 | 12.96 | 29.63 | 17.71 | 20.03 |
| Lane Group LOS | C | C | C | C | C | C | C | B | B | C | B | C |
| Critical Lane Group | No | Yes | No | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.76 | 3.09 | 1.45 | 1.38 | 1.04 | 0.77 | 2.99 | 2.41 | 0.57 | 1.78 | 3.48 | 3.55 |
| 50th-Percentile Queue Length [ft/ln] | 19.01 | 77.31 | 36.30 | 34.55 | 26.00 | 19.33 | 74.66 | 60.37 | 14.14 | 44.39 | 87.04 | 88.71 |
| 95th-Percentile Queue Length [veh/ln] | 1.37 | 5.57 | 2.61 | 2.49 | 1.87 | 1.39 | 5.38 | 4.35 | 1.02 | 3.20 | 6.27 | 6.39 |
| 95th-Percentile Queue Length [ft/ln] | 34.22 | 139.16 | 65.33 | 62.19 | 46.80 | 34.79 | 134.38 | 108.66 | 25.46 | 79.90 | 156.67 | 159.68 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 27.72 | 30.53 | 26.43 | 28.35 | 24.25 | 24.11 | 32.75 | 14.93 | 12.96 | 29.63 | 17.71 | 20.03 |
| Movement LOS | C | C | C | C | C | C | C | B | B | C | B | C |
| d_A, Approach Delay [s/veh] | 28.76 | | | 26.61 | | | 18.10 | | | 20.08 | | |
| Approach LOS | C | | | C | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 21.23 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.635 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 22.01 | 22.01 | 22.01 | 22.01 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.738 | 2.662 | 3.115 | 3.263 |
| Crosswalk LOS | B | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 530 | 530 | 530 | 530 |
| d_b, Bicycle Delay [s] | 17.32 | 17.32 | 17.32 | 17.32 |
| l_b,int, Bicycle LOS Score for Intersection | 2.274 | 2.122 | 2.140 | 2.419 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 13: El Sobrante Rd (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 38.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.587 |

**Intersection Setup**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 65.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 78.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 45.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 15 | 18 | 106 | 118 | 36 | 102 | 59 | 1286 | 41 | 96 | 1612 | 178 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 2 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 15 | 18 | 106 | 118 | 36 | 102 | 59 | 1292 | 41 | 96 | 1614 | 178 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 4 | 5 | 28 | 31 | 9 | 27 | 16 | 340 | 11 | 25 | 425 | 47 |
| Total Analysis Volume [veh/h] | 16 | 19 | 112 | 124 | 38 | 107 | 62 | 1360 | 43 | 101 | 1699 | 187 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 116 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 9 | 11 | 0 | 44 | 46 | 0 | 24 | 49 | 0 | 12 | 37 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 35 | 0 | 0 | 18 | 0 | 0 | 26 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 2 | 44 | 6 | 48 | 5 | 42 | 42 | 8 | 45 | 45 |
| g / C, Green / Cycle | 0.02 | 0.38 | 0.05 | 0.41 | 0.05 | 0.36 | 0.36 | 0.07 | 0.39 | 0.39 |
| (v / s)_i Volume / Saturation Flow Rate | 0.01 | 0.08 | 0.04 | 0.09 | 0.03 | 0.26 | 0.26 | 0.06 | 0.35 | 0.35 |
| s, saturation flow rate [veh/h] | 1781 | 1625 | 3459 | 1655 | 1781 | 3560 | 1841 | 1781 | 3560 | 1777 |
| c, Capacity [veh/h] | 32 | 611 | 189 | 683 | 81 | 1290 | 667 | 123 | 1375 | 686 |
| d1, Uniform Delay [s] | 56.47 | 24.58 | 53.80 | 21.94 | 54.75 | 31.87 | 31.87 | 53.28 | 33.78 | 33.90 |
| k, delay calibration | 0.11 | 0.50 | 0.11 | 0.50 | 0.11 | 0.11 | 0.22 | 0.11 | 0.11 | 0.37 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 11.75 | 0.80 | 3.87 | 0.71 | 13.68 | 0.76 | 2.94 | 12.32 | 2.78 | 15.38 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.50 | 0.21 | 0.66 | 0.21 | 0.76 | 0.72 | 0.72 | 0.82 | 0.91 | 0.92 |
| d, Delay for Lane Group [s/veh] | 68.22 | 25.38 | 57.67 | 22.65 | 68.43 | 32.63 | 34.80 | 65.60 | 36.56 | 49.28 |
| Lane Group LOS | E | C | E | C | E | C | C | E | D | D |
| Critical Lane Group | No | Yes | Yes | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.57 | 2.62 | 1.83 | 2.58 | 2.07 | 10.88 | 11.65 | 3.28 | 16.46 | 18.99 |
| 50th-Percentile Queue Length [ft/ln] | 14.30 | 65.61 | 45.80 | 64.44 | 51.76 | 271.90 | 291.23 | 81.93 | 411.46 | 474.74 |
| 95th-Percentile Queue Length [veh/ln] | 1.03 | 4.72 | 3.30 | 4.64 | 3.73 | 16.28 | 17.25 | 5.90 | 23.11 | 26.14 |
| 95th-Percentile Queue Length [ft/ln] | 25.74 | 118.10 | 82.43 | 116.00 | 93.17 | 407.12 | 431.17 | 147.48 | 577.79 | 653.40 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 68.22 | 25.38 | 25.38 | 57.67 | 22.65 | 22.65 | 68.43 | 33.32 | 34.80 | 65.60 | 39.88 | 49.28 |
| Movement LOS | E | C | C | E | C | C | E | C | C | E | D | D |
| d_A, Approach Delay [s/veh] | 30.04 | | | 38.79 | | | 34.85 | | | 42.07 | | |
| Approach LOS | C | | | D | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 38.65 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.587 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 47.53 | 47.53 | 47.53 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.041 | 2.340 | 3.217 | 0.000 |
| Crosswalk LOS | B | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 121 | 724 | 776 | 569 |
| d_b, Bicycle Delay [s] | 51.22 | 23.61 | 21.74 | 29.70 |
| l_b,int, Bicycle LOS Score for Intersection | 1.802 | 2.003 | 2.365 | 2.652 |
| Bicycle LOS | A | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 14: I-15 SB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 27.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.892 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 310.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 460 | 0 | 1133 | 0 | 1331 | 179 | 327 | 757 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 1 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 460 | 0 | 1134 | 0 | 1337 | 179 | 327 | 758 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 121 | 0 | 298 | 0 | 352 | 47 | 86 | 199 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 484 | 0 | 1194 | 0 | 1407 | 188 | 344 | 798 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 80 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Split | Split | Overlap | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4 | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 38 | 38 | 0 | 28 | 0 | 14 | 42 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | No | | No | | No | No | |
| Maximum Recall | | | | | No | No | | No | | No | No | |
| Pedestrian Recall | | | | | No | No | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | C | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 34 | 34 | 34 | 24 | 24 | 10 | 38 |
| g / C, Green / Cycle | | 0.42 | 0.42 | 0.42 | 0.30 | 0.30 | 0.12 | 0.48 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.14 | 0.14 | 0.42 | 0.23 | 0.23 | 0.10 | 0.16 |
| s, saturation flow rate [veh/h] | | 1781 | 1781 | 2813 | 5094 | 1726 | 3459 | 5094 |
| c, Capacity [veh/h] | | 755 | 755 | 1192 | 1541 | 522 | 429 | 2427 |
| d1, Uniform Delay [s] | | 15.41 | 15.41 | 23.10 | 25.48 | 25.35 | 34.15 | 13.03 |
| k, delay calibration | | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.24 | 0.24 | 12.50 | 3.90 | 10.15 | 3.53 | 0.36 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | | 0.32 | 0.32 | 1.00 | 0.78 | 0.76 | 0.80 | 0.33 |
|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | | 15.65 | 15.65 | 35.61 | 29.38 | 35.51 | 37.68 | 13.39 |
| Lane Group LOS | | B | B | F | C | D | D | B |
| Critical Lane Group | | No | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 2.83 | 2.83 | 12.33 | 6.90 | 7.79 | 3.30 | 2.71 |
| 50th-Percentile Queue Length [ft/ln] | | 70.74 | 70.74 | 308.29 | 172.54 | 194.65 | 82.46 | 67.68 |
| 95th-Percentile Queue Length [veh/ln] | | 5.09 | 5.09 | 18.11 | 11.21 | 12.36 | 5.94 | 4.87 |
| 95th-Percentile Queue Length [ft/ln] | | 127.33 | 127.33 | 452.78 | 280.25 | 309.06 | 148.42 | 121.82 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 15.65 | 15.65 | 35.61 | 0.00 | 30.30 | 35.51 | 37.68 | 13.39 | 0.00 |
| Movement LOS | | | | B | B | F | | C | D | D | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 29.85 | | | 30.91 | | | 20.71 | | |
| Approach LOS | A | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 27.87 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.892 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 29.80 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 2.620 | 0.000 | 0.000 |
| Crosswalk LOS | F | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 849 | 599 | 949 |
| d_b, Bicycle Delay [s] | 40.04 | 13.26 | 19.64 | 11.06 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 4.328 | 2.218 | 2.188 |
| Bicycle LOS | D | E | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**

**Intersection 15: I-15 NB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 12.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.657 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 262 | 0 | 471 | 0 | 0 | 0 | 0 | 929 | 860 | 0 | 822 | 323 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 1 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 262 | 0 | 471 | 0 | 0 | 0 | 0 | 932 | 863 | 0 | 823 | 323 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 69 | 0 | 124 | 0 | 0 | 0 | 0 | 245 | 0 | 0 | 217 | 85 |
| Total Analysis Volume [veh/h] | 276 | 0 | 496 | 0 | 0 | 0 | 0 | 981 | 0 | 0 | 866 | 340 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Split | Permiss | Split | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 18 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | | | | | No | | | No | |
| Maximum Recall | No | | | | | | | No | | | No | |
| Pedestrian Recall | No | | | | | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | | C | R | C | R |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 22 | 22 | | 30 | 30 | 30 | 30 |
| g / C, Green / Cycle | 0.36 | 0.36 | | 0.51 | 0.51 | 0.51 | 0.51 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.31 | | 0.19 | 0.00 | 0.17 | 0.21 |
| s, saturation flow rate [veh/h] | 3459 | 1589 | | 5094 | 2813 | 5094 | 1589 |
| c, Capacity [veh/h] | 1252 | 576 | | 2572 | 1420 | 2572 | 802 |
| d1, Uniform Delay [s] | 13.29 | 17.78 | | 9.13 | 0.00 | 8.88 | 9.38 |
| k, delay calibration | 0.11 | 0.11 | | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.09 | 3.96 | | 0.43 | 0.00 | 0.35 | 1.64 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.22 | 0.86 | | 0.38 | 0.00 | 0.34 | 0.42 |
| d, Delay for Lane Group [s/veh] | 13.38 | 21.74 | | 9.56 | 0.00 | 9.24 | 11.02 |
| Lane Group LOS | B | C | | A | A | A | B |
| Critical Lane Group | No | Yes | | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 1.18 | 6.23 | | 2.09 | 0.00 | 1.79 | 2.49 |
| 50th-Percentile Queue Length [ft/ln] | 29.51 | 155.85 | | 52.34 | 0.00 | 44.86 | 62.29 |
| 95th-Percentile Queue Length [veh/ln] | 2.12 | 10.33 | | 3.77 | 0.00 | 3.23 | 4.48 |
| 95th-Percentile Queue Length [ft/ln] | 53.11 | 258.22 | | 94.21 | 0.00 | 80.74 | 112.12 |

**Movement, Approach, & Intersection Results**

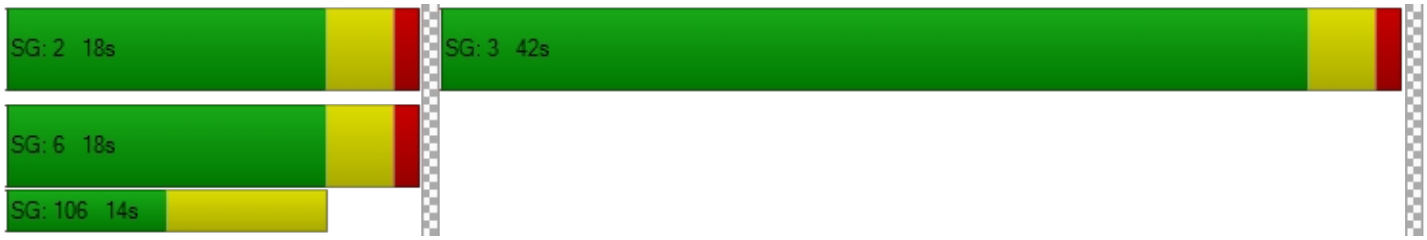
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 13.38 | 0.00 | 21.74 | 0.00 | 0.00 | 0.00 | 0.00 | 9.56 | 0.00 | 0.00 | 9.24 | 11.02 |
| Movement LOS | B | | C | | | | | A | A | | A | B |
| d_A, Approach Delay [s/veh] | 18.75 | | | 0.00 | | | 9.56 | | | 9.74 | | |
| Approach LOS | B | | | A | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 12.03 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.657 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 20.04 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 1.732 | 0.000 | 0.000 |
| Crosswalk LOS | F | A | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1265 | 0 | 466 | 466 |
| d_b, Bicycle Delay [s] | 4.05 | 30.03 | 17.66 | 17.66 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 4.132 | 2.099 | 2.223 |
| Bicycle LOS | A | D | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 16: Compton Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 22.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.709 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 197.00 | 100.00 | 83.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 323 | 0 | 0 | 134 | 0 | 1137 | 58 | 277 | 1508 | 572 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 6 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 323 | 0 | 0 | 134 | 0 | 1141 | 58 | 277 | 1514 | 572 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 85 | 0 | 0 | 35 | 0 | 300 | 15 | 73 | 398 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 340 | 0 | 0 | 141 | 0 | 1201 | 61 | 292 | 1594 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 7 | 0 | 5 | 0 | 0 |
| Maximum Green [s] | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 0 | 30 | 0 | 0 |
| Amber [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 0.0 |
| Split [s] | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 26 | 0 | 16 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | No | | | | | No | | | | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| Minimum Recall | | | No | | | | | No | | No | | |
| Maximum Recall | | | No | | | | | No | | No | | |
| Pedestrian Recall | | | No | | | | | No | | No | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | R | | C | C | L |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 14 | | 23 | 23 | 12 |
| g / C, Green / Cycle | 0.23 | | 0.37 | 0.37 | 0.19 |
| (v / s)_i Volume / Saturation Flow Rate | 0.21 | | 0.24 | 0.23 | 0.16 |
| s, saturation flow rate [veh/h] | 1589 | | 3560 | 1823 | 1781 |
| c, Capacity [veh/h] | 372 | | 1331 | 682 | 344 |
| d1, Uniform Delay [s] | 22.47 | | 15.44 | 15.33 | 23.44 |
| k, delay calibration | 0.11 | | 0.50 | 0.50 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 9.12 | | 2.29 | 4.15 | 5.89 |
| d3, Initial Queue Delay [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.92 | | 0.63 | 0.62 | 0.85 |
| d, Delay for Lane Group [s/veh] | 31.58 | | 17.73 | 19.48 | 29.33 |
| Lane Group LOS | C | | B | B | C |
| Critical Lane Group | Yes | | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 5.23 | | 4.21 | 4.54 | 4.03 |
| 50th-Percentile Queue Length [ft/ln] | 130.65 | | 105.22 | 113.61 | 100.67 |
| 95th-Percentile Queue Length [veh/ln] | 8.98 | | 7.57 | 8.04 | 7.25 |
| 95th-Percentile Queue Length [ft/ln] | 224.38 | | 189.33 | 201.01 | 181.20 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 31.58 | 0.00 | 0.00 | 0.00 | 0.00 | 18.26 | 19.48 | 29.33 | 0.00 | 0.00 |
| Movement LOS | | | C | | | | | B | B | C | | |
| d_A, Approach Delay [s/veh] | 31.58 | | | 0.00 | | | 18.32 | | | 29.33 | | |
| Approach LOS | C | | | A | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 22.40 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.709 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.05 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.030 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | B | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 466 | 0 | 732 | 0 |
| d_b, Bicycle Delay [s] | 17.67 | 30.04 | 12.07 | 30.04 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 1.560 | 2.254 | 1.560 |
| Bicycle LOS | A | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Monte Olivo Phase 1

Vistro File: G:\...\PM E.vistro
Report File: G:\...\PM EP.pdf

Scenario 2 Existing Plus Project
6/13/2023

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Rimpau Ave (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | SB Left | 0.966 | 30.5 | C |
| 2 | Rimpau Ave (NS) at California Ave (EW) | Signalized | HCM 6th Edition | WB Right | 0.556 | 10.8 | B |
| 3 | Rimpau Ave (NS) at Olympic Dr (EW) | Signalized | HCM 6th Edition | WB Right | 0.464 | 16.6 | B |
| 4 | Rimpau Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | SB Left | 0.577 | 14.9 | B |
| 5 | California Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Thru | 0.582 | 13.4 | B |
| 6 | Compton Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Left | 0.263 | 8.5 | A |
| 7 | Laurel Canyon Way (NS) at Project Dwy (EW) | Two-way stop | HCM 6th Edition | WB Left | 0.019 | 9.0 | A |
| 8 | State St (NS) at Bel Air St/Project Dwy (EW) | Two-way stop | HCM 6th Edition | WB Left | 0.022 | 8.9 | A |
| 9 | State St (NS) at Ontario Ave (EW) | Two-way stop | HCM 6th Edition | NB Left | 0.046 | 48.2 | E |
| 10 | I-15 SB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | WB Left | 0.719 | 16.3 | B |
| 11 | I-15 NB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | NB Left | 0.849 | 16.2 | B |
| 12 | California Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | SB Left | 0.626 | 24.1 | C |
| 13 | El Sobrante Rd (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | NB Left | 0.670 | 42.4 | D |
| 14 | I-15 SB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | WB Left | 0.971 | 36.2 | D |
| 15 | I-15 NB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | NB Right | 0.770 | 10.7 | B |
| 16 | Compton Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | WB Left | 0.644 | 16.5 | B |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For

**Intersection Level Of Service Report**
**Intersection 1: Rimpau Ave (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 30.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.966 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 148.00 | 100.00 | 100.00 | 80.00 | 100.00 | 100.00 | 180.00 | 100.00 | 100.00 | 360.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 127 | 355 | 615 | 202 | 321 | 40 | 73 | 885 | 72 | 455 | 945 | 101 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 2 | 4 | 0 | 3 | 0 | 0 | 0 | 3 | 6 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 129 | 357 | 619 | 202 | 324 | 40 | 73 | 885 | 75 | 461 | 945 | 101 |
| Peak Hour Factor | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 34 | 94 | 162 | 53 | 85 | 10 | 19 | 232 | 20 | 121 | 248 | 26 |
| Total Analysis Volume [veh/h] | 135 | 375 | 650 | 212 | 340 | 42 | 77 | 929 | 79 | 484 | 992 | 106 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 68 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 2 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | 2,7 | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 7 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 21 | 13 | 23 | 0 | 11 | 21 | 0 | 13 | 23 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | No | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | No | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 7 | 16 | 30 | 9 | 18 | 5 | 17 | 17 | 10 | 22 | 22 |
| g / C, Green / Cycle | 0.10 | 0.23 | 0.44 | 0.13 | 0.27 | 0.08 | 0.25 | 0.25 | 0.15 | 0.32 | 0.32 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.20 | 0.41 | 0.12 | 0.21 | 0.04 | 0.19 | 0.19 | 0.14 | 0.21 | 0.21 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1589 | 1781 | 1834 | 1781 | 3560 | 1796 | 3459 | 3560 | 1779 |
| c, Capacity [veh/h] | 171 | 435 | 704 | 236 | 493 | 141 | 884 | 446 | 525 | 1142 | 570 |
| d1, Uniform Delay [s] | 30.08 | 25.07 | 17.86 | 29.07 | 22.97 | 30.16 | 23.69 | 23.71 | 28.48 | 19.77 | 19.77 |
| k, delay calibration | 0.11 | 0.11 | 0.40 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 7.82 | 5.17 | 16.52 | 11.60 | 2.64 | 3.26 | 6.04 | 11.53 | 7.30 | 2.77 | 5.46 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.79 | 0.86 | 0.92 | 0.90 | 0.77 | 0.55 | 0.76 | 0.76 | 0.92 | 0.64 | 0.64 |
| d, Delay for Lane Group [s/veh] | 37.90 | 30.24 | 34.39 | 40.67 | 25.61 | 33.42 | 29.73 | 35.24 | 35.77 | 22.54 | 25.24 |
| Lane Group LOS | D | C | C | D | C | C | C | D | D | C | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.41 | 5.97 | 11.40 | 3.96 | 5.52 | 1.26 | 5.21 | 5.96 | 4.11 | 4.82 | 5.24 |
| 50th-Percentile Queue Length [ft/ln] | 60.33 | 149.14 | 285.12 | 98.94 | 138.04 | 31.50 | 130.37 | 148.91 | 102.75 | 120.47 | 131.10 |
| 95th-Percentile Queue Length [veh/ln] | 4.34 | 9.97 | 16.94 | 7.12 | 9.38 | 2.27 | 8.96 | 9.96 | 7.40 | 8.42 | 9.00 |
| 95th-Percentile Queue Length [ft/ln] | 108.60 | 249.28 | 423.58 | 178.09 | 234.38 | 56.69 | 224.00 | 248.98 | 184.94 | 210.47 | 224.98 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 37.90 | 30.24 | 34.39 | 40.67 | 25.61 | 25.61 | 33.42 | 31.27 | 35.24 | 35.77 | 23.25 | 25.24 |
| Movement LOS | D | C | C | D | C | C | C | C | D | D | C | C |
| d_A, Approach Delay [s/veh] | 33.46 | | | 30.99 | | | 31.71 | | | 27.21 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 30.46 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.966 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 23.91 | 23.91 | 23.91 | 23.91 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.754 | 2.362 | 2.997 | 3.258 |
| Crosswalk LOS | C | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 500 | 559 | 500 | 559 |
| d_b, Bicycle Delay [s] | 19.14 | 17.67 | 19.14 | 17.67 |
| l_b,int, Bicycle LOS Score for Intersection | 3.474 | 2.540 | 2.156 | 2.430 |
| Bicycle LOS | C | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Rimpau Ave (NS) at California Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 10.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.556 |

**Intersection Setup**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 50.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 35.00 | | 40.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | Yes | |

**Volumes**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 636 | 6 | 0 | 793 | 13 | 366 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 9 | 3 | 0 | 6 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 638 | 6 | 9 | 796 | 13 | 372 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 168 | 2 | 2 | 209 | 3 | 98 |
| Total Analysis Volume [veh/h] | 672 | 6 | 9 | 838 | 14 | 392 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Split | Split |
|---|---|---|---|---|---|---|
| Signal Group | 2 | 0 | 0 | 6 | 7 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 21 | 0 | 0 | 21 | 39 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | C | L | R |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 35 | 35 | 35 | 17 | 17 |
| g / C, Green / Cycle | 0.58 | 0.58 | 0.58 | 0.29 | 0.29 |
| (v / s)_i Volume / Saturation Flow Rate | 0.13 | 0.12 | 0.24 | 0.01 | 0.25 |
| s, saturation flow rate [veh/h] | 3560 | 1861 | 3560 | 1781 | 1589 |
| c, Capacity [veh/h] | 2067 | 1080 | 2067 | 510 | 455 |
| d1, Uniform Delay [s] | 6.06 | 6.02 | 6.92 | 15.43 | 20.32 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.24 | 0.44 | 0.59 | 0.02 | 4.90 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.22 | 0.21 | 0.41 | 0.03 | 0.86 |
| d, Delay for Lane Group [s/veh] | 6.30 | 6.46 | 7.51 | 15.45 | 25.22 |
| Lane Group LOS | A | A | A | B | C |
| Critical Lane Group | No | No | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 1.07 | 1.13 | 2.30 | 0.12 | 5.08 |
| 50th-Percentile Queue Length [ft/ln] | 26.85 | 28.25 | 57.39 | 3.10 | 127.09 |
| 95th-Percentile Queue Length [veh/ln] | 1.93 | 2.03 | 4.13 | 0.22 | 8.78 |
| 95th-Percentile Queue Length [ft/ln] | 48.33 | 50.85 | 103.31 | 5.58 | 219.53 |

**Movement, Approach, & Intersection Results**

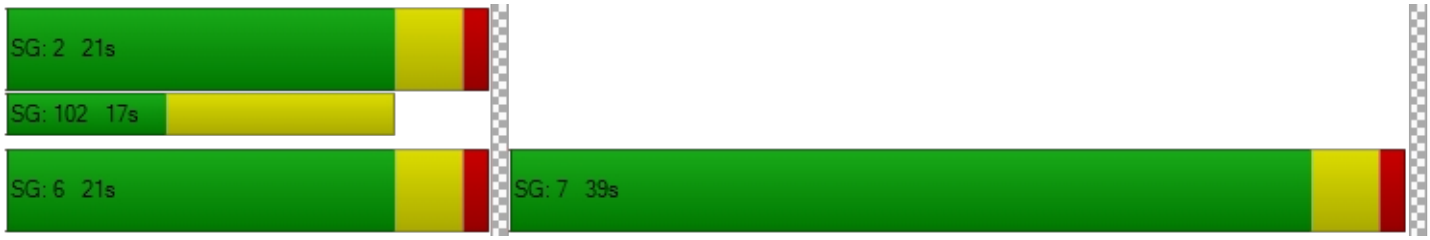
| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 6.36 | 6.46 | 0.00 | 7.51 | 15.45 | 25.22 |
| Movement LOS | A | A | | A | B | C |
| d_A, Approach Delay [s/veh] | 6.36 | | 7.51 | | 24.88 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 10.77 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.556 | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 20.04 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 0.000 | 2.242 |
| Crosswalk LOS | F | F | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 566 | 566 | 1165 |
| d_b, Bicycle Delay [s] | 15.44 | 15.44 | 5.23 |
| l_b,int, Bicycle LOS Score for Intersection | 1.933 | 2.251 | 1.560 |
| Bicycle LOS | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Rimpau Ave (NS) at Olympic Dr (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 16.6 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.464 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 140.00 | 100.00 | 100.00 | 140.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 32 | 488 | 10 | 109 | 626 | 71 | 64 | 8 | 26 | 9 | 13 | 128 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 32 | 490 | 10 | 109 | 629 | 71 | 64 | 8 | 26 | 9 | 13 | 128 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 8 | 129 | 3 | 29 | 166 | 19 | 17 | 2 | 7 | 2 | 3 | 34 |
| Total Analysis Volume [veh/h] | 34 | 516 | 11 | 115 | 662 | 75 | 67 | 8 | 27 | 9 | 14 | 135 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 7 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 11 | 21 | 0 | 11 | 28 | 0 | 0 | 17 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | Yes | No | | | No | |
| Maximum Recall | No | No | | No | No | | No | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | C | R | C | R |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 3 | 24 | 24 | 6 | 27 | 27 | 18 | 18 | 7 | 7 |
| g / C, Green / Cycle | 0.05 | 0.41 | 0.41 | 0.10 | 0.45 | 0.45 | 0.29 | 0.29 | 0.11 | 0.11 |
| (v / s)_i Volume / Saturation Flow Rate | 0.02 | 0.14 | 0.14 | 0.06 | 0.20 | 0.20 | 0.05 | 0.02 | 0.02 | 0.08 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1856 | 1781 | 1870 | 1804 | 1402 | 1589 | 1493 | 1589 |
| c, Capacity [veh/h] | 94 | 755 | 750 | 181 | 846 | 816 | 553 | 470 | 251 | 179 |
| d1, Uniform Delay [s] | 27.53 | 12.46 | 12.46 | 25.98 | 11.29 | 11.29 | 15.64 | 15.20 | 24.00 | 25.90 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.31 | 1.28 | 1.29 | 3.69 | 1.68 | 1.75 | 0.11 | 0.05 | 0.16 | 6.29 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.36 | 0.35 | 0.35 | 0.64 | 0.44 | 0.44 | 0.14 | 0.06 | 0.09 | 0.75 |
| d, Delay for Lane Group [s/veh] | 29.84 | 13.74 | 13.75 | 29.67 | 12.98 | 13.04 | 15.75 | 15.25 | 24.16 | 32.19 |
| Lane Group LOS | C | B | B | C | B | B | B | B | C | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.50 | 2.37 | 2.36 | 1.65 | 3.21 | 3.12 | 0.73 | 0.26 | 0.29 | 2.08 |
| 50th-Percentile Queue Length [ft/ln] | 12.54 | 59.17 | 58.88 | 41.22 | 80.31 | 77.88 | 18.27 | 6.43 | 7.23 | 51.89 |
| 95th-Percentile Queue Length [veh/ln] | 0.90 | 4.26 | 4.24 | 2.97 | 5.78 | 5.61 | 1.32 | 0.46 | 0.52 | 3.74 |
| 95th-Percentile Queue Length [ft/ln] | 22.56 | 106.51 | 105.98 | 74.20 | 144.55 | 140.18 | 32.89 | 11.57 | 13.01 | 93.41 |

**Movement, Approach, & Intersection Results**

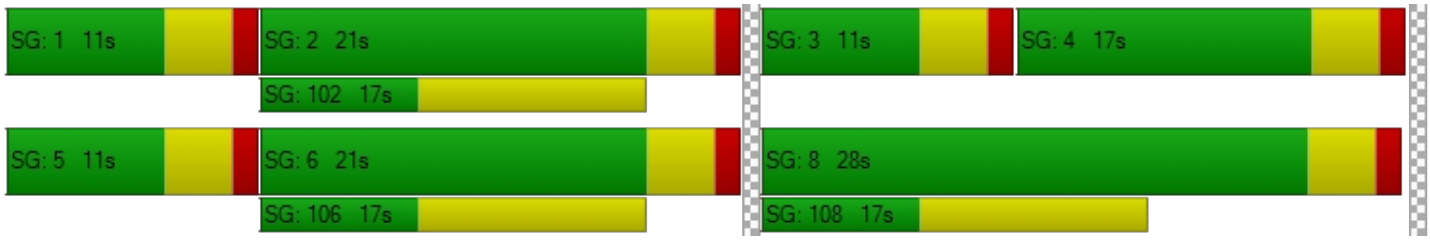
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 29.84 | 13.74 | 13.75 | 29.67 | 13.00 | 13.04 | 15.75 | 15.75 | 15.25 | 24.16 | 24.16 | 32.19 |
| Movement LOS | C | B | B | C | B | B | B | B | B | C | C | C |
| d_A, Approach Delay [s/veh] | 14.72 | | | 15.26 | | | 15.62 | | | 31.02 | | |
| Approach LOS | B | | | B | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 16.59 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.464 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.06 | 0.00 | 20.06 | 20.06 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.577 | 0.000 | 1.979 | 2.013 |
| Crosswalk LOS | B | F | A | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 566 | 566 | 799 | 433 |
| d_b, Bicycle Delay [s] | 15.46 | 15.46 | 10.84 | 18.46 |
| l_b,int, Bicycle LOS Score for Intersection | 2.022 | 2.263 | 1.728 | 1.820 |
| Bicycle LOS | B | B | A | A |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 4: Rimpau Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 14.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.577 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 23 | 277 | 45 | 99 | 448 | 52 | 26 | 122 | 43 | 33 | 101 | 115 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 2 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 23 | 277 | 47 | 102 | 448 | 52 | 26 | 123 | 43 | 34 | 102 | 117 |
| Peak Hour Factor | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 6 | 71 | 12 | 26 | 115 | 13 | 7 | 31 | 11 | 9 | 26 | 30 |
| Total Analysis Volume [veh/h] | 24 | 284 | 48 | 104 | 459 | 53 | 27 | 126 | 44 | 35 | 104 | 120 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 514 | 533 | 534 | 558 | 475 | 530 | 479 | 538 |
| Degree of Utilization, x | 0.35 | 0.33 | 0.58 | 0.55 | 0.32 | 0.08 | 0.29 | 0.22 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 1.53 | 1.45 | 3.63 | 3.34 | 1.38 | 0.27 | 1.19 | 0.85 |
| 95th-Percentile Queue Length [ft] | 38.33 | 36.35 | 90.65 | 83.55 | 34.44 | 6.75 | 29.83 | 21.18 |
| Approach Delay [s/veh] | 13.08 | | 17.53 | | 13.00 | | 12.35 | |
| Approach LOS | B | | C | | B | | B | |
| Intersection Delay [s/veh] | 14.86 | | | | | | | |
| Intersection LOS | B | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 5: California Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 13.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.582 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | No | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 118 | 191 | 26 | 17 | 156 | 25 | 16 | 77 | 169 | 57 | 74 | 44 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 5 | 9 | 0 | 0 | 0 | 6 | 0 | 3 | 4 | 6 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 118 | 191 | 31 | 26 | 156 | 25 | 16 | 83 | 169 | 60 | 78 | 50 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 31 | 50 | 8 | 7 | 41 | 7 | 4 | 22 | 44 | 16 | 21 | 13 |
| Total Analysis Volume [veh/h] | 124 | 201 | 33 | 27 | 164 | 26 | 17 | 87 | 178 | 63 | 82 | 53 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 558 | 648 | 549 | 622 | 537 | 609 | 519 | 599 |
| Degree of Utilization, x | 0.58 | 0.05 | 0.35 | 0.04 | 0.19 | 0.29 | 0.28 | 0.09 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 3.71 | 0.16 | 1.55 | 0.13 | 0.71 | 1.21 | 1.14 | 0.29 |
| 95th-Percentile Queue Length [ft] | 92.70 | 4.02 | 38.71 | 3.27 | 17.76 | 30.30 | 28.39 | 7.26 |
| Approach Delay [s/veh] | 16.89 | | 12.25 | | 11.02 | | 11.50 | |
| Approach LOS | C | | B | | B | | B | |
| Intersection Delay [s/veh] | 13.36 | | | | | | | |
| Intersection LOS | B | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 6: Compton Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 8.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.263 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 100 | 85 | 12 | 1 | 25 | 19 | 13 | 21 | 65 | 5 | 21 | 1 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 20 | 0 | 4 | 13 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 100 | 85 | 18 | 1 | 25 | 19 | 13 | 41 | 65 | 9 | 34 | 1 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 26 | 22 | 5 | 0 | 7 | 5 | 3 | 11 | 17 | 2 | 9 | 0 |
| Total Analysis Volume [veh/h] | 105 | 89 | 19 | 1 | 26 | 20 | 14 | 43 | 68 | 9 | 36 | 1 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | |
|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 809 | 828 | 675 | 800 | 669 | 787 |
| Degree of Utilization, x | 0.26 | 0.06 | 0.08 | 0.09 | 0.07 | 0.00 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 1.06 | 0.18 | 0.28 | 0.28 | 0.22 | 0.00 |
| 95th-Percentile Queue Length [ft] | 26.43 | 4.51 | 6.89 | 6.95 | 5.39 | 0.10 |
| Approach Delay [s/veh] | 9.03 | 7.61 | 8.03 | | 8.44 | |
| Approach LOS | A | A | A | | A | |
| Intersection Delay [s/veh] | 8.52 | | | | | |
| Intersection LOS | A | | | | | |

**Intersection Level Of Service Report**

**Intersection 7: Laurel Canyon Way (NS) at Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 9.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.019 |

**Intersection Setup**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**Volumes**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 34 | 0 | 0 | 27 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 26 | 0 | 0 | 17 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 34 | 26 | 0 | 27 | 17 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 7 | 0 | 7 | 4 | 0 |
| Total Analysis Volume [veh/h] | 36 | 27 | 0 | 28 | 18 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|---|---|---|---|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 |
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 7.34 | 0.00 | 8.97 | 8.61 |
| Movement LOS | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.06 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 1.49 | 1.49 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.00 | | 8.97 | |
| Approach LOS | A | | A | | A | |
| d_I, Intersection Delay [s/veh] | 1.48 | | | | | |
| Intersection LOS | A | | | | | |

**Intersection Level Of Service Report**
**Intersection 8: State St (NS) at Bel Air St/Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 8.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.022 |

**Intersection Setup**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 25.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 1 | 9 | 0 | 0 | 12 | 2 | 0 | 0 | 3 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 1 | 9 | 35 | 0 | 12 | 2 | 0 | 0 | 3 | 20 | 0 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 2 | 9 | 0 | 3 | 1 | 0 | 0 | 1 | 5 | 0 | 0 |
| Total Analysis Volume [veh/h] | 1 | 9 | 37 | 0 | 13 | 2 | 0 | 0 | 3 | 21 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.25 | 0.00 | 0.00 | 7.31 | 0.00 | 0.00 | 8.77 | 9.36 | 8.39 | 8.86 | 9.34 | 8.52 |
| Movement LOS | A | A | A | A | A | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.07 | 0.07 | 0.07 |
| 95th-Percentile Queue Length [ft/ln] | 0.05 | 0.05 | 0.05 | 0.00 | 0.00 | 0.00 | 0.21 | 0.21 | 0.21 | 1.69 | 1.69 | 1.69 |
| d_A, Approach Delay [s/veh] | 0.15 | | | 0.00 | | | 8.39 | | | 8.86 | | |
| Approach LOS | A | | | A | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 2.54 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 48.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.046 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 4 | 0 | 0 | 37 | 0 | 59 | 41 | 936 | 5 | 0 | 528 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 5 | 0 | 15 | 26 | 0 | 0 | 0 | 0 | 9 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 0 | 0 | 42 | 0 | 74 | 67 | 936 | 5 | 0 | 528 | 23 |
| Peak Hour Factor | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 11 | 0 | 19 | 17 | 242 | 1 | 0 | 137 | 6 |
| Total Analysis Volume [veh/h] | 4 | 0 | 0 | 43 | 0 | 77 | 69 | 968 | 5 | 0 | 546 | 24 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | Yes | | |
| Number of Storage Spaces in Median | 0 | 2 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.05 | 0.00 | 0.00 | 0.13 | 0.00 | 0.11 | 0.07 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 48.15 | 48.12 | 13.80 | 17.62 | 22.13 | 10.56 | 8.87 | 0.00 | 0.00 | 10.11 | 0.00 | 0.00 |
| Movement LOS | E | E | B | C | C | B | A | A | A | B | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.14 | 0.14 | 0.14 | 0.45 | 0.45 | 0.36 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 3.55 | 3.55 | 3.55 | 11.17 | 11.17 | 8.88 | 5.56 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 48.15 | | | 13.09 | | | 0.59 | | | 0.00 | | |
| Approach LOS | E | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 1.37 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 10: I-15 SB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 16.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.719 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 67.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 401 | 2 | 674 | 0 | 1094 | 428 | 23 | 840 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 5 | 2 | 5 | 6 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 413 | 2 | 674 | 0 | 1099 | 430 | 28 | 846 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9730 | 0.9730 | 0.9730 | 0.9500 | 0.9730 | 0.9730 | 0.9730 | 0.9730 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 106 | 1 | 173 | 0 | 282 | 110 | 7 | 217 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 424 | 2 | 693 | 0 | 1129 | 442 | 29 | 869 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 62 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 21 | 0 | 20 | 41 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 62 | 62 | 62 | 62 | 62 | 62 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 17 | 17 | 30 | 30 | 3 | 37 |
| g / C, Green / Cycle | | 0.27 | 0.27 | 0.49 | 0.49 | 0.05 | 0.60 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.24 | 0.25 | 0.32 | 0.28 | 0.02 | 0.24 |
| s, saturation flow rate [veh/h] | | 1781 | 2813 | 3560 | 1589 | 1781 | 3560 |
| c, Capacity [veh/h] | | 487 | 768 | 1735 | 774 | 83 | 2130 |
| d1, Uniform Delay [s] | | 21.58 | 21.79 | 11.97 | 11.32 | 28.72 | 6.64 |
| k, delay calibration | | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 5.15 | 4.24 | 1.91 | 3.04 | 2.50 | 0.58 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.88 | 0.90 | 0.65 | 0.57 | 0.35 | 0.41 |
| d, Delay for Lane Group [s/veh] | | 26.73 | 26.03 | 13.88 | 14.36 | 31.22 | 7.22 |
| Lane Group LOS | | C | C | B | B | C | A |
| Critical Lane Group | | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 6.10 | 4.89 | 4.80 | 3.87 | 0.44 | 2.10 |
| 50th-Percentile Queue Length [ft/ln] | | 152.58 | 122.32 | 120.12 | 96.81 | 10.94 | 52.58 |
| 95th-Percentile Queue Length [veh/ln] | | 10.15 | 8.52 | 8.40 | 6.97 | 0.79 | 3.79 |
| 95th-Percentile Queue Length [ft/ln] | | 253.87 | 213.00 | 210.00 | 174.26 | 19.70 | 94.64 |

**Movement, Approach, & Intersection Results**

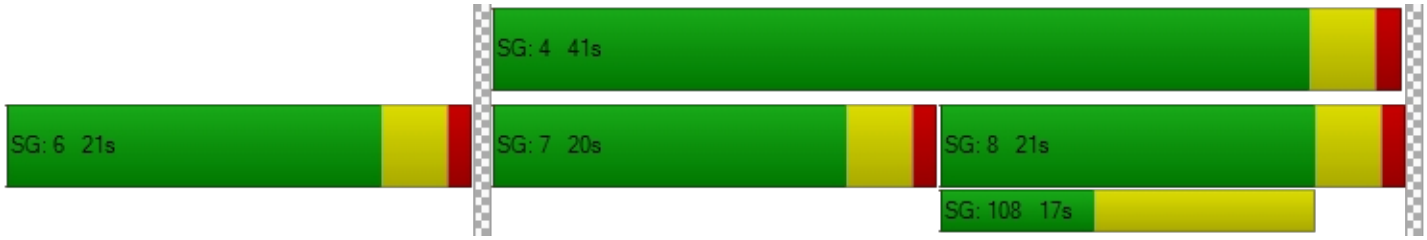
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 26.73 | 26.73 | 26.03 | 0.00 | 13.88 | 14.36 | 31.22 | 7.22 | 0.00 |
| Movement LOS | | | | C | C | C | | B | B | C | A | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 26.30 | | | 14.01 | | | 7.99 | | |
| Approach LOS | A | | | C | | | B | | | A | | |
| d_I, Intersection Delay [s/veh] | 16.34 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.719 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 21.01 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 1.864 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | A | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 548 | 548 | 1192 |
| d_b, Bicycle Delay [s] | 31.04 | 16.37 | 16.37 | 5.07 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 3.406 | 2.856 | 2.300 |
| Bicycle LOS | D | C | C | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 11: I-15 NB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 16.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.849 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 354 | 2 | 35 | 0 | 0 | 0 | 549 | 1032 | 0 | 0 | 421 | 278 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 0 | 9 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 8 | 7 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 357 | 2 | 44 | 0 | 0 | 0 | 549 | 1049 | 0 | 0 | 429 | 285 |
| Peak Hour Factor | 0.9740 | 0.9740 | 0.9740 | 0.9500 | 0.9500 | 0.9500 | 0.9740 | 0.9740 | 0.9500 | 0.9500 | 0.9740 | 0.9740 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 92 | 1 | 11 | 0 | 0 | 0 | 141 | 269 | 0 | 0 | 110 | 73 |
| Total Analysis Volume [veh/h] | 367 | 2 | 45 | 0 | 0 | 0 | 564 | 1077 | 0 | 0 | 440 | 293 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 28 | 0 | 0 | 0 | 0 | 11 | 32 | 0 | 0 | 21 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 9 | 9 | 9 | | 13 | 43 | 27 | 27 |
| g / C, Green / Cycle | 0.15 | 0.15 | 0.15 | | 0.21 | 0.72 | 0.44 | 0.44 |
| (v / s)_i Volume / Saturation Flow Rate | 0.10 | 0.10 | 0.03 | | 0.16 | 0.58 | 0.12 | 0.18 |
| s, saturation flow rate [veh/h] | 1781 | 1782 | 1589 | | 3459 | 1870 | 3560 | 1589 |
| c, Capacity [veh/h] | 264 | 264 | 236 | | 729 | 1344 | 1572 | 702 |
| d1, Uniform Delay [s] | 24.34 | 24.34 | 22.46 | | 22.39 | 5.61 | 10.71 | 11.50 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.33 | 3.33 | 0.39 | | 1.79 | 5.11 | 0.44 | 1.83 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.70 | 0.70 | 0.19 | | 0.77 | 0.80 | 0.28 | 0.42 |
| d, Delay for Lane Group [s/veh] | 27.67 | 27.67 | 22.85 | | 24.18 | 10.72 | 11.15 | 13.33 |
| Lane Group LOS | C | C | C | | C | B | B | B |
| Critical Lane Group | Yes | No | No | | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.58 | 2.58 | 0.55 | | 3.42 | 4.75 | 1.54 | 2.42 |
| 50th-Percentile Queue Length [ft/ln] | 64.46 | 64.49 | 13.77 | | 85.54 | 118.72 | 38.44 | 60.44 |
| 95th-Percentile Queue Length [veh/ln] | 4.64 | 4.64 | 0.99 | | 6.16 | 8.32 | 2.77 | 4.35 |
| 95th-Percentile Queue Length [ft/ln] | 116.02 | 116.07 | 24.79 | | 153.97 | 208.07 | 69.19 | 108.78 |

**Movement, Approach, & Intersection Results**

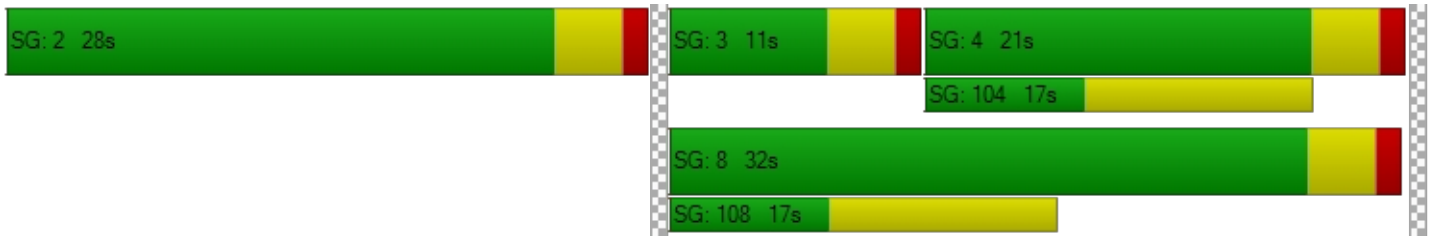
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 27.67 | 27.67 | 22.85 | 0.00 | 0.00 | 0.00 | 24.18 | 10.72 | 0.00 | 0.00 | 11.15 | 13.33 |
| Movement LOS | C | C | C | | | | C | B | | | B | B |
| d_A, Approach Delay [s/veh] | 27.14 | | | 0.00 | | | 15.35 | | | 12.02 | | |
| Approach LOS | C | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 16.23 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.849 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.05 | 20.05 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.052 | 2.111 | 0.000 | 0.000 |
| Crosswalk LOS | B | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 799 | 0 | 932 | 566 |
| d_b, Bicycle Delay [s] | 10.83 | 30.04 | 8.57 | 15.45 |
| l_b,int, Bicycle LOS Score for Intersection | 2.243 | 4.132 | 4.267 | 2.164 |
| Bicycle LOS | B | D | E | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 12: California Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.626 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 195.00 | 100.00 | 100.00 | 212.00 | 100.00 | 150.00 | 268.00 | 100.00 | 115.00 | 217.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 201 | 205 | 139 | 360 | 209 | 118 | 249 | 799 | 163 | 315 | 568 | 119 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 3 | 0 | 1 | 2 | 3 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 201 | 207 | 141 | 362 | 210 | 118 | 249 | 802 | 163 | 316 | 570 | 122 |
| Peak Hour Factor | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 51 | 52 | 36 | 91 | 53 | 30 | 63 | 203 | 41 | 80 | 144 | 31 |
| Total Analysis Volume [veh/h] | 203 | 209 | 142 | 366 | 212 | 119 | 252 | 810 | 165 | 319 | 576 | 123 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 65 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 12 | 22 | 0 | 11 | 21 | 0 | 11 | 21 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 7 | 10 | 10 | 8 | 11 | 11 | 11 | 23 | 23 | 8 | 21 | 21 |
| g / C, Green / Cycle | 0.11 | 0.15 | 0.15 | 0.12 | 0.17 | 0.17 | 0.17 | 0.36 | 0.36 | 0.13 | 0.31 | 0.31 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.11 | 0.09 | 0.11 | 0.11 | 0.07 | 0.14 | 0.16 | 0.10 | 0.09 | 0.11 | 0.08 |
| s, saturation flow rate [veh/h] | 3459 | 1870 | 1589 | 3459 | 1870 | 1589 | 1781 | 5094 | 1589 | 3459 | 5094 | 1589 |
| c, Capacity [veh/h] | 367 | 276 | 235 | 428 | 310 | 263 | 300 | 1812 | 565 | 441 | 1604 | 501 |
| d1, Uniform Delay [s] | 27.71 | 26.68 | 26.03 | 28.02 | 25.63 | 24.56 | 26.30 | 16.11 | 15.12 | 27.38 | 17.27 | 16.60 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.30 | 4.20 | 2.49 | 4.95 | 2.68 | 1.21 | 6.30 | 0.80 | 1.31 | 2.27 | 0.63 | 1.17 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.55 | 0.76 | 0.60 | 0.85 | 0.68 | 0.45 | 0.84 | 0.45 | 0.29 | 0.72 | 0.36 | 0.25 |
| d, Delay for Lane Group [s/veh] | 29.01 | 30.88 | 28.52 | 32.97 | 28.31 | 25.78 | 32.60 | 16.91 | 16.42 | 29.65 | 17.90 | 17.77 |
| Lane Group LOS | C | C | C | C | C | C | C | B | B | C | B | B |
| Critical Lane Group | No | Yes | No | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 1.43 | 3.11 | 2.01 | 2.86 | 3.04 | 1.60 | 3.89 | 2.73 | 1.69 | 2.29 | 2.01 | 1.34 |
| 50th-Percentile Queue Length [ft/ln] | 35.68 | 77.86 | 50.32 | 71.43 | 76.11 | 40.06 | 97.30 | 68.21 | 42.32 | 57.18 | 50.13 | 33.50 |
| 95th-Percentile Queue Length [veh/ln] | 2.57 | 5.61 | 3.62 | 5.14 | 5.48 | 2.88 | 7.01 | 4.91 | 3.05 | 4.12 | 3.61 | 2.41 |
| 95th-Percentile Queue Length [ft/ln] | 64.22 | 140.15 | 90.58 | 128.58 | 136.99 | 72.12 | 175.15 | 122.77 | 76.17 | 102.93 | 90.24 | 60.30 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 29.01 | 30.88 | 28.52 | 32.97 | 28.31 | 25.78 | 32.60 | 16.91 | 16.42 | 29.65 | 17.90 | 17.77 |
| Movement LOS | C | C | C | C | C | C | C | B | B | C | B | B |
| d_A, Approach Delay [s/veh] | 29.59 | | | 30.32 | | | 20.07 | | | 21.57 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 24.06 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.626 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 22.50 | 22.50 | 22.50 | 22.50 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.794 | 2.713 | 3.096 | 3.211 |
| Crosswalk LOS | C | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 522 | 553 | 522 | 522 |
| d_b, Bicycle Delay [s] | 17.79 | 17.06 | 17.79 | 17.79 |
| l_b,int, Bicycle LOS Score for Intersection | 2.474 | 2.710 | 2.234 | 2.120 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 13: El Sobrante Rd (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 42.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.670 |

**Intersection Setup**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 65.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 78.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 45.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 70 | 28 | 192 | 159 | 44 | 125 | 84 | 1542 | 75 | 118 | 1395 | 186 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 6 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 70 | 28 | 192 | 159 | 44 | 125 | 84 | 1546 | 75 | 118 | 1401 | 186 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 18 | 7 | 51 | 42 | 12 | 33 | 22 | 407 | 20 | 31 | 369 | 49 |
| Total Analysis Volume [veh/h] | 74 | 29 | 202 | 167 | 46 | 132 | 88 | 1627 | 79 | 124 | 1475 | 196 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 116 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 10 | 22 | 0 | 34 | 46 | 0 | 11 | 44 | 0 | 16 | 49 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 35 | 0 | 0 | 18 | 0 | 0 | 26 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 42 | 8 | 44 | 7 | 40 | 40 | 10 | 43 | 43 |
| g / C, Green / Cycle | 0.05 | 0.37 | 0.07 | 0.38 | 0.06 | 0.34 | 0.34 | 0.08 | 0.37 | 0.37 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.14 | 0.05 | 0.11 | 0.05 | 0.32 | 0.32 | 0.07 | 0.31 | 0.31 |
| s, saturation flow rate [veh/h] | 1781 | 1620 | 3459 | 1654 | 1781 | 3560 | 1826 | 1781 | 3560 | 1760 |
| c, Capacity [veh/h] | 93 | 593 | 235 | 632 | 108 | 1222 | 627 | 151 | 1308 | 647 |
| d1, Uniform Delay [s] | 54.39 | 27.20 | 52.95 | 24.84 | 53.85 | 36.62 | 36.65 | 52.23 | 33.84 | 33.89 |
| k, delay calibration | 0.11 | 0.50 | 0.11 | 0.50 | 0.11 | 0.11 | 0.37 | 0.11 | 0.11 | 0.33 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 14.26 | 1.92 | 3.92 | 1.11 | 13.54 | 3.45 | 17.14 | 10.42 | 1.70 | 9.48 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.80 | 0.39 | 0.71 | 0.28 | 0.81 | 0.92 | 0.92 | 0.82 | 0.85 | 0.86 |
| d, Delay for Lane Group [s/veh] | 68.65 | 29.12 | 56.86 | 25.95 | 67.39 | 40.07 | 53.78 | 62.65 | 35.54 | 43.37 |
| Lane Group LOS | E | C | E | C | E | D | D | E | D | D |
| Critical Lane Group | No | Yes | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.52 | 5.11 | 2.45 | 3.46 | 2.90 | 15.27 | 18.08 | 3.92 | 14.17 | 15.47 |
| 50th-Percentile Queue Length [ft/ln] | 63.04 | 127.71 | 61.27 | 86.49 | 72.51 | 381.80 | 451.88 | 98.10 | 354.22 | 386.70 |
| 95th-Percentile Queue Length [veh/ln] | 4.54 | 8.82 | 4.41 | 6.23 | 5.22 | 21.68 | 25.05 | 7.06 | 20.34 | 21.92 |
| 95th-Percentile Queue Length [ft/ln] | 113.46 | 220.38 | 110.29 | 155.68 | 130.52 | 542.02 | 626.20 | 176.58 | 508.55 | 547.95 |

**Movement, Approach, & Intersection Results**

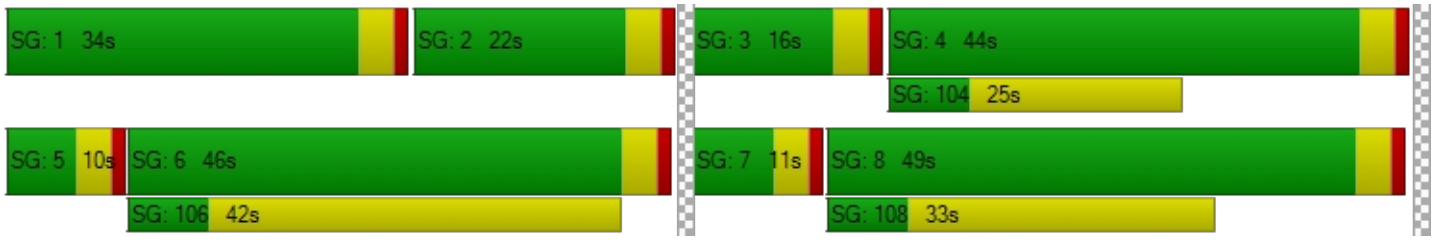
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 68.65 | 29.12 | 29.12 | 56.86 | 25.95 | 25.95 | 67.39 | 44.28 | 53.78 | 62.65 | 37.44 | 43.37 |
| Movement LOS | E | C | C | E | C | C | E | D | D | E | D | D |
| d_A, Approach Delay [s/veh] | 38.71 | | | 40.91 | | | 45.84 | | | 39.83 | | |
| Approach LOS | D | | | D | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 42.38 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.670 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 47.53 | 47.53 | 47.53 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.102 | 2.384 | 3.251 | 0.000 |
| Crosswalk LOS | B | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 310 | 724 | 690 | 776 |
| d_b, Bicycle Delay [s] | 41.41 | 23.61 | 24.91 | 21.74 |
| l_b,int, Bicycle LOS Score for Intersection | 2.063 | 2.129 | 2.546 | 2.547 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 14: I-15 SB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 36.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.971 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 310.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 378 | 0 | 1227 | 0 | 1624 | 180 | 333 | 634 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 4 | 0 | 0 | 3 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 378 | 0 | 1230 | 0 | 1628 | 180 | 333 | 637 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 99 | 0 | 324 | 0 | 428 | 47 | 88 | 168 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 398 | 0 | 1295 | 0 | 1714 | 189 | 351 | 671 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Split | Split | Overlap | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4 | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 45 | 45 | 0 | 31 | 0 | 13 | 44 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | No | | No | | No | No | |
| Maximum Recall | | | | | No | No | | No | | No | No | |
| Pedestrian Recall | | | | | No | No | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | C | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 41 | 41 | 41 | 28 | 28 | 9 | 41 |
| g / C, Green / Cycle | | 0.45 | 0.45 | 0.45 | 0.31 | 0.31 | 0.10 | 0.46 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.11 | 0.11 | 0.46 | 0.28 | 0.27 | 0.10 | 0.13 |
| s, saturation flow rate [veh/h] | | 1781 | 1781 | 2813 | 5094 | 1747 | 3459 | 5094 |
| c, Capacity [veh/h] | | 808 | 808 | 1277 | 1586 | 544 | 352 | 2330 |
| d1, Uniform Delay [s] | | 15.13 | 15.13 | 24.60 | 29.69 | 29.36 | 40.45 | 15.28 |
| k, delay calibration | | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.16 | 0.16 | 15.43 | 8.59 | 17.60 | 21.78 | 0.31 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.25 | 0.25 | 1.01 | 0.90 | 0.87 | 1.00 | 0.29 |
| d, Delay for Lane Group [s/veh] | | 15.29 | 15.29 | 40.04 | 38.28 | 46.96 | 62.23 | 15.59 |
| Lane Group LOS | | B | B | F | D | D | E | B |
| Critical Lane Group | | No | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 2.44 | 2.44 | 15.31 | 10.44 | 11.74 | 4.80 | 2.71 |
| 50th-Percentile Queue Length [ft/ln] | | 61.12 | 61.12 | 382.71 | 261.07 | 293.51 | 120.12 | 67.74 |
| 95th-Percentile Queue Length [veh/ln] | | 4.40 | 4.40 | 21.95 | 15.74 | 17.36 | 8.40 | 4.88 |
| 95th-Percentile Queue Length [ft/ln] | | 110.02 | 110.02 | 548.74 | 393.57 | 433.99 | 209.99 | 121.94 |

**Movement, Approach, & Intersection Results**

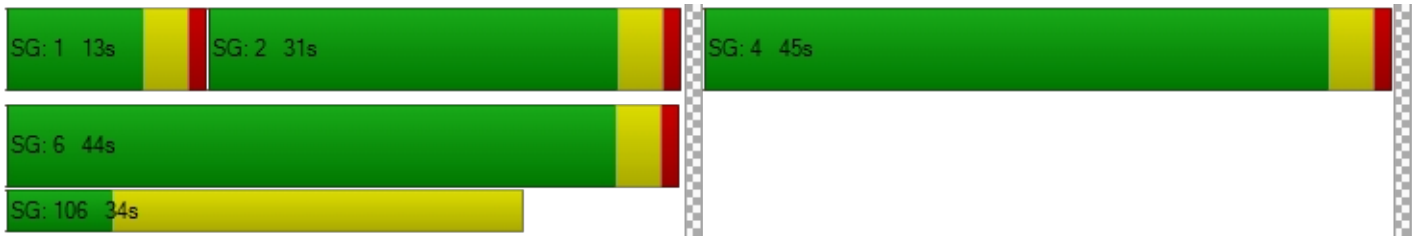
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 15.29 | 15.29 | 40.04 | 0.00 | 39.73 | 46.96 | 62.23 | 15.59 | 0.00 |
| Movement LOS | | | | B | B | F | | D | D | E | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 34.22 | | | 40.45 | | | 31.61 | | |
| Approach LOS | A | | | C | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 36.21 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.971 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 34.70 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 2.630 | 0.000 | 0.000 |
| Crosswalk LOS | F | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 911 | 600 | 888 |
| d_b, Bicycle Delay [s] | 45.02 | 13.36 | 22.07 | 13.91 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 4.353 | 2.345 | 2.122 |
| Bicycle LOS | D | E | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 15: I-15 NB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 10.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.770 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 148 | 0 | 376 | 0 | 0 | 0 | 0 | 985 | 1044 | 0 | 829 | 555 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 3 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 148 | 0 | 376 | 0 | 0 | 0 | 0 | 987 | 1046 | 0 | 832 | 555 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 39 | 0 | 99 | 0 | 0 | 0 | 0 | 260 | 0 | 0 | 219 | 146 |
| Total Analysis Volume [veh/h] | 156 | 0 | 396 | 0 | 0 | 0 | 0 | 1039 | 0 | 0 | 876 | 584 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Split | Permiss | Split | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 18 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | | | | | No | | | No | |
| Maximum Recall | No | | | | | | | No | | | No | |
| Pedestrian Recall | No | | | | | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | | C | R | C | R |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 18 | 18 | | 34 | 34 | 34 | 34 |
| g / C, Green / Cycle | 0.29 | 0.29 | | 0.57 | 0.57 | 0.57 | 0.57 |
| (v / s)_i Volume / Saturation Flow Rate | 0.05 | 0.25 | | 0.20 | 0.00 | 0.17 | 0.37 |
| s, saturation flow rate [veh/h] | 3459 | 1589 | | 5094 | 2813 | 5094 | 1589 |
| c, Capacity [veh/h] | 1021 | 469 | | 2912 | 1608 | 2912 | 909 |
| d1, Uniform Delay [s] | 15.64 | 19.89 | | 6.93 | 0.00 | 6.66 | 8.72 |
| k, delay calibration | 0.11 | 0.11 | | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.07 | 4.22 | | 0.34 | 0.00 | 0.27 | 3.49 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.15 | 0.84 | | 0.36 | 0.00 | 0.30 | 0.64 |
| d, Delay for Lane Group [s/veh] | 15.71 | 24.11 | | 7.27 | 0.00 | 6.93 | 12.20 |
| Lane Group LOS | B | C | | A | A | A | B |
| Critical Lane Group | No | Yes | | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.74 | 5.24 | | 1.75 | 0.00 | 1.41 | 4.39 |
| 50th-Percentile Queue Length [ft/ln] | 18.39 | 130.92 | | 43.63 | 0.00 | 35.28 | 109.69 |
| 95th-Percentile Queue Length [veh/ln] | 1.32 | 8.99 | | 3.14 | 0.00 | 2.54 | 7.82 |
| 95th-Percentile Queue Length [ft/ln] | 33.10 | 224.74 | | 78.54 | 0.00 | 63.51 | 195.57 |

**Movement, Approach, & Intersection Results**

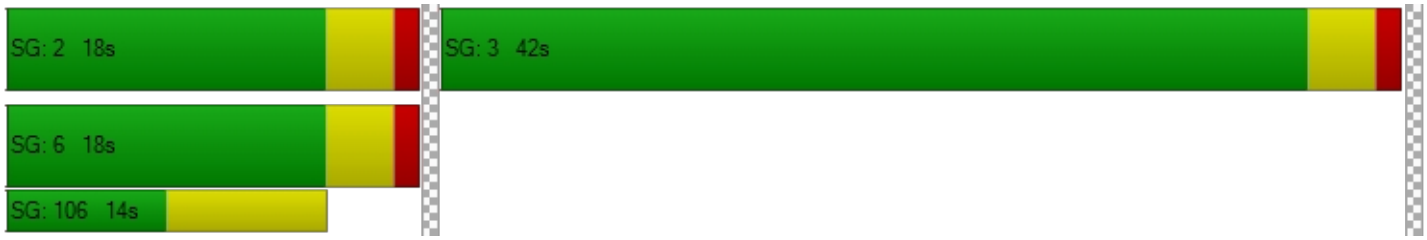
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 15.71 | 0.00 | 24.11 | 0.00 | 0.00 | 0.00 | 0.00 | 7.27 | 0.00 | 0.00 | 6.93 | 12.20 |
| Movement LOS | B | | C | | | | | A | A | | A | B |
| d_A, Approach Delay [s/veh] | 21.73 | | | 0.00 | | | 7.27 | | | 9.04 | | |
| Approach LOS | C | | | A | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 10.73 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.770 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 20.04 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 1.970 | 0.000 | 0.000 |
| Crosswalk LOS | F | A | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1265 | 0 | 466 | 466 |
| d_b, Bicycle Delay [s] | 4.05 | 30.03 | 17.66 | 17.66 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 4.132 | 2.131 | 2.363 |
| Bicycle LOS | A | D | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 16: Compton Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 16.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.644 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 197.00 | 100.00 | 83.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 259 | 0 | 0 | 216 | 0 | 1292 | 75 | 275 | 883 | 258 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 259 | 0 | 0 | 216 | 0 | 1298 | 75 | 275 | 889 | 258 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 68 | 0 | 0 | 57 | 0 | 342 | 20 | 72 | 234 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 273 | 0 | 0 | 227 | 0 | 1366 | 79 | 289 | 936 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 |
| Maximum Green [s] | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 0 | 30 | 0 | 0 |
| Amber [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 0.0 |
| Split [s] | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 25 | 0 | 64 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | No | | | | | No | | | | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| Minimum Recall | | | No | | | | | No | | No | | |
| Maximum Recall | | | No | | | | | No | | No | | |
| Pedestrian Recall | | | No | | | | | No | | No | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | R | | C | C | L |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 26 | | 26 | 26 | 26 |
| L, Total Lost Time per Cycle [s] | 4.00 | | 4.00 | 4.00 | 0.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | | 2.00 | 2.00 | 0.00 |
| g_i, Effective Green Time [s] | 6 | | 11 | 11 | 0 |
| g / C, Green / Cycle | 0.24 | | 0.45 | 0.45 | 0.00 |
| (v / s)_i Volume / Saturation Flow Rate | 0.17 | | 0.27 | 0.27 | 0.78 |
| s, saturation flow rate [veh/h] | 1589 | | 3560 | 1817 | 369 |
| c, Capacity [veh/h] | 377 | | 1605 | 819 | 281 |
| d1, Uniform Delay [s] | 9.01 | | 5.31 | 5.27 | 12.83 |
| k, delay calibration | 0.11 | | 0.11 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.64 | | 0.36 | 0.68 | 61.64 |
| d3, Initial Queue Delay [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.72 | | 0.60 | 0.59 | 1.03 |
| d, Delay for Lane Group [s/veh] | 11.64 | | 5.67 | 5.94 | 74.47 |
| Lane Group LOS | B | | A | A | F |
| Critical Lane Group | Yes | | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 1.11 | | 0.30 | 0.37 | 6.80 |
| 50th-Percentile Queue Length [ft/ln] | 27.76 | | 7.58 | 9.36 | 169.89 |
| 95th-Percentile Queue Length [veh/ln] | 2.00 | | 0.55 | 0.67 | 11.07 |
| 95th-Percentile Queue Length [ft/ln] | 49.97 | | 13.65 | 16.84 | 276.78 |

**Movement, Approach, & Intersection Results**

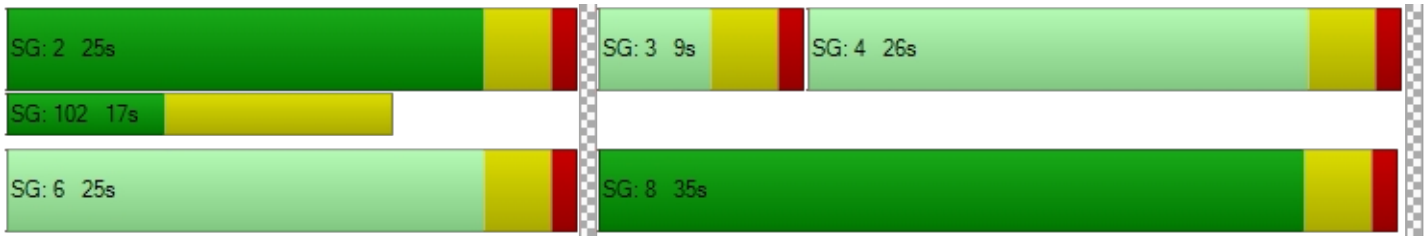
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 11.64 | 0.00 | 0.00 | 0.00 | 0.00 | 5.75 | 5.94 | 74.47 | 0.00 | 0.00 |
| Movement LOS | | | B | | | | | A | A | F | | |
| d_A, Approach Delay [s/veh] | 11.64 | | | 0.00 | | | 5.76 | | | 74.47 | | |
| Approach LOS | B | | | A | | | A | | | E | | |
| d_I, Intersection Delay [s/veh] | 16.45 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.644 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 4.14 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.353 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | B | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 2428 | 0 | 1645 | 0 |
| d_b, Bicycle Delay [s] | 0.58 | 12.77 | 0.40 | 12.77 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 1.560 | 2.354 | 1.560 |
| Bicycle LOS | A | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Monte Olivo Phase 1

Vistro File: G:\...\AM MIT.vistro
Report File: G:\...\AM EP MIT.pdf

Scenario 2 Existing Plus Project
12/5/2022

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 9 | State St (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | SB Right | 0.684 | 7.5 | A |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 7.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.684 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 5 | 0 | 1 | 19 | 0 | 75 | 47 | 388 | 2 | 1 | 960 | 12 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 9 | 0 | 25 | 9 | 0 | 0 | 0 | 0 | 3 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 0 | 1 | 28 | 0 | 100 | 56 | 388 | 2 | 1 | 960 | 15 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 7 | 0 | 26 | 15 | 102 | 1 | 0 | 253 | 4 |
| Total Analysis Volume [veh/h] | 5 | 0 | 1 | 29 | 0 | 105 | 59 | 408 | 2 | 1 | 1011 | 16 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 71 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 8 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 59 | 0 | 0 | 59 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 6 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | R | L | C | C | L | C | R |
|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 7 | 7 | 7 | 56 | 56 | 56 | 56 | 56 | 56 |
| g / C, Green / Cycle | 0.09 | 0.09 | 0.09 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| (v / s)_i Volume / Saturation Flow Rate | 0.01 | 0.02 | 0.07 | 0.11 | 0.11 | 0.11 | 0.00 | 0.54 | 0.01 |
| s, saturation flow rate [veh/h] | 880 | 1642 | 1589 | 549 | 1870 | 1867 | 976 | 1870 | 1589 |
| c, Capacity [veh/h] | 175 | 254 | 148 | 382 | 1486 | 1483 | 819 | 1486 | 1263 |
| d1, Uniform Delay [s] | 29.34 | 29.69 | 31.27 | 9.52 | 1.68 | 1.68 | 2.49 | 3.26 | 1.52 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.08 | 0.20 | 6.20 | 0.86 | 0.19 | 0.19 | 0.00 | 2.54 | 0.02 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.03 | 0.11 | 0.71 | 0.15 | 0.14 | 0.14 | 0.00 | 0.68 | 0.01 |
| d, Delay for Lane Group [s/veh] | 29.42 | 29.89 | 37.47 | 10.38 | 1.88 | 1.88 | 2.49 | 5.80 | 1.53 |
| Lane Group LOS | C | C | D | B | A | A | A | A | A |
| Critical Lane Group | No | No | Yes | No | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.10 | 0.45 | 1.92 | 0.49 | 0.19 | 0.19 | 0.00 | 2.09 | 0.01 |
| 50th-Percentile Queue Length [ft/ln] | 2.39 | 11.25 | 47.93 | 12.31 | 4.74 | 4.74 | 0.06 | 52.34 | 0.35 |
| 95th-Percentile Queue Length [veh/ln] | 0.17 | 0.81 | 3.45 | 0.89 | 0.34 | 0.34 | 0.00 | 3.77 | 0.03 |
| 95th-Percentile Queue Length [ft/ln] | 4.30 | 20.25 | 86.27 | 22.17 | 8.53 | 8.53 | 0.10 | 94.21 | 0.63 |

**Movement, Approach, & Intersection Results**

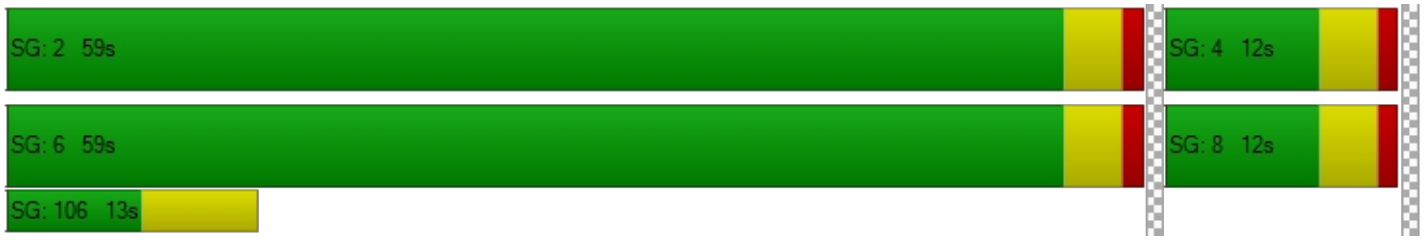
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 29.42 | 29.42 | 29.42 | 29.89 | 29.89 | 37.47 | 10.38 | 1.88 | 1.88 | 2.49 | 5.80 | 1.53 |
| Movement LOS | C | C | C | C | C | D | B | A | A | A | A | A |
| d_A, Approach Delay [s/veh] | 29.42 | | | 35.83 | | | 2.95 | | | 5.73 | | |
| Approach LOS | C | | | D | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 7.49 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |
| Intersection V/C | 0.684 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 25.35 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 2.090 | 0.000 | 0.000 |
| Crosswalk LOS | F | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 225 | 225 | 1549 | 1549 |
| d_b, Bicycle Delay [s] | 27.95 | 27.95 | 1.80 | 1.80 |
| l_b,int, Bicycle LOS Score for Intersection | 1.570 | 1.781 | 1.947 | 3.256 |
| Bicycle LOS | A | A | A | C |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Monte Olivo Phase 1

Vistro File: G:\...\PM MIT.vistro
Report File: G:\...\PM EP MIT.pdf

Scenario 2 Existing Plus Project
12/5/2022

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 9 | State St (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | SB Right | 0.391 | 4.7 | A |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 4.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.391 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 4 | 0 | 0 | 37 | 0 | 59 | 41 | 936 | 5 | 0 | 528 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 5 | 0 | 13 | 32 | 0 | 0 | 0 | 0 | 11 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 0 | 0 | 42 | 0 | 72 | 73 | 936 | 5 | 0 | 528 | 25 |
| Peak Hour Factor | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 11 | 0 | 19 | 19 | 242 | 1 | 0 | 137 | 6 |
| Total Analysis Volume [veh/h] | 4 | 0 | 0 | 43 | 0 | 74 | 75 | 968 | 5 | 0 | 546 | 26 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 8 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 48 | 0 | 0 | 48 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 6 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | R | L | C | C | L | C | R |
|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 6 | 6 | 46 | 46 | 46 | 46 | 46 | 46 |
| g / C, Green / Cycle | 0.10 | 0.10 | 0.10 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 |
| (v / s)_i Volume / Saturation Flow Rate | 0.01 | 0.03 | 0.05 | 0.09 | 0.26 | 0.26 | 0.00 | 0.29 | 0.02 |
| s, saturation flow rate [veh/h] | 722 | 1652 | 1589 | 840 | 1870 | 1867 | 578 | 1870 | 1589 |
| c, Capacity [veh/h] | 194 | 290 | 164 | 641 | 1428 | 1425 | 487 | 1428 | 1214 |
| d1, Uniform Delay [s] | 26.83 | 24.75 | 25.33 | 4.75 | 2.27 | 2.27 | 0.00 | 2.37 | 1.71 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.04 | 0.23 | 1.93 | 0.37 | 0.65 | 0.65 | 0.00 | 0.78 | 0.03 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.02 | 0.15 | 0.45 | 0.12 | 0.34 | 0.34 | 0.00 | 0.38 | 0.02 |
| d, Delay for Lane Group [s/veh] | 26.87 | 24.98 | 27.26 | 5.13 | 2.92 | 2.92 | 0.00 | 3.15 | 1.74 |
| Lane Group LOS | C | C | C | A | A | A | A | A | A |
| Critical Lane Group | No | No | Yes | No | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.05 | 0.54 | 1.01 | 0.29 | 0.49 | 0.49 | 0.00 | 0.58 | 0.02 |
| 50th-Percentile Queue Length [ft/ln] | 1.37 | 13.54 | 25.23 | 7.30 | 12.26 | 12.25 | 0.00 | 14.52 | 0.51 |
| 95th-Percentile Queue Length [veh/ln] | 0.10 | 0.98 | 1.82 | 0.53 | 0.88 | 0.88 | 0.00 | 1.05 | 0.04 |
| 95th-Percentile Queue Length [ft/ln] | 2.47 | 24.38 | 45.41 | 13.14 | 22.08 | 22.06 | 0.00 | 26.14 | 0.91 |

**Movement, Approach, & Intersection Results**

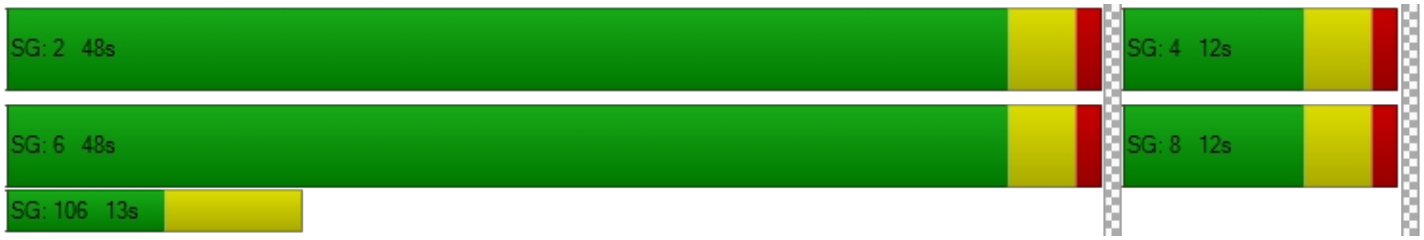
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 26.87 | 26.87 | 26.87 | 24.98 | 24.98 | 27.26 | 5.13 | 2.92 | 2.92 | 0.00 | 3.15 | 1.74 |
| Movement LOS | C | C | C | C | C | C | A | A | A | A | A | A |
| d_A, Approach Delay [s/veh] | 26.87 | | | 26.42 | | | 3.08 | | | 3.09 | | |
| Approach LOS | C | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 4.71 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |
| Intersection V/C | 0.391 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 20.02 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 2.107 | 0.000 | 0.000 |
| Crosswalk LOS | F | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 267 | 267 | 1466 | 1466 |
| d_b, Bicycle Delay [s] | 22.55 | 22.55 | 2.14 | 2.14 |
| l_b,int, Bicycle LOS Score for Intersection | 1.566 | 1.753 | 2.424 | 2.503 |
| Bicycle LOS | A | A | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# Opening Year (2025) Without Project

Monte Olivo Phase 1

Vistro File: G:\...\AM E.vistro
Report File: G:\...\AM OY.pdf

Scenario 3 Opening Year (2025) Without Project
6/13/2023

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Rimpau Ave (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | SB Left | 0.942 | 27.8 | C |
| 2 | Rimpau Ave (NS) at California Ave (EW) | Signalized | HCM 6th Edition | WB Right | 0.465 | 6.4 | A |
| 3 | Rimpau Ave (NS) at Olympic Dr (EW) | Signalized | HCM 6th Edition | SB Left | 0.833 | 20.9 | C |
| 4 | Rimpau Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | SB Left | 0.618 | 18.0 | C |
| 5 | California Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Thru | 0.579 | 12.6 | B |
| 6 | Compton Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Left | 0.458 | 10.3 | B |
| 7 | Laurel Canyon Way (NS) at Project Dwy (EW) | Two-way stop | HCM 6th Edition | WB Left | 0.004 | 8.8 | A |
| 8 | State St (NS) at Bel Air St/Project Dwy (EW) | Two-way stop | HCM 6th Edition | WB Left | 0.017 | 8.8 | A |
| 9 | State St (NS) at Ontario Ave (EW) | Two-way stop | HCM 6th Edition | NB Left | 0.040 | 35.0 | D |
| 10 | I-15 SB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | EB Right | 0.967 | 24.3 | C |
| 11 | I-15 NB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | NB Left | 0.806 | 19.4 | B |
| 12 | California Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | EB Left | 0.672 | 21.9 | C |
| 13 | El Sobrante Rd (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | EB Left | 0.628 | 38.8 | D |
| 14 | I-15 SB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | EB Right | 0.978 | 32.8 | C |
| 15 | I-15 NB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | NB Right | 0.798 | 15.3 | B |
| 16 | Compton Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | NB Right | 0.749 | 24.2 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For

**Intersection Level Of Service Report**
**Intersection 1: Rimpau Ave (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 27.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.942 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 148.00 | 100.00 | 100.00 | 80.00 | 100.00 | 100.00 | 180.00 | 100.00 | 100.00 | 360.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 101 | 271 | 481 | 115 | 269 | 42 | 88 | 825 | 104 | 542 | 1084 | 69 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 3 | 3 | 2 | 2 | 0 | 0 | 89 | 1 | 2 | 25 | 2 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 109 | 290 | 513 | 124 | 287 | 45 | 93 | 964 | 111 | 577 | 1174 | 75 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 29 | 76 | 135 | 33 | 76 | 12 | 24 | 254 | 29 | 152 | 309 | 20 |
| Total Analysis Volume [veh/h] | 115 | 305 | 540 | 131 | 302 | 47 | 98 | 1015 | 117 | 607 | 1236 | 79 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 70 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 2 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | 2,7 | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 7 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 21 | 11 | 21 | 0 | 13 | 23 | 0 | 15 | 25 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | No | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | No | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 15 | 32 | 7 | 15 | 6 | 19 | 19 | 13 | 27 | 27 |
| g / C, Green / Cycle | 0.09 | 0.21 | 0.46 | 0.09 | 0.22 | 0.09 | 0.27 | 0.27 | 0.19 | 0.38 | 0.38 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.16 | 0.34 | 0.07 | 0.19 | 0.06 | 0.21 | 0.21 | 0.18 | 0.24 | 0.25 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1589 | 1781 | 1827 | 1781 | 3560 | 1773 | 3459 | 3560 | 1813 |
| c, Capacity [veh/h] | 162 | 398 | 731 | 169 | 396 | 153 | 977 | 486 | 658 | 1349 | 687 |
| d1, Uniform Delay [s] | 31.04 | 26.01 | 15.51 | 31.07 | 26.64 | 31.07 | 23.48 | 23.49 | 27.93 | 17.94 | 17.95 |
| k, delay calibration | 0.11 | 0.11 | 0.30 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 5.65 | 3.12 | 4.04 | 7.40 | 6.52 | 4.44 | 5.95 | 11.43 | 5.97 | 2.39 | 4.67 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.71 | 0.77 | 0.74 | 0.78 | 0.88 | 0.64 | 0.77 | 0.77 | 0.92 | 0.65 | 0.65 |
| d, Delay for Lane Group [s/veh] | 36.69 | 29.13 | 19.55 | 38.47 | 33.16 | 35.51 | 29.43 | 34.92 | 33.90 | 20.33 | 22.62 |
| Lane Group LOS | D | C | B | D | C | D | C | C | C | C | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.05 | 4.80 | 6.86 | 2.40 | 5.95 | 1.69 | 5.99 | 6.71 | 5.12 | 5.49 | 6.05 |
| 50th-Percentile Queue Length [ft/ln] | 51.26 | 119.88 | 171.51 | 60.09 | 148.85 | 42.24 | 149.72 | 167.81 | 127.99 | 137.31 | 151.24 |
| 95th-Percentile Queue Length [veh/ln] | 3.69 | 8.39 | 11.16 | 4.33 | 9.96 | 3.04 | 10.00 | 10.96 | 8.83 | 9.34 | 10.08 |
| 95th-Percentile Queue Length [ft/ln] | 92.27 | 209.66 | 278.90 | 108.16 | 248.90 | 76.04 | 250.06 | 274.04 | 220.76 | 233.40 | 252.09 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 36.69 | 29.13 | 19.55 | 38.47 | 33.16 | 33.16 | 35.51 | 30.84 | 34.92 | 33.90 | 21.01 | 22.62 |
| Movement LOS | D | C | B | D | C | C | D | C | C | C | C | C |
| d_A, Approach Delay [s/veh] | 24.65 | | | 34.61 | | | 31.60 | | | 25.14 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 27.76 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.942 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 24.93 | 24.93 | 24.93 | 24.93 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.738 | 2.291 | 3.068 | 3.298 |
| Crosswalk LOS | B | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 485 | 485 | 542 | 599 |
| d_b, Bicycle Delay [s] | 20.12 | 20.12 | 18.64 | 17.21 |
| l_b,int, Bicycle LOS Score for Intersection | 3.144 | 2.352 | 2.236 | 2.617 |
| Bicycle LOS | C | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**

**Intersection 2: Rimpau Ave (NS) at California Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 6.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.465 |

**Intersection Setup**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 50.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 35.00 | | 40.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | Yes | |

**Volumes**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 692 | 11 | 0 | 872 | 1 | 181 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 5 | 0 | 1 | 4 | 0 | 3 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 739 | 12 | 1 | 928 | 1 | 195 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 194 | 3 | 0 | 244 | 0 | 51 |
| Total Analysis Volume [veh/h] | 778 | 13 | 1 | 977 | 1 | 205 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Split | Split |
|---|---|---|---|---|---|---|
| Signal Group | 2 | 0 | 0 | 6 | 7 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 21 | 0 | 0 | 21 | 39 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | C | L | R |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 42 | 42 | 42 | 10 | 10 |
| g / C, Green / Cycle | 0.71 | 0.71 | 0.71 | 0.16 | 0.16 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.14 | 0.27 | 0.00 | 0.13 |
| s, saturation flow rate [veh/h] | 3560 | 1854 | 3560 | 1781 | 1589 |
| c, Capacity [veh/h] | 2508 | 1306 | 2508 | 289 | 258 |
| d1, Uniform Delay [s] | 3.08 | 3.06 | 3.61 | 21.09 | 24.19 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.19 | 0.35 | 0.46 | 0.00 | 5.51 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.21 | 0.20 | 0.39 | 0.00 | 0.79 |
| d, Delay for Lane Group [s/veh] | 3.27 | 3.41 | 4.07 | 21.09 | 29.70 |
| Lane Group LOS | A | A | A | C | C |
| Critical Lane Group | No | No | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.63 | 0.68 | 1.37 | 0.01 | 2.90 |
| 50th-Percentile Queue Length [ft/ln] | 15.63 | 17.03 | 34.37 | 0.28 | 72.49 |
| 95th-Percentile Queue Length [veh/ln] | 1.13 | 1.23 | 2.47 | 0.02 | 5.22 |
| 95th-Percentile Queue Length [ft/ln] | 28.14 | 30.66 | 61.86 | 0.50 | 130.48 |

**Movement, Approach, & Intersection Results**

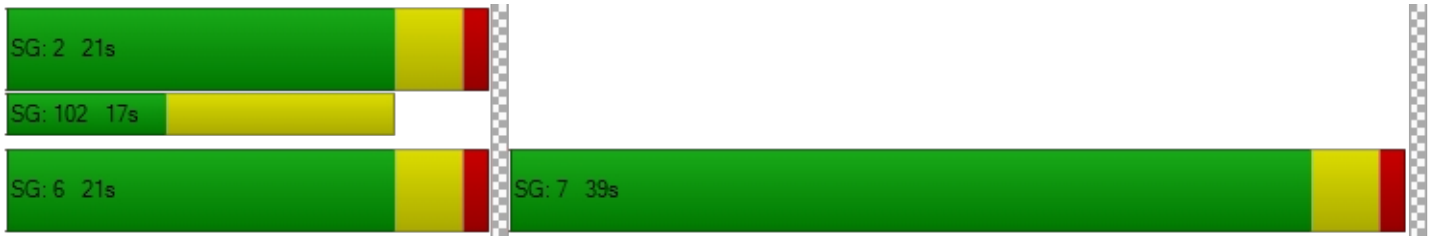
| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 3.31 | 3.41 | 0.00 | 4.07 | 21.09 | 29.70 |
| Movement LOS | A | A | | A | C | C |
| d_A, Approach Delay [s/veh] | 3.31 | | 4.07 | | 29.66 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 6.44 | | | | | |
| Intersection LOS | A | | | | | |
| Intersection V/C | 0.465 | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 20.02 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 0.000 | 2.180 |
| Crosswalk LOS | F | F | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 566 | 566 | 1166 |
| d_b, Bicycle Delay [s] | 15.42 | 15.42 | 5.22 |
| l_b,int, Bicycle LOS Score for Intersection | 1.995 | 2.366 | 1.560 |
| Bicycle LOS | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Rimpau Ave (NS) at Olympic Dr (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 20.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.833 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 140.00 | 100.00 | 100.00 | 140.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 31 | 420 | 17 | 181 | 517 | 175 | 223 | 14 | 119 | 70 | 36 | 59 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 5 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 33 | 450 | 18 | 192 | 552 | 186 | 236 | 15 | 126 | 74 | 38 | 63 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 118 | 5 | 51 | 145 | 49 | 62 | 4 | 33 | 19 | 10 | 17 |
| Total Analysis Volume [veh/h] | 35 | 474 | 19 | 202 | 581 | 196 | 248 | 16 | 133 | 78 | 40 | 66 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 61 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 7 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 14 | 24 | 0 | 11 | 26 | 0 | 0 | 15 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | Yes | No | | | No | |
| Maximum Recall | No | No | | No | No | | No | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | C | R | C | R |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 3 | 18 | 18 | 9 | 24 | 24 | 22 | 22 | 11 | 11 |
| g / C, Green / Cycle | 0.05 | 0.30 | 0.30 | 0.14 | 0.39 | 0.39 | 0.36 | 0.36 | 0.18 | 0.18 |
| (v / s)_i Volume / Saturation Flow Rate | 0.02 | 0.13 | 0.13 | 0.11 | 0.22 | 0.22 | 0.31 | 0.08 | 0.25 | 0.04 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1845 | 1781 | 1870 | 1711 | 848 | 1589 | 468 | 1589 |
| c, Capacity [veh/h] | 96 | 564 | 557 | 252 | 728 | 666 | 442 | 573 | 182 | 288 |
| d1, Uniform Delay [s] | 27.95 | 17.20 | 17.20 | 25.44 | 14.56 | 14.56 | 15.91 | 13.65 | 27.27 | 21.42 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.33 | 2.47 | 2.52 | 5.86 | 3.06 | 3.34 | 5.87 | 0.20 | 3.81 | 0.40 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.37 | 0.44 | 0.44 | 0.80 | 0.56 | 0.56 | 0.60 | 0.23 | 0.65 | 0.23 |
| d, Delay for Lane Group [s/veh] | 30.28 | 19.67 | 19.72 | 31.31 | 17.63 | 17.91 | 21.78 | 13.86 | 31.08 | 21.82 |
| Lane Group LOS | C | B | B | C | B | B | C | B | C | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.52 | 2.88 | 2.86 | 3.03 | 4.37 | 4.05 | 3.26 | 1.22 | 1.86 | 0.79 |
| 50th-Percentile Queue Length [ft/ln] | 13.12 | 72.02 | 71.43 | 75.64 | 109.25 | 101.23 | 81.45 | 30.54 | 46.39 | 19.78 |
| 95th-Percentile Queue Length [veh/ln] | 0.94 | 5.19 | 5.14 | 5.45 | 7.80 | 7.29 | 5.86 | 2.20 | 3.34 | 1.42 |
| 95th-Percentile Queue Length [ft/ln] | 23.62 | 129.63 | 128.57 | 136.16 | 194.95 | 182.22 | 146.61 | 54.98 | 83.50 | 35.60 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 30.28 | 19.69 | 19.72 | 31.31 | 17.71 | 17.91 | 21.78 | 21.78 | 13.86 | 31.08 | 31.08 | 21.82 |
| Movement LOS | C | B | B | C | B | B | C | C | B | C | C | C |
| d_A, Approach Delay [s/veh] | 20.40 | | | 20.55 | | | 19.12 | | | 27.76 | | |
| Approach LOS | C | | | C | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 20.88 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.833 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.54 | 0.00 | 20.54 | 20.54 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.690 | 0.000 | 2.100 | 2.056 |
| Crosswalk LOS | B | F | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 556 | 655 | 720 | 360 |
| d_b, Bicycle Delay [s] | 15.92 | 13.82 | 12.51 | 20.54 |
| l_b,int, Bicycle LOS Score for Intersection | 1.995 | 2.367 | 2.215 | 1.863 |
| Bicycle LOS | A | B | B | A |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**

**Intersection 4: Rimpau Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 18.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.618 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 34 | 401 | 47 | 106 | 323 | 108 | 78 | 109 | 38 | 35 | 86 | 92 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 36 | 429 | 50 | 112 | 346 | 114 | 83 | 116 | 40 | 37 | 91 | 99 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 113 | 13 | 29 | 91 | 30 | 22 | 31 | 11 | 10 | 24 | 26 |
| Total Analysis Volume [veh/h] | 38 | 452 | 53 | 118 | 364 | 120 | 87 | 122 | 42 | 39 | 96 | 104 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 490 | 504 | 487 | 521 | 440 | 495 | 440 | 491 |
| Degree of Utilization, x | 0.55 | 0.54 | 0.62 | 0.58 | 0.47 | 0.08 | 0.31 | 0.21 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 3.32 | 3.15 | 4.12 | 3.63 | 2.50 | 0.28 | 1.29 | 0.79 |
| 95th-Percentile Queue Length [ft] | 82.99 | 78.84 | 102.97 | 90.72 | 62.38 | 6.91 | 32.13 | 19.86 |
| Approach Delay [s/veh] | 18.31 | | 19.97 | | 16.81 | | 13.40 | |
| Approach LOS | C | | C | | C | | B | |
| Intersection Delay [s/veh] | 17.97 | | | | | | | |
| Intersection LOS | C | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 5: California Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 12.6 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.579 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | No | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 81 | 227 | 21 | 12 | 79 | 5 | 35 | 78 | 117 | 17 | 75 | 69 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 86 | 241 | 22 | 14 | 84 | 5 | 37 | 83 | 124 | 18 | 81 | 76 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 23 | 63 | 6 | 4 | 22 | 1 | 10 | 22 | 33 | 5 | 21 | 20 |
| Total Analysis Volume [veh/h] | 91 | 254 | 23 | 15 | 88 | 5 | 39 | 87 | 131 | 19 | 85 | 80 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 596 | 691 | 567 | 646 | 562 | 650 | 559 | 637 |
| Degree of Utilization, x | 0.58 | 0.03 | 0.18 | 0.01 | 0.22 | 0.20 | 0.19 | 0.13 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 3.69 | 0.10 | 0.66 | 0.02 | 0.85 | 0.75 | 0.68 | 0.43 |
| 95th-Percentile Queue Length [ft] | 92.27 | 2.58 | 16.47 | 0.59 | 21.32 | 18.72 | 16.95 | 10.69 |
| Approach Delay [s/veh] | 16.17 | | 10.36 | | 10.27 | | 9.98 | |
| Approach LOS | C | | B | | B | | A | |
| Intersection Delay [s/veh] | 12.59 | | | | | | | |
| Intersection LOS | B | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 6: Compton Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 10.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.458 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 216 | 108 | 13 | 0 | 8 | 0 | 7 | 11 | 60 | 10 | 18 | 7 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 229 | 114 | 14 | 0 | 8 | 0 | 7 | 13 | 64 | 11 | 23 | 7 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 60 | 30 | 4 | 0 | 2 | 0 | 2 | 3 | 17 | 3 | 6 | 2 |
| Total Analysis Volume [veh/h] | 241 | 120 | 15 | 0 | 8 | 0 | 7 | 14 | 67 | 12 | 24 | 7 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | |
|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 822 | 769 | 634 | 750 | 628 | 742 |
| Degree of Utilization, x | 0.46 | 0.01 | 0.03 | 0.09 | 0.06 | 0.01 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 2.43 | 0.03 | 0.10 | 0.29 | 0.18 | 0.03 |
| 95th-Percentile Queue Length [ft] | 60.65 | 0.79 | 2.57 | 7.34 | 4.55 | 0.71 |
| Approach Delay [s/veh] | 11.02 | 7.74 | 8.12 | | 8.58 | |
| Approach LOS | B | A | A | | A | |
| Intersection Delay [s/veh] | 10.27 | | | | | |
| Intersection LOS | B | | | | | |

**Intersection Level Of Service Report**

**Intersection 7: Laurel Canyon Way (NS) at Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 8.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.004 |

**Intersection Setup**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**Volumes**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 24 | 0 | 0 | 35 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 1 | 0 | 0 | 4 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 25 | 1 | 0 | 37 | 4 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 7 | 0 | 0 | 10 | 1 | 0 |
| Total Analysis Volume [veh/h] | 26 | 1 | 0 | 39 | 4 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop |
|---|---|---|---|
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 7.27 | 0.00 | 8.85 | 8.45 |
| Movement LOS | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.32 | 0.32 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.00 | | 8.85 | |
| Approach LOS | A | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.51 | | | | | |
| Intersection LOS | A | | | | | |

**Intersection Level Of Service Report**

**Intersection 8: State St (NS) at Bel Air St/Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 8.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.017 |

**Intersection Setup**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 25.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 9 | 0 | 0 | 12 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 10 | 5 | 0 | 13 | 0 | 0 | 0 | 2 | 16 | 0 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 3 | 1 | 0 | 3 | 0 | 0 | 0 | 1 | 4 | 0 | 0 |
| Total Analysis Volume [veh/h] | 2 | 11 | 5 | 0 | 14 | 0 | 0 | 0 | 2 | 17 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.25 | 0.00 | 0.00 | 7.25 | 0.00 | 0.00 | 8.70 | 9.20 | 8.38 | 8.77 | 9.25 | 8.44 |
| Movement LOS | A | A | A | A | A | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.05 | 0.05 | 0.05 |
| 95th-Percentile Queue Length [ft/ln] | 0.09 | 0.09 | 0.09 | 0.00 | 0.00 | 0.00 | 0.14 | 0.14 | 0.14 | 1.33 | 1.33 | 1.33 |
| d_A, Approach Delay [s/veh] | 0.81 | | | 0.00 | | | 8.38 | | | 8.77 | | |
| Approach LOS | A | | | A | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 3.54 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 35.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.040 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 5 | 0 | 1 | 19 | 0 | 75 | 47 | 388 | 2 | 1 | 960 | 12 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 3 | 0 | 15 | 6 | 2 | 0 | 0 | 2 | 1 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 0 | 1 | 23 | 0 | 95 | 56 | 413 | 2 | 1 | 1020 | 14 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 6 | 0 | 25 | 15 | 109 | 1 | 0 | 268 | 4 |
| Total Analysis Volume [veh/h] | 5 | 0 | 1 | 24 | 0 | 100 | 59 | 435 | 2 | 1 | 1074 | 15 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | Yes | | |
| Number of Storage Spaces in Median | 0 | 2 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.04 | 0.00 | 0.00 | 0.11 | 0.00 | 0.20 | 0.09 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 34.97 | 46.37 | 10.65 | 23.91 | 21.64 | 14.26 | 11.23 | 0.00 | 0.00 | 8.22 | 0.00 | 0.00 |
| Movement LOS | D | E | B | C | C | B | B | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.13 | 0.13 | 0.13 | 0.37 | 0.37 | 0.76 | 0.31 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 3.22 | 3.22 | 3.22 | 9.32 | 9.32 | 19.02 | 7.63 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 30.92 | | | 16.13 | | | 1.34 | | | 0.01 | | |
| Approach LOS | D | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 1.66 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 10: I-15 SB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.967 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 67.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 262 | 2 | 938 | 0 | 950 | 467 | 29 | 1345 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 12 | 0 | 1 | 0 | 7 | 2 | 10 | 9 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 290 | 2 | 995 | 0 | 1014 | 497 | 41 | 1435 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 76 | 1 | 262 | 0 | 267 | 131 | 11 | 378 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 305 | 2 | 1047 | 0 | 1067 | 523 | 43 | 1511 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 68 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 27 | 0 | 11 | 38 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 68 | 68 | 68 | 68 | 68 | 68 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 26 | 26 | 26 | 26 | 4 | 34 |
| g / C, Green / Cycle | | 0.38 | 0.38 | 0.38 | 0.38 | 0.06 | 0.50 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.17 | 0.37 | 0.30 | 0.33 | 0.02 | 0.42 |
| s, saturation flow rate [veh/h] | | 1781 | 2813 | 3560 | 1589 | 1781 | 3560 |
| c, Capacity [veh/h] | | 680 | 1074 | 1364 | 609 | 105 | 1783 |
| d1, Uniform Delay [s] | | 15.73 | 20.73 | 18.52 | 19.33 | 30.91 | 14.75 |
| k, delay calibration | | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.47 | 8.13 | 4.54 | 14.65 | 2.53 | 5.21 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.45 | 0.97 | 0.78 | 0.86 | 0.41 | 0.85 |
| d, Delay for Lane Group [s/veh] | | 16.20 | 28.86 | 23.06 | 33.99 | 33.44 | 19.97 |
| Lane Group LOS | | B | C | C | C | C | B |
| Critical Lane Group | | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | | 3.35 | 8.55 | 7.02 | 8.79 | 0.70 | 9.01 |
| 50th-Percentile Queue Length [ft/ln] | | 83.81 | 213.72 | 175.62 | 219.66 | 17.54 | 225.27 |
| 95th-Percentile Queue Length [veh/ln] | | 6.03 | 13.34 | 11.37 | 13.65 | 1.26 | 13.93 |
| 95th-Percentile Queue Length [ft/ln] | | 150.85 | 333.59 | 284.29 | 341.19 | 31.57 | 348.35 |

**Movement, Approach, & Intersection Results**

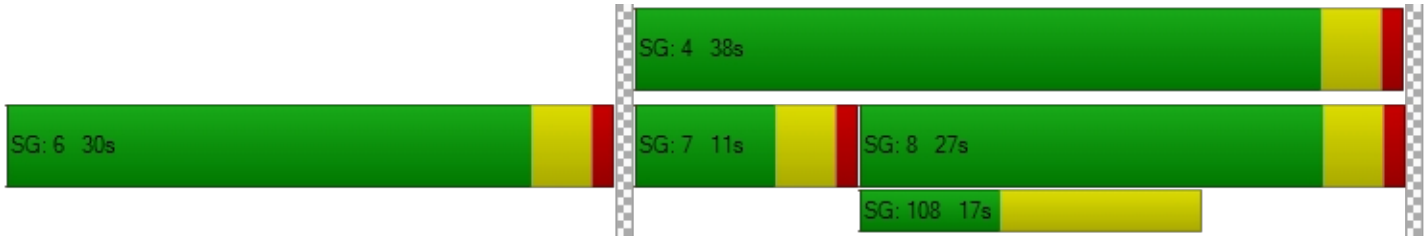
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 16.20 | 16.20 | 28.86 | 0.00 | 23.06 | 33.99 | 33.44 | 19.97 | 0.00 |
| Movement LOS | | | | B | B | C | | C | C | C | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 25.99 | | | 26.65 | | | 20.34 | | |
| Approach LOS | A | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 24.27 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.967 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 23.92 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 1.962 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | A | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 764 | 676 | 999 |
| d_b, Bicycle Delay [s] | 34.03 | 13.00 | 14.92 | 8.52 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 3.794 | 2.871 | 2.842 |
| Bicycle LOS | D | D | C | C |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**

**Intersection 11: I-15 NB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 19.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.806 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 354 | 2 | 33 | 0 | 0 | 0 | 618 | 539 | 0 | 0 | 1046 | 270 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0000 | 1.0000 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 2 | 0 | 9 | 0 | 0 | 0 | 2 | 17 | 0 | 0 | 17 | 13 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 377 | 2 | 44 | 0 | 0 | 0 | 657 | 588 | 0 | 0 | 1126 | 299 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 99 | 1 | 12 | 0 | 0 | 0 | 173 | 155 | 0 | 0 | 296 | 79 |
| Total Analysis Volume [veh/h] | 397 | 2 | 46 | 0 | 0 | 0 | 692 | 619 | 0 | 0 | 1185 | 315 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 28 | 0 | 0 | 0 | 0 | 11 | 32 | 0 | 0 | 21 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 9 | 9 | 9 | | 15 | 43 | 24 | 24 |
| g / C, Green / Cycle | 0.16 | 0.16 | 0.16 | | 0.25 | 0.71 | 0.40 | 0.40 |
| (v / s)_i Volume / Saturation Flow Rate | 0.11 | 0.11 | 0.03 | | 0.20 | 0.33 | 0.33 | 0.20 |
| s, saturation flow rate [veh/h] | 1781 | 1782 | 1589 | | 3459 | 1870 | 3560 | 1589 |
| c, Capacity [veh/h] | 280 | 280 | 250 | | 856 | 1327 | 1408 | 629 |
| d1, Uniform Delay [s] | 24.05 | 24.05 | 21.99 | | 21.29 | 3.79 | 16.47 | 13.71 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.34 | 3.33 | 0.35 | | 1.87 | 1.18 | 6.23 | 2.84 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.71 | 0.71 | 0.18 | | 0.81 | 0.47 | 0.84 | 0.50 |
| d, Delay for Lane Group [s/veh] | 27.39 | 27.39 | 22.34 | | 23.17 | 4.97 | 22.70 | 16.54 |
| Lane Group LOS | C | C | C | | C | A | C | B |
| Critical Lane Group | Yes | No | No | | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 2.77 | 2.77 | 0.55 | | 4.11 | 1.61 | 7.00 | 3.05 |
| 50th-Percentile Queue Length [ft/ln] | 69.34 | 69.37 | 13.86 | | 102.87 | 40.26 | 174.97 | 76.31 |
| 95th-Percentile Queue Length [veh/ln] | 4.99 | 4.99 | 1.00 | | 7.41 | 2.90 | 11.34 | 5.49 |
| 95th-Percentile Queue Length [ft/ln] | 124.81 | 124.86 | 24.95 | | 185.16 | 72.47 | 283.44 | 137.36 |

**Movement, Approach, & Intersection Results**

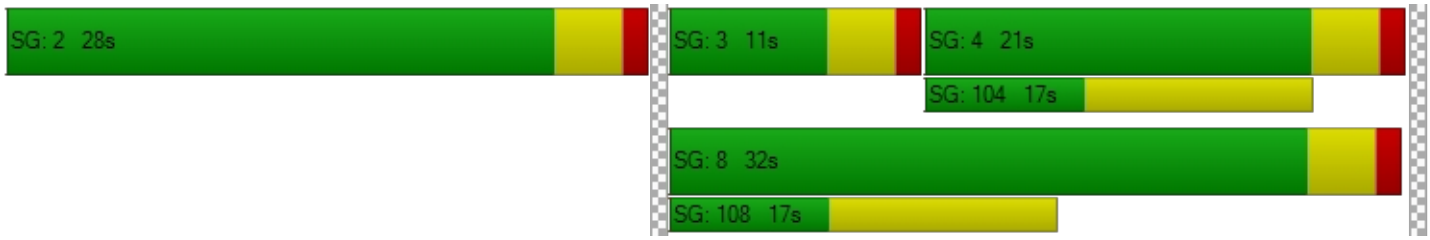
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 27.39 | 27.39 | 22.34 | 0.00 | 0.00 | 0.00 | 23.17 | 4.97 | 0.00 | 0.00 | 22.70 | 16.54 |
| Movement LOS | C | C | C | | | | C | A | | | C | B |
| d_A, Approach Delay [s/veh] | 26.87 | | | 0.00 | | | 14.58 | | | 21.41 | | |
| Approach LOS | C | | | A | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 19.40 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.806 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.05 | 20.05 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.062 | 2.184 | 0.000 | 0.000 |
| Crosswalk LOS | B | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 799 | 0 | 932 | 566 |
| d_b, Bicycle Delay [s] | 10.83 | 30.04 | 8.57 | 15.45 |
| l_b,int, Bicycle LOS Score for Intersection | 2.294 | 4.132 | 3.723 | 2.797 |
| Bicycle LOS | B | D | D | C |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 12: California Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 21.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.672 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 195.00 | 100.00 | 100.00 | 212.00 | 100.00 | 150.00 | 268.00 | 100.00 | 115.00 | 217.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 107 | 199 | 103 | 186 | 76 | 58 | 185 | 753 | 63 | 236 | 952 | 290 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 8 | 5 | 2 | 7 | 1 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 116 | 211 | 110 | 197 | 81 | 61 | 196 | 806 | 72 | 252 | 1016 | 308 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 31 | 56 | 29 | 52 | 21 | 16 | 52 | 212 | 19 | 66 | 267 | 81 |
| Total Analysis Volume [veh/h] | 122 | 222 | 116 | 207 | 85 | 64 | 206 | 848 | 76 | 265 | 1069 | 324 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 64 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 11 | 21 | 0 | 11 | 21 | 0 | 11 | 21 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 10 | 10 | 7 | 10 | 10 | 9 | 24 | 24 | 7 | 22 | 22 |
| g / C, Green / Cycle | 0.10 | 0.15 | 0.15 | 0.11 | 0.16 | 0.16 | 0.14 | 0.38 | 0.38 | 0.11 | 0.35 | 0.35 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.12 | 0.07 | 0.06 | 0.05 | 0.04 | 0.12 | 0.17 | 0.05 | 0.08 | 0.21 | 0.20 |
| s, saturation flow rate [veh/h] | 3459 | 1870 | 1589 | 3459 | 1870 | 1589 | 1781 | 5094 | 1589 | 3459 | 5094 | 1589 |
| c, Capacity [veh/h] | 341 | 289 | 246 | 373 | 306 | 260 | 256 | 1921 | 599 | 386 | 1759 | 549 |
| d1, Uniform Delay [s] | 27.07 | 26.07 | 24.79 | 27.21 | 23.55 | 23.42 | 26.66 | 14.96 | 13.10 | 27.47 | 17.44 | 17.31 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.63 | 4.29 | 1.41 | 1.29 | 0.49 | 0.49 | 5.91 | 0.74 | 0.44 | 2.17 | 1.57 | 4.61 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.36 | 0.77 | 0.47 | 0.56 | 0.28 | 0.25 | 0.81 | 0.44 | 0.13 | 0.69 | 0.61 | 0.59 |
| d, Delay for Lane Group [s/veh] | 27.70 | 30.36 | 26.20 | 28.51 | 24.04 | 23.91 | 32.57 | 15.70 | 13.53 | 29.63 | 19.01 | 21.92 |
| Lane Group LOS | C | C | C | C | C | C | C | B | B | C | B | C |
| Critical Lane Group | No | Yes | No | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.82 | 3.24 | 1.54 | 1.45 | 1.07 | 0.81 | 3.15 | 2.68 | 0.67 | 1.88 | 3.90 | 3.99 |
| 50th-Percentile Queue Length [ft/ln] | 20.52 | 81.10 | 38.41 | 36.27 | 26.79 | 20.17 | 78.63 | 66.99 | 16.81 | 46.92 | 97.54 | 99.82 |
| 95th-Percentile Queue Length [veh/ln] | 1.48 | 5.84 | 2.77 | 2.61 | 1.93 | 1.45 | 5.66 | 4.82 | 1.21 | 3.38 | 7.02 | 7.19 |
| 95th-Percentile Queue Length [ft/ln] | 36.94 | 145.98 | 69.15 | 65.28 | 48.23 | 36.30 | 141.53 | 120.58 | 30.25 | 84.45 | 175.58 | 179.68 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 27.70 | 30.36 | 26.20 | 28.51 | 24.04 | 23.91 | 32.57 | 15.70 | 13.53 | 29.63 | 19.01 | 21.92 |
| Movement LOS | C | C | C | C | C | C | C | B | B | C | B | C |
| d_A, Approach Delay [s/veh] | 28.61 | | | 26.61 | | | 18.63 | | | 21.28 | | |
| Approach LOS | C | | | C | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 21.91 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.672 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 22.01 | 22.01 | 22.01 | 22.01 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.745 | 2.674 | 3.143 | 3.290 |
| Crosswalk LOS | B | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 530 | 530 | 530 | 530 |
| d_b, Bicycle Delay [s] | 17.32 | 17.32 | 17.32 | 17.32 |
| l_b,int, Bicycle LOS Score for Intersection | 2.319 | 2.147 | 2.181 | 2.472 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 13: El Sobrante Rd (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 38.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.628 |

**Intersection Setup**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 65.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 78.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 45.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 15 | 18 | 106 | 118 | 36 | 102 | 59 | 1286 | 41 | 96 | 1612 | 178 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 94 | 0 | 0 | 29 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 16 | 19 | 112 | 125 | 38 | 108 | 63 | 1457 | 43 | 102 | 1738 | 189 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 4 | 5 | 29 | 33 | 10 | 28 | 17 | 383 | 11 | 27 | 457 | 50 |
| Total Analysis Volume [veh/h] | 17 | 20 | 118 | 132 | 40 | 114 | 66 | 1534 | 45 | 107 | 1829 | 199 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 118 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 9 | 15 | 0 | 40 | 46 | 0 | 10 | 51 | 0 | 13 | 54 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 35 | 0 | 0 | 18 | 0 | 0 | 26 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 2 | 41 | 7 | 46 | 6 | 45 | 45 | 9 | 49 | 49 |
| g / C, Green / Cycle | 0.02 | 0.35 | 0.06 | 0.39 | 0.05 | 0.38 | 0.38 | 0.07 | 0.41 | 0.41 |
| (v / s)_i Volume / Saturation Flow Rate | 0.01 | 0.08 | 0.04 | 0.09 | 0.04 | 0.29 | 0.29 | 0.06 | 0.38 | 0.38 |
| s, saturation flow rate [veh/h] | 1781 | 1625 | 3459 | 1654 | 1781 | 3560 | 1843 | 1781 | 3560 | 1778 |
| c, Capacity [veh/h] | 33 | 567 | 196 | 641 | 85 | 1369 | 709 | 132 | 1463 | 731 |
| d1, Uniform Delay [s] | 57.41 | 27.31 | 54.60 | 24.41 | 55.58 | 31.58 | 31.58 | 53.83 | 32.95 | 33.16 |
| k, delay calibration | 0.11 | 0.50 | 0.11 | 0.50 | 0.11 | 0.11 | 0.27 | 0.11 | 0.11 | 0.39 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 12.22 | 1.02 | 4.00 | 0.89 | 14.07 | 0.89 | 4.11 | 11.22 | 2.87 | 16.88 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.52 | 0.24 | 0.67 | 0.24 | 0.78 | 0.76 | 0.76 | 0.81 | 0.92 | 0.93 |
| d, Delay for Lane Group [s/veh] | 69.63 | 28.32 | 58.60 | 25.30 | 69.65 | 32.47 | 35.69 | 65.05 | 35.82 | 50.04 |
| Lane Group LOS | E | C | E | C | E | C | D | E | D | D |
| Critical Lane Group | No | Yes | Yes | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.62 | 2.98 | 1.99 | 2.96 | 2.24 | 12.54 | 13.61 | 3.49 | 17.89 | 21.01 |
| 50th-Percentile Queue Length [ft/ln] | 15.44 | 74.43 | 49.66 | 74.07 | 56.07 | 313.39 | 340.36 | 87.17 | 447.25 | 525.25 |
| 95th-Percentile Queue Length [veh/ln] | 1.11 | 5.36 | 3.58 | 5.33 | 4.04 | 18.34 | 19.67 | 6.28 | 24.83 | 28.53 |
| 95th-Percentile Queue Length [ft/ln] | 27.79 | 133.98 | 89.38 | 133.32 | 100.92 | 458.55 | 491.64 | 156.90 | 620.66 | 713.18 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 69.63 | 28.32 | 28.32 | 58.60 | 25.30 | 25.30 | 69.65 | 33.51 | 35.69 | 65.05 | 39.56 | 50.04 |
| Movement LOS | E | C | C | E | C | C | E | C | D | E | D | D |
| d_A, Approach Delay [s/veh] | 32.85 | | | 40.67 | | | 35.02 | | | 41.82 | | |
| Approach LOS | C | | | D | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 38.76 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.628 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 48.52 | 48.52 | 48.52 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.047 | 2.353 | 3.276 | 0.000 |
| Crosswalk LOS | B | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 186 | 712 | 797 | 847 |
| d_b, Bicycle Delay [s] | 48.52 | 24.48 | 21.36 | 19.60 |
| l_b,int, Bicycle LOS Score for Intersection | 1.815 | 2.032 | 2.464 | 2.734 |
| Bicycle LOS | A | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 14: I-15 SB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 32.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.978 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 310.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 460 | 0 | 1133 | 0 | 1331 | 179 | 327 | 757 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 99 | 0 | 1 | 0 | 93 | 1 | 25 | 28 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 587 | 0 | 1202 | 0 | 1504 | 191 | 372 | 830 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 154 | 0 | 316 | 0 | 396 | 50 | 98 | 218 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 618 | 0 | 1265 | 0 | 1583 | 201 | 392 | 874 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 77 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Split | Split | Overlap | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4 | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 38 | 38 | 0 | 26 | 0 | 13 | 39 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | No | | No | | No | No | |
| Maximum Recall | | | | | No | No | | No | | No | No | |
| Pedestrian Recall | | | | | No | No | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | C | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 77 | 77 | 77 | 77 | 77 | 77 | 77 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 34 | 34 | 34 | 22 | 22 | 9 | 35 |
| g / C, Green / Cycle | | 0.44 | 0.44 | 0.44 | 0.29 | 0.29 | 0.12 | 0.46 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.17 | 0.17 | 0.45 | 0.26 | 0.26 | 0.11 | 0.17 |
| s, saturation flow rate [veh/h] | | 1781 | 1781 | 2813 | 5094 | 1732 | 3459 | 5094 |
| c, Capacity [veh/h] | | 784 | 784 | 1238 | 1456 | 495 | 411 | 2324 |
| d1, Uniform Delay [s] | | 14.64 | 14.64 | 21.61 | 26.70 | 26.51 | 33.81 | 13.77 |
| k, delay calibration | | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.32 | 0.32 | 17.89 | 10.82 | 22.10 | 12.42 | 0.47 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.39 | 0.39 | 1.02 | 0.92 | 0.90 | 0.95 | 0.38 |
| d, Delay for Lane Group [s/veh] | | 14.97 | 14.97 | 39.50 | 37.53 | 48.61 | 46.23 | 14.24 |
| Lane Group LOS | | B | B | F | D | D | D | B |
| Critical Lane Group | | No | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 3.47 | 3.47 | 13.13 | 8.69 | 10.22 | 4.15 | 3.03 |
| 50th-Percentile Queue Length [ft/ln] | | 86.73 | 86.73 | 328.16 | 217.31 | 255.55 | 103.67 | 75.70 |
| 95th-Percentile Queue Length [veh/ln] | | 6.24 | 6.24 | 19.36 | 13.53 | 15.47 | 7.46 | 5.45 |
| 95th-Percentile Queue Length [ft/ln] | | 156.12 | 156.12 | 483.93 | 338.20 | 386.63 | 186.60 | 136.25 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 14.97 | 14.97 | 39.50 | 0.00 | 39.24 | 48.61 | 46.23 | 14.24 | 0.00 |
| Movement LOS | | | | B | B | F | | D | D | D | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 31.45 | | | 40.30 | | | 24.14 | | |
| Approach LOS | A | | | C | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 32.77 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.978 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 28.33 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 2.658 | 0.000 | 0.000 |
| Crosswalk LOS | F | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 882 | 571 | 908 |
| d_b, Bicycle Delay [s] | 38.55 | 12.05 | 19.69 | 11.49 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 4.667 | 2.296 | 2.256 |
| Bicycle LOS | D | E | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 15: I-15 NB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 15.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.798 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 262 | 0 | 471 | 0 | 0 | 0 | 0 | 929 | 860 | 0 | 822 | 323 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0000 | 1.0600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 99 | 0 | 0 | 0 | 0 | 191 | 1 | 0 | 53 | 25 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 278 | 0 | 598 | 0 | 0 | 0 | 0 | 1176 | 913 | 0 | 924 | 367 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 73 | 0 | 157 | 0 | 0 | 0 | 0 | 309 | 0 | 0 | 243 | 97 |
| Total Analysis Volume [veh/h] | 293 | 0 | 629 | 0 | 0 | 0 | 0 | 1238 | 0 | 0 | 973 | 386 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Split | Permiss | Split | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 18 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | | | | | No | | | No | |
| Maximum Recall | No | | | | | | | No | | | No | |
| Pedestrian Recall | No | | | | | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | | C | R | C | R |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 27 | 27 | | 25 | 25 | 25 | 25 |
| g / C, Green / Cycle | 0.44 | 0.44 | | 0.42 | 0.42 | 0.42 | 0.42 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.40 | | 0.24 | 0.00 | 0.19 | 0.24 |
| s, saturation flow rate [veh/h] | 3459 | 1589 | | 5094 | 2813 | 5094 | 1589 |
| c, Capacity [veh/h] | 1535 | 705 | | 2156 | 1191 | 2156 | 673 |
| d1, Uniform Delay [s] | 10.16 | 15.40 | | 13.21 | 0.00 | 12.36 | 13.21 |
| k, delay calibration | 0.11 | 0.18 | | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.06 | 6.75 | | 1.12 | 0.00 | 0.68 | 3.54 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.19 | 0.89 | | 0.57 | 0.00 | 0.45 | 0.57 |
| d, Delay for Lane Group [s/veh] | 10.22 | 22.14 | | 14.33 | 0.00 | 13.05 | 16.74 |
| Lane Group LOS | B | C | | B | A | B | B |
| Critical Lane Group | No | Yes | | Yes | No | No | No |
| 50th-Percentile Queue Length [veh/ln] | 1.04 | 7.99 | | 3.65 | 0.00 | 2.65 | 3.86 |
| 50th-Percentile Queue Length [ft/ln] | 25.95 | 199.75 | | 91.15 | 0.00 | 66.34 | 96.53 |
| 95th-Percentile Queue Length [veh/ln] | 1.87 | 12.63 | | 6.56 | 0.00 | 4.78 | 6.95 |
| 95th-Percentile Queue Length [ft/ln] | 46.72 | 315.64 | | 164.07 | 0.00 | 119.41 | 173.76 |

**Movement, Approach, & Intersection Results**

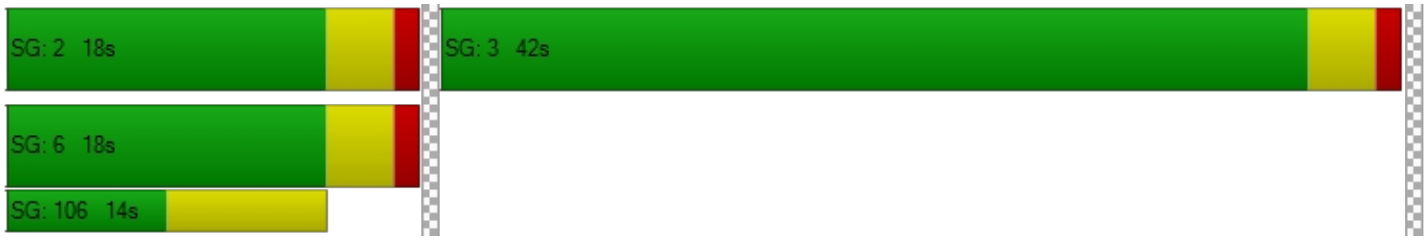
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 10.22 | 0.00 | 22.14 | 0.00 | 0.00 | 0.00 | 0.00 | 14.33 | 0.00 | 0.00 | 13.05 | 16.74 |
| Movement LOS | B | | C | | | | | B | A | | B | B |
| d_A, Approach Delay [s/veh] | 18.35 | | | 0.00 | | | 14.33 | | | 14.10 | | |
| Approach LOS | B | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 15.29 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.798 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 20.04 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 1.777 | 0.000 | 0.000 |
| Crosswalk LOS | F | A | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1265 | 0 | 466 | 466 |
| d_b, Bicycle Delay [s] | 4.05 | 30.03 | 17.66 | 17.66 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 4.132 | 2.241 | 2.307 |
| Bicycle LOS | A | D | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 16: Compton Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.749 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 197.00 | 100.00 | 83.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 323 | 0 | 0 | 134 | 0 | 1137 | 58 | 277 | 1508 | 572 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 10 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 342 | 0 | 0 | 134 | 0 | 1214 | 61 | 294 | 1608 | 572 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 90 | 0 | 0 | 35 | 0 | 319 | 16 | 77 | 423 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 360 | 0 | 0 | 141 | 0 | 1278 | 64 | 309 | 1693 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 61 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 7 | 0 | 5 | 0 | 0 |
| Maximum Green [s] | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 0 | 30 | 0 | 0 |
| Amber [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 0.0 |
| Split [s] | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 26 | 0 | 16 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | No | | | | | No | | | | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| Minimum Recall | | | No | | | | | No | | No | | |
| Maximum Recall | | | No | | | | | No | | No | | |
| Pedestrian Recall | | | No | | | | | No | | No | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | R | | C | C | L |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 61 | | 61 | 61 | 61 |
| L, Total Lost Time per Cycle [s] | 4.00 | | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 15 | | 22 | 22 | 12 |
| g / C, Green / Cycle | 0.25 | | 0.36 | 0.36 | 0.20 |
| (v / s)_i Volume / Saturation Flow Rate | 0.23 | | 0.25 | 0.25 | 0.17 |
| s, saturation flow rate [veh/h] | 1589 | | 3560 | 1824 | 1781 |
| c, Capacity [veh/h] | 392 | | 1281 | 656 | 353 |
| d1, Uniform Delay [s] | 22.50 | | 16.78 | 16.65 | 23.86 |
| k, delay calibration | 0.11 | | 0.50 | 0.50 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 9.00 | | 3.18 | 5.65 | 6.95 |
| d3, Initial Queue Delay [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.92 | | 0.70 | 0.68 | 0.88 |
| d, Delay for Lane Group [s/veh] | 31.50 | | 19.96 | 22.30 | 30.81 |
| Lane Group LOS | C | | B | C | C |
| Critical Lane Group | Yes | | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 5.60 | | 4.93 | 5.36 | 4.45 |
| 50th-Percentile Queue Length [ft/ln] | 139.94 | | 123.24 | 133.98 | 111.15 |
| 95th-Percentile Queue Length [veh/ln] | 9.48 | | 8.57 | 9.16 | 7.90 |
| 95th-Percentile Queue Length [ft/ln] | 236.94 | | 214.27 | 228.89 | 197.59 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 31.50 | 0.00 | 0.00 | 0.00 | 0.00 | 20.66 | 22.30 | 30.81 | 0.00 | 0.00 |
| Movement LOS | | | C | | | | | C | C | C | | |
| d_A, Approach Delay [s/veh] | 31.50 | | | 0.00 | | | 20.74 | | | 30.81 | | |
| Approach LOS | C | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 24.22 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.749 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.57 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.051 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | B | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 491 | 0 | 719 | 0 |
| d_b, Bicycle Delay [s] | 17.42 | 30.58 | 12.54 | 30.58 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 1.560 | 2.298 | 1.560 |
| Bicycle LOS | A | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Monte Olivo Phase 1

Vistro File: G:\...\PM E.vistro
Report File: G:\...\PM OY.pdf

Scenario 3 Opening Year (2025) Without Project
5/11/2023

**Intersection Analysis Summary**

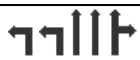
| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Rimpau Ave (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | SB Left | 0.992 | 34.8 | C |
| 2 | Rimpau Ave (NS) at California Ave (EW) | Signalized | HCM 6th Edition | WB Right | 0.589 | 11.1 | B |
| 3 | Rimpau Ave (NS) at Olympic Dr (EW) | Signalized | HCM 6th Edition | WB Right | 0.488 | 17.1 | B |
| 4 | Rimpau Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | SB Left | 0.633 | 16.4 | C |
| 5 | California Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Thru | 0.624 | 14.1 | B |
| 6 | Compton Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Left | 0.271 | 8.5 | A |
| 7 | Laurel Canyon Way (NS) at Project Dwy (EW) | Two-way stop | HCM 6th Edition | WB Left | 0.003 | 8.9 | A |
| 8 | State St (NS) at Bel Air St/Project Dwy (EW) | Two-way stop | HCM 6th Edition | WB Left | 0.011 | 8.8 | A |
| 9 | State St (NS) at Ontario Ave (EW) | Two-way stop | HCM 6th Edition | NB Left | 0.051 | 53.0 | F |
| 10 | I-15 SB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | WB Left | 0.774 | 17.4 | B |
| 11 | I-15 NB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | NB Left | 0.905 | 17.7 | B |
| 12 | California Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | EB Left | 0.660 | 24.7 | C |
| 13 | El Sobrante Rd (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | NB Left | 0.716 | 44.7 | D |
| 14 | I-15 SB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | WB Left | 1.039 | 53.4 | D |
| 15 | I-15 NB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | NB Right | 0.914 | 13.2 | B |
| 16 | Compton Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | WB Left | 0.665 | 23.7 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For

**Intersection Level Of Service Report**
**Intersection 1: Rimpau Ave (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 34.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.992 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 148.00 | 100.00 | 100.00 | 80.00 | 100.00 | 100.00 | 180.00 | 100.00 | 100.00 | 360.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 127 | 355 | 615 | 202 | 321 | 40 | 73 | 885 | 72 | 455 | 945 | 101 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 1 | 4 | 5 | 4 | 4 | 0 | 0 | 28 | 2 | 5 | 85 | 4 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 136 | 380 | 657 | 218 | 344 | 42 | 77 | 966 | 78 | 487 | 1087 | 111 |
| Peak Hour Factor | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 36 | 100 | 172 | 57 | 90 | 11 | 20 | 253 | 20 | 128 | 285 | 29 |
| Total Analysis Volume [veh/h] | 143 | 399 | 689 | 229 | 361 | 44 | 81 | 1014 | 82 | 511 | 1141 | 116 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 74 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 2 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | 2,7 | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 7 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 16 | 23 | 23 | 14 | 21 | 0 | 11 | 22 | 0 | 15 | 26 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | No | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | No | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 8 | 18 | 34 | 10 | 20 | 6 | 18 | 18 | 12 | 24 | 24 |
| g / C, Green / Cycle | 0.10 | 0.24 | 0.46 | 0.14 | 0.28 | 0.08 | 0.24 | 0.24 | 0.16 | 0.33 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.21 | 0.43 | 0.13 | 0.22 | 0.05 | 0.20 | 0.20 | 0.15 | 0.24 | 0.24 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1589 | 1781 | 1835 | 1781 | 3560 | 1799 | 3459 | 3560 | 1783 |
| c, Capacity [veh/h] | 181 | 453 | 733 | 241 | 506 | 137 | 859 | 434 | 571 | 1173 | 587 |
| d1, Uniform Delay [s] | 32.48 | 27.02 | 18.96 | 31.77 | 24.92 | 33.05 | 26.79 | 26.80 | 30.29 | 21.77 | 21.79 |
| k, delay calibration | 0.11 | 0.11 | 0.50 | 0.11 | 0.12 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 7.44 | 5.71 | 21.36 | 17.39 | 3.20 | 4.01 | 10.12 | 18.29 | 5.25 | 3.72 | 7.28 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.79 | 0.88 | 0.94 | 0.95 | 0.80 | 0.59 | 0.85 | 0.85 | 0.90 | 0.71 | 0.72 |
| d, Delay for Lane Group [s/veh] | 39.92 | 32.73 | 40.32 | 49.17 | 28.12 | 37.07 | 36.91 | 45.09 | 35.54 | 25.49 | 29.07 |
| Lane Group LOS | D | C | D | D | C | D | D | D | D | C | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.76 | 7.04 | 14.06 | 5.02 | 6.57 | 1.48 | 6.81 | 7.88 | 4.57 | 6.33 | 6.93 |
| 50th-Percentile Queue Length [ft/ln] | 69.09 | 176.00 | 351.51 | 125.50 | 164.18 | 37.01 | 170.19 | 196.89 | 114.27 | 158.18 | 173.36 |
| 95th-Percentile Queue Length [veh/ln] | 4.97 | 11.39 | 20.21 | 8.69 | 10.77 | 2.67 | 11.09 | 12.48 | 8.08 | 10.45 | 11.25 |
| 95th-Percentile Queue Length [ft/ln] | 124.36 | 284.79 | 505.24 | 217.36 | 269.25 | 66.63 | 277.17 | 311.95 | 201.92 | 261.31 | 281.32 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 39.92 | 32.73 | 40.32 | 49.17 | 28.12 | 28.12 | 37.07 | 39.22 | 45.09 | 35.54 | 26.45 | 29.07 |
| Movement LOS | D | C | D | D | C | C | D | D | D | D | C | C |
| d_A, Approach Delay [s/veh] | 37.81 | | | 35.72 | | | 39.48 | | | 29.25 | | |
| Approach LOS | D | | | D | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 34.80 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.992 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 26.83 | 26.83 | 26.83 | 26.83 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.786 | 2.396 | 3.048 | 3.316 |
| Crosswalk LOS | C | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 513 | 459 | 486 | 594 |
| d_b, Bicycle Delay [s] | 20.45 | 21.97 | 21.20 | 18.28 |
| l_b,int, Bicycle LOS Score for Intersection | 3.591 | 2.606 | 2.207 | 2.532 |
| Bicycle LOS | D | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Rimpau Ave (NS) at California Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 11.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.589 |

**Intersection Setup**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 50.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 35.00 | | 40.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | Yes | |

**Volumes**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 636 | 6 | 0 | 793 | 13 | 366 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 7 | 0 | 3 | 8 | 0 | 3 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 681 | 6 | 3 | 849 | 14 | 391 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 179 | 2 | 1 | 223 | 4 | 103 |
| Total Analysis Volume [veh/h] | 717 | 6 | 3 | 894 | 15 | 412 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Split | Split |
|---|---|---|---|---|---|---|
| Signal Group | 2 | 0 | 0 | 6 | 7 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 21 | 0 | 0 | 21 | 39 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | C | L | R |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 34 | 34 | 34 | 18 | 18 |
| g / C, Green / Cycle | 0.57 | 0.57 | 0.57 | 0.30 | 0.30 |
| (v / s)_i Volume / Saturation Flow Rate | 0.14 | 0.13 | 0.25 | 0.01 | 0.26 |
| s, saturation flow rate [veh/h] | 3560 | 1862 | 3560 | 1781 | 1589 |
| c, Capacity [veh/h] | 2022 | 1057 | 2022 | 533 | 476 |
| d1, Uniform Delay [s] | 6.50 | 6.45 | 7.50 | 14.89 | 19.93 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.28 | 0.50 | 0.70 | 0.02 | 4.91 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.24 | 0.23 | 0.44 | 0.03 | 0.87 |
| d, Delay for Lane Group [s/veh] | 6.77 | 6.95 | 8.20 | 14.91 | 24.84 |
| Lane Group LOS | A | A | A | B | C |
| Critical Lane Group | No | No | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 1.22 | 1.28 | 2.64 | 0.13 | 5.30 |
| 50th-Percentile Queue Length [ft/ln] | 30.46 | 32.00 | 65.99 | 3.24 | 132.53 |
| 95th-Percentile Queue Length [veh/ln] | 2.19 | 2.30 | 4.75 | 0.23 | 9.08 |
| 95th-Percentile Queue Length [ft/ln] | 54.83 | 57.60 | 118.78 | 5.84 | 226.93 |

**Movement, Approach, & Intersection Results**

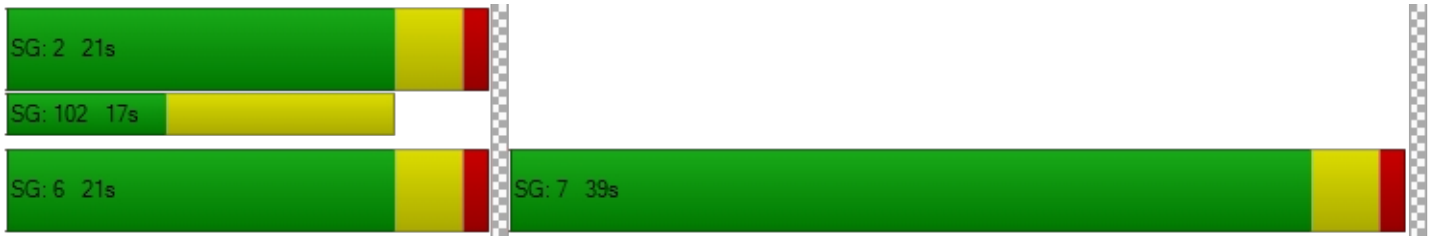
| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 6.83 | 6.95 | 0.00 | 8.20 | 14.91 | 24.84 |
| Movement LOS | A | A | | A | B | C |
| d_A, Approach Delay [s/veh] | 6.83 | | 8.20 | | 24.49 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 11.12 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.589 | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 20.04 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 0.000 | 2.249 |
| Crosswalk LOS | F | F | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 566 | 566 | 1165 |
| d_b, Bicycle Delay [s] | 15.44 | 15.44 | 5.23 |
| l_b,int, Bicycle LOS Score for Intersection | 1.957 | 2.297 | 1.560 |
| Bicycle LOS | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Rimpau Ave (NS) at Olympic Dr (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 17.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.488 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 140.00 | 100.00 | 100.00 | 140.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 32 | 488 | 10 | 109 | 626 | 71 | 64 | 8 | 26 | 9 | 13 | 128 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 7 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 34 | 524 | 11 | 116 | 672 | 75 | 68 | 8 | 28 | 10 | 14 | 136 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 138 | 3 | 31 | 177 | 20 | 18 | 2 | 7 | 3 | 4 | 36 |
| Total Analysis Volume [veh/h] | 36 | 552 | 12 | 122 | 707 | 79 | 72 | 8 | 29 | 11 | 15 | 143 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 62 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 7 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 11 | 21 | 0 | 11 | 30 | 0 | 0 | 19 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | Yes | No | | | No | |
| Maximum Recall | No | No | | No | No | | No | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | C | R | C | R |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 3 | 26 | 26 | 6 | 28 | 28 | 18 | 18 | 7 | 7 |
| g / C, Green / Cycle | 0.05 | 0.41 | 0.41 | 0.10 | 0.46 | 0.46 | 0.29 | 0.29 | 0.12 | 0.12 |
| (v / s)_i Volume / Saturation Flow Rate | 0.02 | 0.15 | 0.15 | 0.07 | 0.21 | 0.21 | 0.06 | 0.02 | 0.02 | 0.09 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1856 | 1781 | 1870 | 1805 | 1361 | 1589 | 1409 | 1589 |
| c, Capacity [veh/h] | 97 | 768 | 762 | 180 | 855 | 825 | 532 | 470 | 250 | 189 |
| d1, Uniform Delay [s] | 28.38 | 12.73 | 12.73 | 26.99 | 11.66 | 11.67 | 16.21 | 15.72 | 24.51 | 26.54 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.34 | 1.36 | 1.37 | 4.45 | 1.84 | 1.91 | 0.13 | 0.05 | 0.18 | 6.10 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.37 | 0.37 | 0.37 | 0.68 | 0.47 | 0.47 | 0.15 | 0.06 | 0.10 | 0.76 |
| d, Delay for Lane Group [s/veh] | 30.72 | 14.09 | 14.11 | 31.44 | 13.50 | 13.57 | 16.34 | 15.77 | 24.69 | 32.64 |
| Lane Group LOS | C | B | B | C | B | B | B | B | C | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.55 | 2.63 | 2.62 | 1.85 | 3.61 | 3.50 | 0.82 | 0.29 | 0.34 | 2.26 |
| 50th-Percentile Queue Length [ft/ln] | 13.72 | 65.87 | 65.52 | 46.19 | 90.14 | 87.40 | 20.38 | 7.20 | 8.44 | 56.46 |
| 95th-Percentile Queue Length [veh/ln] | 0.99 | 4.74 | 4.72 | 3.33 | 6.49 | 6.29 | 1.47 | 0.52 | 0.61 | 4.06 |
| 95th-Percentile Queue Length [ft/ln] | 24.70 | 118.57 | 117.94 | 83.14 | 162.26 | 157.32 | 36.68 | 12.96 | 15.20 | 101.62 |

**Movement, Approach, & Intersection Results**

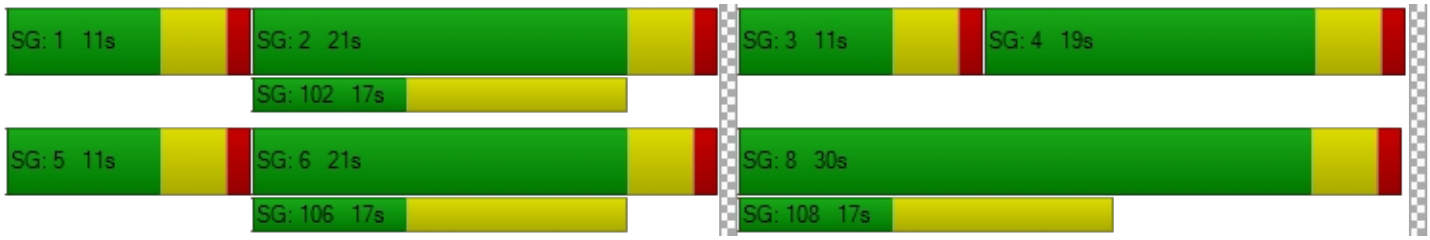
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 30.72 | 14.10 | 14.11 | 31.44 | 13.53 | 13.57 | 16.34 | 16.34 | 15.77 | 24.69 | 24.69 | 32.64 |
| Movement LOS | C | B | B | C | B | B | B | B | B | C | C | C |
| d_A, Approach Delay [s/veh] | 15.09 | | | 15.94 | | | 16.19 | | | 31.42 | | |
| Approach LOS | B | | | B | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 17.14 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.488 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 21.02 | 0.00 | 21.02 | 21.02 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.601 | 0.000 | 1.984 | 2.021 |
| Crosswalk LOS | B | F | A | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 548 | 548 | 837 | 483 |
| d_b, Bicycle Delay [s] | 16.38 | 16.38 | 10.49 | 17.86 |
| l_b,int, Bicycle LOS Score for Intersection | 2.055 | 2.309 | 1.739 | 1.838 |
| Bicycle LOS | B | B | A | A |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**

**Intersection 4: Rimpau Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 16.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.633 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 23 | 277 | 45 | 99 | 448 | 52 | 26 | 122 | 43 | 33 | 101 | 115 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 7 | 0 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 24 | 301 | 48 | 106 | 482 | 55 | 28 | 129 | 46 | 35 | 107 | 122 |
| Peak Hour Factor | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 6 | 77 | 12 | 27 | 123 | 14 | 7 | 33 | 12 | 9 | 27 | 31 |
| Total Analysis Volume [veh/h] | 25 | 308 | 49 | 108 | 493 | 56 | 29 | 132 | 47 | 36 | 110 | 125 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 499 | 517 | 520 | 541 | 461 | 513 | 465 | 520 |
| Degree of Utilization, x | 0.38 | 0.37 | 0.63 | 0.61 | 0.35 | 0.09 | 0.31 | 0.24 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 1.78 | 1.69 | 4.37 | 4.02 | 1.55 | 0.30 | 1.33 | 0.93 |
| 95th-Percentile Queue Length [ft] | 44.51 | 42.30 | 109.19 | 100.55 | 38.70 | 7.53 | 33.24 | 23.29 |
| Approach Delay [s/veh] | 14.02 | | 19.95 | | 13.70 | | 12.96 | |
| Approach LOS | B | | C | | B | | B | |
| Intersection Delay [s/veh] | 16.35 | | | | | | | |
| Intersection LOS | C | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 5: California Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 14.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.624 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | No | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 118 | 191 | 26 | 17 | 156 | 25 | 16 | 77 | 169 | 57 | 74 | 44 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 125 | 202 | 28 | 21 | 165 | 27 | 17 | 83 | 179 | 60 | 78 | 50 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 33 | 53 | 7 | 6 | 43 | 7 | 4 | 22 | 47 | 16 | 21 | 13 |
| Total Analysis Volume [veh/h] | 132 | 213 | 29 | 22 | 174 | 28 | 18 | 87 | 188 | 63 | 82 | 53 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 553 | 641 | 542 | 612 | 529 | 599 | 510 | 586 |
| Degree of Utilization, x | 0.62 | 0.05 | 0.36 | 0.05 | 0.20 | 0.31 | 0.28 | 0.09 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 4.28 | 0.14 | 1.64 | 0.14 | 0.73 | 1.34 | 1.16 | 0.30 |
| 95th-Percentile Queue Length [ft] | 106.95 | 3.55 | 40.94 | 3.59 | 18.33 | 33.48 | 29.08 | 7.42 |
| Approach Delay [s/veh] | 18.58 | | 12.53 | | 11.35 | | 11.72 | |
| Approach LOS | C | | B | | B | | B | |
| Intersection Delay [s/veh] | 14.14 | | | | | | | |
| Intersection LOS | B | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 6: Compton Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 8.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.271 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 100 | 85 | 12 | 1 | 25 | 19 | 13 | 21 | 65 | 5 | 21 | 1 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 3 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 106 | 90 | 13 | 1 | 27 | 20 | 14 | 26 | 69 | 5 | 25 | 1 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 28 | 24 | 3 | 0 | 7 | 5 | 4 | 7 | 18 | 1 | 7 | 0 |
| Total Analysis Volume [veh/h] | 112 | 95 | 14 | 1 | 28 | 21 | 15 | 27 | 73 | 5 | 26 | 1 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | |
|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 817 | 839 | 668 | 799 | 671 | 785 |
| Degree of Utilization, x | 0.27 | 0.06 | 0.06 | 0.09 | 0.05 | 0.00 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 1.10 | 0.19 | 0.20 | 0.30 | 0.15 | 0.00 |
| 95th-Percentile Queue Length [ft] | 27.43 | 4.74 | 5.02 | 7.52 | 3.63 | 0.10 |
| Approach Delay [s/veh] | 9.04 | 7.56 | 7.95 | | 8.30 | |
| Approach LOS | A | A | A | | A | |
| Intersection Delay [s/veh] | 8.50 | | | | | |
| Intersection LOS | A | | | | | |

**Intersection Level Of Service Report**
**Intersection 7: Laurel Canyon Way (NS) at Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 8.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.003 |

**Intersection Setup**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**Volumes**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 34 | 0 | 0 | 27 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 4 | 0 | 0 | 3 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 36 | 4 | 0 | 29 | 3 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 1 | 0 | 8 | 1 | 0 |
| Total Analysis Volume [veh/h] | 38 | 4 | 0 | 31 | 3 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop |
|---|---|---|---|
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 7.30 | 0.00 | 8.87 | 8.50 |
| Movement LOS | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.24 | 0.24 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.00 | | 8.87 | |
| Approach LOS | A | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.35 | | | | | |
| Intersection LOS | A | | | | | |

**Intersection Level Of Service Report**

**Intersection 8: State St (NS) at Bel Air St/Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 8.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.011 |

**Intersection Setup**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 25.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 1 | 9 | 0 | 0 | 12 | 2 | 0 | 0 | 3 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 1 | 10 | 17 | 0 | 13 | 2 | 0 | 0 | 3 | 10 | 0 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 3 | 4 | 0 | 3 | 1 | 0 | 0 | 1 | 3 | 0 | 0 |
| Total Analysis Volume [veh/h] | 1 | 11 | 18 | 0 | 14 | 2 | 0 | 0 | 3 | 11 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.25 | 0.00 | 0.00 | 7.27 | 0.00 | 0.00 | 8.73 | 9.27 | 8.39 | 8.78 | 9.26 | 8.45 |
| Movement LOS | A | A | A | A | A | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.03 | 0.03 | 0.03 |
| 95th-Percentile Queue Length [ft/ln] | 0.05 | 0.05 | 0.05 | 0.00 | 0.00 | 0.00 | 0.21 | 0.21 | 0.21 | 0.87 | 0.87 | 0.87 |
| d_A, Approach Delay [s/veh] | 0.24 | | | 0.00 | | | 8.39 | | | 8.78 | | |
| Approach LOS | A | | | A | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 2.15 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 53.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.051 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 4 | 0 | 0 | 37 | 0 | 59 | 41 | 936 | 5 | 0 | 528 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 2 | 0 | 9 | 16 | 3 | 0 | 0 | 3 | 3 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 0 | 0 | 41 | 0 | 72 | 59 | 995 | 5 | 0 | 563 | 18 |
| Peak Hour Factor | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 11 | 0 | 19 | 15 | 257 | 1 | 0 | 146 | 5 |
| Total Analysis Volume [veh/h] | 4 | 0 | 0 | 42 | 0 | 74 | 61 | 1029 | 5 | 0 | 582 | 19 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | Yes | | |
| Number of Storage Spaces in Median | 0 | 2 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.05 | 0.00 | 0.00 | 0.13 | 0.00 | 0.10 | 0.06 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 53.00 | 52.97 | 14.57 | 18.10 | 22.95 | 10.70 | 8.95 | 0.00 | 0.00 | 10.39 | 0.00 | 0.00 |
| Movement LOS | F | F | B | C | C | B | A | A | A | B | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.16 | 0.16 | 0.16 | 0.45 | 0.45 | 0.35 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 3.93 | 3.93 | 3.93 | 11.32 | 11.32 | 8.75 | 5.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 53.00 | | | 13.38 | | | 0.50 | | | 0.00 | | |
| Approach LOS | F | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 1.27 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**

**Intersection 10: I-15 SB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 17.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.774 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 67.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 401 | 2 | 674 | 0 | 1094 | 428 | 23 | 840 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 17 | 0 | 2 | 0 | 10 | 2 | 11 | 11 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 442 | 2 | 716 | 0 | 1170 | 456 | 35 | 901 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9730 | 0.9730 | 0.9730 | 0.9500 | 0.9730 | 0.9730 | 0.9730 | 0.9730 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 114 | 1 | 184 | 0 | 301 | 117 | 9 | 232 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 454 | 2 | 736 | 0 | 1202 | 469 | 36 | 926 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 21 | 0 | 18 | 39 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 17 | 17 | 28 | 28 | 3 | 35 |
| g / C, Green / Cycle | | 0.28 | 0.28 | 0.46 | 0.46 | 0.05 | 0.58 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.26 | 0.26 | 0.34 | 0.30 | 0.02 | 0.26 |
| s, saturation flow rate [veh/h] | | 1781 | 2813 | 3560 | 1589 | 1781 | 3560 |
| c, Capacity [veh/h] | | 505 | 797 | 1646 | 735 | 98 | 2078 |
| d1, Uniform Delay [s] | | 20.76 | 20.92 | 13.13 | 12.34 | 27.43 | 7.05 |
| k, delay calibration | | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 6.29 | 5.10 | 2.89 | 4.21 | 2.31 | 0.69 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.90 | 0.92 | 0.73 | 0.64 | 0.37 | 0.45 |
| d, Delay for Lane Group [s/veh] | | 27.05 | 26.02 | 16.02 | 16.55 | 29.74 | 7.74 |
| Lane Group LOS | | C | C | B | B | C | A |
| Critical Lane Group | | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 6.44 | 5.09 | 5.56 | 4.45 | 0.51 | 2.32 |
| 50th-Percentile Queue Length [ft/ln] | | 161.10 | 127.21 | 138.90 | 111.23 | 12.80 | 57.99 |
| 95th-Percentile Queue Length [veh/ln] | | 10.61 | 8.79 | 9.42 | 7.91 | 0.92 | 4.17 |
| 95th-Percentile Queue Length [ft/ln] | | 265.18 | 219.69 | 235.54 | 197.71 | 23.03 | 104.37 |

**Movement, Approach, & Intersection Results**

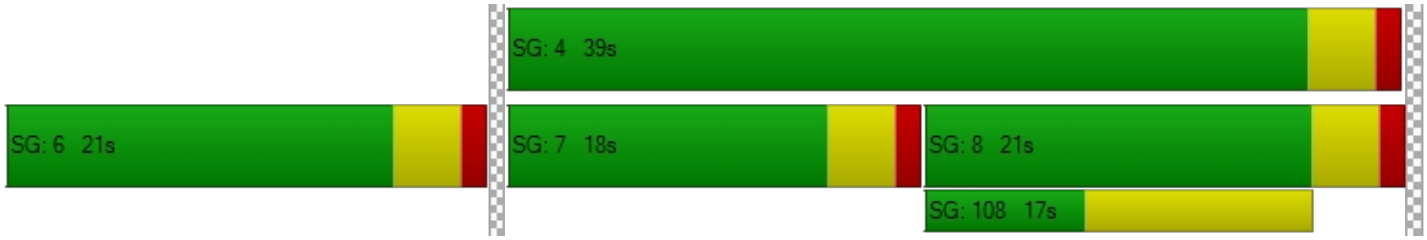
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 27.05 | 27.05 | 26.02 | 0.00 | 16.02 | 16.55 | 29.74 | 7.74 | 0.00 |
| Movement LOS | | | | C | C | C | | B | B | C | A | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 26.41 | | | 16.17 | | | 8.57 | | |
| Approach LOS | A | | | C | | | B | | | A | | |
| d_I, Intersection Delay [s/veh] | 17.45 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.774 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.05 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 1.895 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | A | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 566 | 566 | 1165 |
| d_b, Bicycle Delay [s] | 30.04 | 15.45 | 15.45 | 5.24 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 3.526 | 2.938 | 2.353 |
| Bicycle LOS | D | D | C | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**

**Intersection 11: I-15 NB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 17.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.905 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 354 | 2 | 35 | 0 | 0 | 0 | 549 | 1032 | 0 | 0 | 421 | 278 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0000 | 1.0000 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 0 | 13 | 0 | 0 | 0 | 1 | 26 | 0 | 0 | 19 | 13 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 378 | 2 | 50 | 0 | 0 | 0 | 583 | 1120 | 0 | 0 | 465 | 308 |
| Peak Hour Factor | 0.9740 | 0.9740 | 0.9740 | 0.9500 | 0.9500 | 0.9500 | 0.9740 | 0.9740 | 0.9500 | 0.9500 | 0.9740 | 0.9740 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 97 | 1 | 13 | 0 | 0 | 0 | 150 | 287 | 0 | 0 | 119 | 79 |
| Total Analysis Volume [veh/h] | 388 | 2 | 51 | 0 | 0 | 0 | 599 | 1150 | 0 | 0 | 477 | 316 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 28 | 0 | 0 | 0 | 0 | 11 | 32 | 0 | 0 | 21 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 9 | 9 | 9 | | 13 | 43 | 26 | 26 |
| g / C, Green / Cycle | 0.15 | 0.15 | 0.15 | | 0.22 | 0.71 | 0.43 | 0.43 |
| (v / s)_i Volume / Saturation Flow Rate | 0.11 | 0.11 | 0.03 | | 0.17 | 0.61 | 0.13 | 0.20 |
| s, saturation flow rate [veh/h] | 1781 | 1782 | 1589 | | 3459 | 1870 | 3560 | 1589 |
| c, Capacity [veh/h] | 276 | 276 | 246 | | 764 | 1332 | 1513 | 675 |
| d1, Uniform Delay [s] | 24.13 | 24.13 | 22.20 | | 22.09 | 6.47 | 11.49 | 12.42 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.31 | 3.31 | 0.41 | | 1.82 | 7.61 | 0.55 | 2.32 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.71 | 0.71 | 0.21 | | 0.78 | 0.86 | 0.32 | 0.47 |
| d, Delay for Lane Group [s/veh] | 27.44 | 27.44 | 22.61 | | 23.91 | 14.09 | 12.04 | 14.74 |
| Lane Group LOS | C | C | C | | C | B | B | B |
| Critical Lane Group | Yes | No | No | | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.71 | 2.71 | 0.62 | | 3.61 | 6.49 | 1.77 | 2.81 |
| 50th-Percentile Queue Length [ft/ln] | 67.83 | 67.86 | 15.50 | | 90.37 | 162.13 | 44.30 | 70.22 |
| 95th-Percentile Queue Length [veh/ln] | 4.88 | 4.89 | 1.12 | | 6.51 | 10.66 | 3.19 | 5.06 |
| 95th-Percentile Queue Length [ft/ln] | 122.10 | 122.15 | 27.91 | | 162.66 | 266.54 | 79.75 | 126.40 |

**Movement, Approach, & Intersection Results**

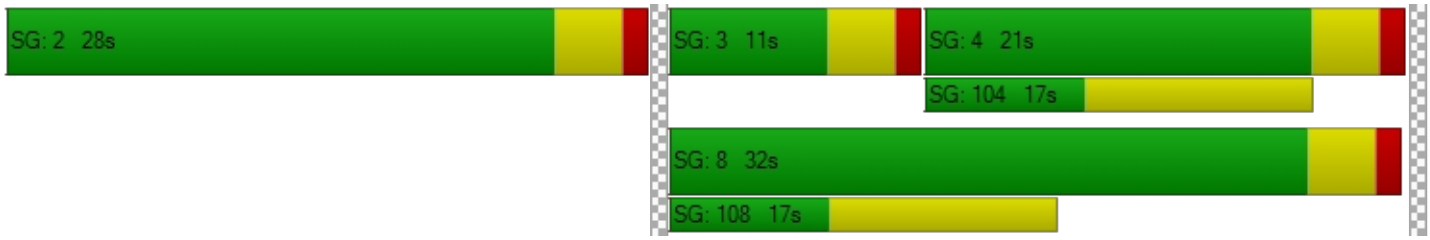
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 27.44 | 27.44 | 22.61 | 0.00 | 0.00 | 0.00 | 23.91 | 14.09 | 0.00 | 0.00 | 12.04 | 14.74 |
| Movement LOS | C | C | C | | | | C | B | | | B | B |
| d_A, Approach Delay [s/veh] | 26.88 | | | 0.00 | | | 17.45 | | | 13.11 | | |
| Approach LOS | C | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 17.69 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.905 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.05 | 20.05 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.061 | 2.139 | 0.000 | 0.000 |
| Crosswalk LOS | B | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 799 | 0 | 932 | 566 |
| d_b, Bicycle Delay [s] | 10.83 | 30.04 | 8.57 | 15.45 |
| l_b,int, Bicycle LOS Score for Intersection | 2.287 | 4.132 | 4.445 | 2.214 |
| Bicycle LOS | B | D | E | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 12: California Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.660 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 195.00 | 100.00 | 100.00 | 212.00 | 100.00 | 150.00 | 268.00 | 100.00 | 115.00 | 217.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 201 | 205 | 139 | 360 | 209 | 118 | 249 | 799 | 163 | 315 | 568 | 119 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 10 | 0 | 2 | 1 | 0 | 0 | 0 | 9 | 10 | 1 | 11 | 1 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 223 | 217 | 149 | 383 | 222 | 125 | 264 | 856 | 183 | 335 | 613 | 127 |
| Peak Hour Factor | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 56 | 55 | 38 | 97 | 56 | 32 | 67 | 216 | 46 | 85 | 155 | 32 |
| Total Analysis Volume [veh/h] | 225 | 219 | 151 | 387 | 224 | 126 | 267 | 865 | 185 | 338 | 619 | 128 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 66 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 13 | 23 | 0 | 11 | 21 | 0 | 11 | 21 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 7 | 10 | 10 | 9 | 12 | 12 | 12 | 22 | 22 | 9 | 19 | 19 |
| g / C, Green / Cycle | 0.10 | 0.15 | 0.15 | 0.14 | 0.18 | 0.18 | 0.18 | 0.34 | 0.34 | 0.13 | 0.29 | 0.29 |
| (v / s)_i Volume / Saturation Flow Rate | 0.07 | 0.12 | 0.09 | 0.11 | 0.12 | 0.08 | 0.15 | 0.17 | 0.12 | 0.10 | 0.12 | 0.08 |
| s, saturation flow rate [veh/h] | 3459 | 1870 | 1589 | 3459 | 1870 | 1589 | 1781 | 5094 | 1589 | 3459 | 5094 | 1589 |
| c, Capacity [veh/h] | 363 | 284 | 242 | 473 | 344 | 292 | 313 | 1718 | 536 | 456 | 1494 | 466 |
| d1, Uniform Delay [s] | 28.34 | 26.93 | 26.27 | 27.75 | 25.02 | 23.92 | 26.42 | 17.49 | 16.43 | 27.62 | 18.80 | 17.96 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.73 | 4.39 | 2.63 | 3.56 | 2.09 | 1.00 | 6.53 | 1.06 | 1.76 | 2.39 | 0.85 | 1.45 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.62 | 0.77 | 0.62 | 0.82 | 0.65 | 0.43 | 0.85 | 0.50 | 0.35 | 0.74 | 0.41 | 0.27 |
| d, Delay for Lane Group [s/veh] | 30.07 | 31.32 | 28.90 | 31.31 | 27.11 | 24.92 | 32.95 | 18.55 | 18.19 | 30.01 | 19.64 | 19.41 |
| Lane Group LOS | C | C | C | C | C | C | C | B | B | C | B | B |
| Critical Lane Group | No | Yes | No | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 1.64 | 3.32 | 2.18 | 2.96 | 3.16 | 1.68 | 4.20 | 3.15 | 2.06 | 2.47 | 2.33 | 1.50 |
| 50th-Percentile Queue Length [ft/ln] | 40.89 | 83.10 | 54.49 | 73.97 | 79.06 | 41.88 | 104.89 | 78.78 | 51.50 | 61.70 | 58.17 | 37.45 |
| 95th-Percentile Queue Length [veh/ln] | 2.94 | 5.98 | 3.92 | 5.33 | 5.69 | 3.02 | 7.55 | 5.67 | 3.71 | 4.44 | 4.19 | 2.70 |
| 95th-Percentile Queue Length [ft/ln] | 73.60 | 149.58 | 98.08 | 133.15 | 142.32 | 75.38 | 188.80 | 141.81 | 92.71 | 111.05 | 104.71 | 67.40 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 30.07 | 31.32 | 28.90 | 31.31 | 27.11 | 24.92 | 32.95 | 18.55 | 18.19 | 30.01 | 19.64 | 19.41 |
| Movement LOS | C | C | C | C | C | C | C | B | B | C | B | B |
| d_A, Approach Delay [s/veh] | 30.23 | | | 28.94 | | | 21.42 | | | 22.85 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 24.72 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.660 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 22.95 | 22.95 | 22.95 | 22.95 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.807 | 2.729 | 3.126 | 3.236 |
| Crosswalk LOS | C | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 515 | 575 | 515 | 515 |
| d_b, Bicycle Delay [s] | 18.22 | 16.77 | 18.22 | 18.22 |
| l_b,int, Bicycle LOS Score for Intersection | 2.541 | 2.776 | 2.284 | 2.156 |
| Bicycle LOS | B | C | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 13: El Sobrante Rd (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 44.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.716 |

**Intersection Setup**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 65.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 78.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 45.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 70 | 28 | 192 | 159 | 44 | 125 | 84 | 1542 | 75 | 118 | 1395 | 186 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 0 | 94 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 74 | 30 | 204 | 169 | 47 | 133 | 89 | 1672 | 80 | 125 | 1573 | 197 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 19 | 8 | 54 | 44 | 12 | 35 | 23 | 440 | 21 | 33 | 414 | 52 |
| Total Analysis Volume [veh/h] | 78 | 32 | 215 | 178 | 49 | 140 | 94 | 1760 | 84 | 132 | 1656 | 207 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 10 | 24 | 0 | 32 | 46 | 0 | 12 | 50 | 0 | 14 | 52 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 35 | 0 | 0 | 18 | 0 | 0 | 26 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 41 | 8 | 44 | 8 | 44 | 44 | 10 | 46 | 46 |
| g / C, Green / Cycle | 0.05 | 0.34 | 0.07 | 0.36 | 0.07 | 0.37 | 0.37 | 0.08 | 0.39 | 0.39 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.15 | 0.05 | 0.11 | 0.05 | 0.34 | 0.34 | 0.07 | 0.35 | 0.35 |
| s, saturation flow rate [veh/h] | 1781 | 1621 | 3459 | 1654 | 1781 | 3560 | 1827 | 1781 | 3560 | 1766 |
| c, Capacity [veh/h] | 90 | 559 | 245 | 604 | 118 | 1307 | 671 | 149 | 1370 | 680 |
| d1, Uniform Delay [s] | 56.60 | 30.36 | 54.64 | 27.28 | 55.27 | 36.52 | 36.57 | 54.43 | 34.89 | 35.03 |
| k, delay calibration | 0.11 | 0.50 | 0.11 | 0.50 | 0.11 | 0.11 | 0.39 | 0.11 | 0.11 | 0.38 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 21.20 | 2.52 | 4.11 | 1.35 | 11.65 | 3.62 | 18.26 | 15.59 | 2.60 | 15.19 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.87 | 0.44 | 0.73 | 0.31 | 0.80 | 0.93 | 0.93 | 0.89 | 0.91 | 0.91 |
| d, Delay for Lane Group [s/veh] | 77.80 | 32.88 | 58.75 | 28.63 | 66.91 | 40.14 | 54.83 | 70.02 | 37.49 | 50.22 |
| Lane Group LOS | E | C | E | C | E | D | D | E | D | D |
| Critical Lane Group | No | Yes | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.89 | 5.98 | 2.71 | 3.98 | 3.14 | 17.06 | 20.30 | 4.53 | 16.85 | 19.28 |
| 50th-Percentile Queue Length [ft/ln] | 72.36 | 149.59 | 67.81 | 99.58 | 78.49 | 426.58 | 507.53 | 113.13 | 421.22 | 482.00 |
| 95th-Percentile Queue Length [veh/ln] | 5.21 | 10.00 | 4.88 | 7.17 | 5.65 | 23.84 | 27.69 | 8.01 | 23.58 | 26.48 |
| 95th-Percentile Queue Length [ft/ln] | 130.25 | 249.88 | 122.06 | 179.24 | 141.29 | 595.94 | 692.26 | 200.34 | 589.52 | 662.03 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 77.80 | 32.88 | 32.88 | 58.75 | 28.63 | 28.63 | 66.91 | 44.67 | 54.83 | 70.02 | 40.67 | 50.22 |
| Movement LOS | E | C | C | E | C | C | E | D | D | E | D | D |
| d_A, Approach Delay [s/veh] | 43.66 | | | 43.24 | | | 46.19 | | | 43.60 | | |
| Approach LOS | D | | | D | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 44.66 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.716 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 49.51 | 49.51 | 49.51 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.114 | 2.401 | 3.316 | 0.000 |
| Crosswalk LOS | B | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 333 | 700 | 767 | 800 |
| d_b, Bicycle Delay [s] | 41.67 | 25.36 | 22.82 | 21.61 |
| l_b,int, Bicycle LOS Score for Intersection | 2.096 | 2.165 | 2.626 | 2.657 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**

**Intersection 14: I-15 SB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 53.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.039 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 310.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 378 | 0 | 1227 | 0 | 1624 | 180 | 333 | 634 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 28 | 0 | 2 | 0 | 37 | 0 | 90 | 92 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 429 | 0 | 1303 | 0 | 1758 | 191 | 443 | 764 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 113 | 0 | 343 | 0 | 463 | 50 | 117 | 201 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 452 | 0 | 1372 | 0 | 1851 | 201 | 466 | 804 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 109 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Split | Split | Overlap | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4 | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 53 | 53 | 0 | 38 | 0 | 18 | 56 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | No | | No | | No | No | |
| Maximum Recall | | | | | No | No | | No | | No | No | |
| Pedestrian Recall | | | | | No | No | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | C | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 109 | 109 | 109 | 109 | 109 | 109 | 109 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 49 | 49 | 49 | 34 | 34 | 14 | 52 |
| g / C, Green / Cycle | | 0.45 | 0.45 | 0.45 | 0.31 | 0.31 | 0.13 | 0.48 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.13 | 0.13 | 0.49 | 0.30 | 0.29 | 0.13 | 0.16 |
| s, saturation flow rate [veh/h] | | 1781 | 1781 | 2813 | 5094 | 1749 | 3459 | 5094 |
| c, Capacity [veh/h] | | 799 | 799 | 1262 | 1591 | 546 | 446 | 2435 |
| d1, Uniform Delay [s] | | 18.98 | 18.98 | 30.05 | 36.92 | 36.46 | 47.46 | 17.62 |
| k, delay calibration | | 0.11 | 0.11 | 0.12 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.19 | 0.19 | 43.29 | 16.04 | 26.05 | 32.46 | 0.36 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.28 | 0.28 | 1.09 | 0.97 | 0.94 | 1.04 | 0.33 |
| d, Delay for Lane Group [s/veh] | | 19.17 | 19.17 | 73.34 | 52.96 | 62.52 | 79.92 | 17.99 |
| Lane Group LOS | | B | B | F | D | E | F | B |
| Critical Lane Group | | No | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 3.61 | 3.61 | 23.37 | 15.22 | 16.65 | 7.92 | 4.05 |
| 50th-Percentile Queue Length [ft/ln] | | 90.34 | 90.34 | 584.27 | 380.43 | 416.19 | 197.88 | 101.33 |
| 95th-Percentile Queue Length [veh/ln] | | 6.50 | 6.50 | 33.24 | 21.61 | 23.34 | 12.76 | 7.30 |
| 95th-Percentile Queue Length [ft/ln] | | 162.61 | 162.61 | 831.02 | 540.37 | 583.48 | 318.97 | 182.39 |

**Movement, Approach, & Intersection Results**

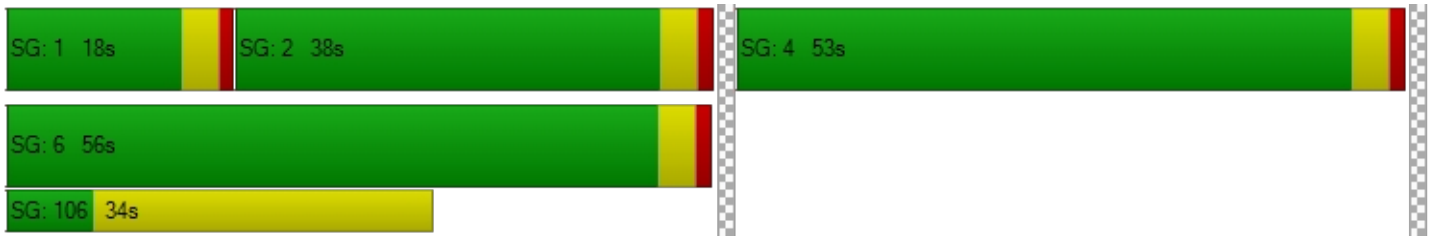
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 19.17 | 19.17 | 73.34 | 0.00 | 54.57 | 62.52 | 79.92 | 17.99 | 0.00 |
| Movement LOS | | | | B | B | F | | D | E | F | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 59.92 | | | 55.35 | | | 40.71 | | |
| Approach LOS | A | | | E | | | E | | | D | | |
| d_I, Intersection Delay [s/veh] | 53.36 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 1.039 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 44.05 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 2.665 | 0.000 | 0.000 |
| Crosswalk LOS | F | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 899 | 624 | 954 |
| d_b, Bicycle Delay [s] | 54.49 | 16.51 | 25.80 | 14.90 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 4.569 | 2.406 | 2.258 |
| Bicycle LOS | D | E | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 15: I-15 NB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 13.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.914 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 148 | 0 | 376 | 0 | 0 | 0 | 0 | 985 | 1044 | 0 | 829 | 555 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0000 | 1.0600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 1 | 0 | 28 | 0 | 0 | 0 | 0 | 64 | 1 | 0 | 181 | 90 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 158 | 0 | 427 | 0 | 0 | 0 | 0 | 1108 | 1108 | 0 | 1060 | 678 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 42 | 0 | 112 | 0 | 0 | 0 | 0 | 292 | 0 | 0 | 279 | 178 |
| Total Analysis Volume [veh/h] | 166 | 0 | 449 | 0 | 0 | 0 | 0 | 1166 | 0 | 0 | 1116 | 714 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Split | Permiss | Split | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 18 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | | | | | No | | | No | |
| Maximum Recall | No | | | | | | | No | | | No | |
| Pedestrian Recall | No | | | | | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | | C | R | C | R |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 20 | 20 | | 32 | 32 | 32 | 32 |
| g / C, Green / Cycle | 0.33 | 0.33 | | 0.54 | 0.54 | 0.54 | 0.54 |
| (v / s)_i Volume / Saturation Flow Rate | 0.05 | 0.28 | | 0.23 | 0.00 | 0.22 | 0.45 |
| s, saturation flow rate [veh/h] | 3459 | 1589 | | 5094 | 2813 | 5094 | 1589 |
| c, Capacity [veh/h] | 1137 | 523 | | 2741 | 1514 | 2741 | 855 |
| d1, Uniform Delay [s] | 14.22 | 18.87 | | 8.32 | 0.00 | 8.21 | 11.65 |
| k, delay calibration | 0.11 | 0.11 | | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.06 | 4.25 | | 0.49 | 0.00 | 0.45 | 9.44 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.15 | 0.86 | | 0.43 | 0.00 | 0.41 | 0.83 |
| d, Delay for Lane Group [s/veh] | 14.28 | 23.12 | | 8.80 | 0.00 | 8.66 | 21.08 |
| Lane Group LOS | B | C | | A | A | A | C |
| Critical Lane Group | No | Yes | | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.73 | 5.83 | | 2.32 | 0.00 | 2.19 | 7.90 |
| 50th-Percentile Queue Length [ft/ln] | 18.37 | 145.63 | | 58.03 | 0.00 | 54.79 | 197.38 |
| 95th-Percentile Queue Length [veh/ln] | 1.32 | 9.78 | | 4.18 | 0.00 | 3.94 | 12.50 |
| 95th-Percentile Queue Length [ft/ln] | 33.07 | 244.59 | | 104.45 | 0.00 | 98.62 | 312.58 |

**Movement, Approach, & Intersection Results**

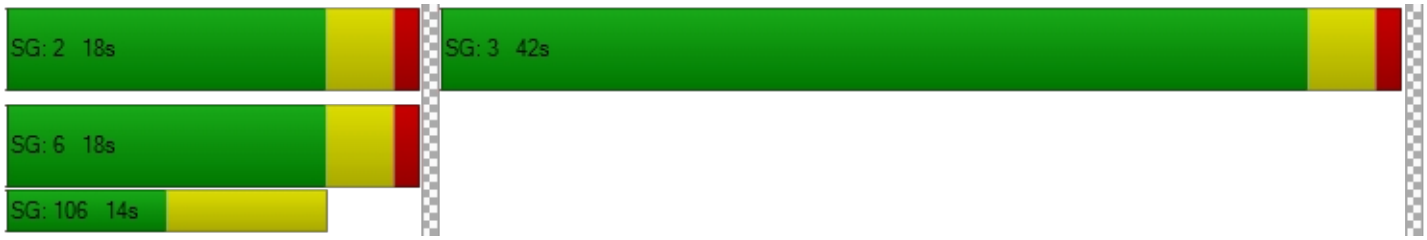
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 14.28 | 0.00 | 23.12 | 0.00 | 0.00 | 0.00 | 0.00 | 8.80 | 0.00 | 0.00 | 8.66 | 21.08 |
| Movement LOS | B | | C | | | | | A | A | | A | C |
| d_A, Approach Delay [s/veh] | 20.73 | | | 0.00 | | | 8.80 | | | 13.51 | | |
| Approach LOS | C | | | A | | | A | | | B | | |
| d_I, Intersection Delay [s/veh] | 13.22 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.914 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 20.04 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 2.097 | 0.000 | 0.000 |
| Crosswalk LOS | F | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1265 | 0 | 466 | 466 |
| d_b, Bicycle Delay [s] | 4.05 | 30.03 | 17.66 | 17.66 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 4.132 | 2.201 | 2.566 |
| Bicycle LOS | A | D | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 16: Compton Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 23.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.665 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 197.00 | 100.00 | 83.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 259 | 0 | 0 | 216 | 0 | 1292 | 75 | 275 | 883 | 258 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0600 | 1.0000 | 1.0000 | 1.0600 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 13 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 275 | 0 | 0 | 229 | 0 | 1382 | 80 | 292 | 949 | 273 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 72 | 0 | 0 | 60 | 0 | 364 | 21 | 77 | 250 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 289 | 0 | 0 | 241 | 0 | 1455 | 84 | 307 | 999 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 85 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 |
| Maximum Green [s] | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 0 | 30 | 0 | 0 |
| Amber [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 0.0 |
| Split [s] | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 50 | 0 | 89 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | No | | | | | No | | | | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| Minimum Recall | | | No | | | | | No | | No | | |
| Maximum Recall | | | No | | | | | No | | No | | |
| Pedestrian Recall | | | No | | | | | No | | No | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | R | | C | C | L |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 27 | | 27 | 27 | 27 |
| L, Total Lost Time per Cycle [s] | 4.00 | | 4.00 | 4.00 | 0.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | | 2.00 | 2.00 | 0.00 |
| g_i, Effective Green Time [s] | 7 | | 13 | 13 | 0 |
| g / C, Green / Cycle | 0.24 | | 0.46 | 0.46 | 0.00 |
| (v / s)_i Volume / Saturation Flow Rate | 0.18 | | 0.29 | 0.28 | 0.91 |
| s, saturation flow rate [veh/h] | 1589 | | 3560 | 1817 | 337 |
| c, Capacity [veh/h] | 388 | | 1654 | 844 | 262 |
| d1, Uniform Delay [s] | 9.59 | | 5.53 | 5.48 | 13.72 |
| k, delay calibration | 0.11 | | 0.11 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.87 | | 0.38 | 0.71 | 109.49 |
| d3, Initial Queue Delay [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.75 | | 0.62 | 0.61 | 1.17 |
| d, Delay for Lane Group [s/veh] | 12.46 | | 5.91 | 6.19 | 123.21 |
| Lane Group LOS | B | | A | A | F |
| Critical Lane Group | Yes | | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 1.32 | | 0.45 | 0.52 | 9.97 |
| 50th-Percentile Queue Length [ft/ln] | 32.98 | | 11.19 | 13.08 | 249.27 |
| 95th-Percentile Queue Length [veh/ln] | 2.37 | | 0.81 | 0.94 | 15.15 |
| 95th-Percentile Queue Length [ft/ln] | 59.37 | | 20.14 | 23.54 | 378.74 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 12.46 | 0.00 | 0.00 | 0.00 | 0.00 | 5.99 | 6.19 | 123.21 | 0.00 | 0.00 |
| Movement LOS | | | B | | | | | A | A | F | | |
| d_A, Approach Delay [s/veh] | 12.46 | | | 0.00 | | | 6.00 | | | 123.21 | | |
| Approach LOS | B | | | A | | | A | | | F | | |
| d_I, Intersection Delay [s/veh] | 23.73 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.665 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 4.87 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.404 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | B | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 2270 | 0 | 3369 | 0 |
| d_b, Bicycle Delay [s] | 0.25 | 13.66 | 6.39 | 13.66 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 1.560 | 2.406 | 1.560 |
| Bicycle LOS | A | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



## Opening Year (2025) With Project

Monte Olivo Phase 1

Vistro File: G:\...\AM E.vistro
Report File: G:\...\AM OYP.pdf

Scenario 4 Opening Year (2025) With Project
6/13/2023

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Rimpau Ave (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | SB Left | 0.940 | 27.9 | C |
| 2 | Rimpau Ave (NS) at California Ave (EW) | Signalized | HCM 6th Edition | WB Right | 0.473 | 6.7 | A |
| 3 | Rimpau Ave (NS) at Olympic Dr (EW) | Signalized | HCM 6th Edition | SB Left | 0.834 | 20.9 | C |
| 4 | Rimpau Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | SB Left | 0.621 | 18.1 | C |
| 5 | California Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Thru | 0.586 | 12.8 | B |
| 6 | Compton Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Left | 0.469 | 10.5 | B |
| 7 | Laurel Canyon Way (NS) at Project Dwy (EW) | Two-way stop | HCM 6th Edition | WB Left | 0.031 | 9.0 | A |
| 8 | State St (NS) at Bel Air St/Project Dwy (EW) | Two-way stop | HCM 6th Edition | WB Left | 0.050 | 8.9 | A |
| 9 | State St (NS) at Ontario Ave (EW) | Two-way stop | HCM 6th Edition | NB Left | 0.045 | 38.4 | E |
| 10 | I-15 SB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | EB Right | 0.969 | 24.8 | C |
| 11 | I-15 NB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | NB Left | 0.810 | 19.6 | B |
| 12 | California Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | EB Left | 0.674 | 22.0 | C |
| 13 | El Sobrante Rd (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | EB Left | 0.628 | 38.9 | D |
| 14 | I-15 SB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | EB Right | 0.979 | 33.0 | C |
| 15 | I-15 NB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | NB Right | 0.799 | 15.3 | B |
| 16 | Compton Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | NB Right | 0.750 | 24.2 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For

**Intersection Level Of Service Report**
**Intersection 1: Rimpau Ave (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 27.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.940 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 148.00 | 100.00 | 100.00 | 80.00 | 100.00 | 100.00 | 180.00 | 100.00 | 100.00 | 360.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 101 | 271 | 481 | 115 | 269 | 42 | 88 | 825 | 104 | 542 | 1084 | 69 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 5 | 6 | 9 | 2 | 3 | 0 | 0 | 89 | 2 | 4 | 25 | 2 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 112 | 293 | 519 | 124 | 288 | 45 | 93 | 964 | 112 | 579 | 1174 | 75 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 29 | 77 | 137 | 33 | 76 | 12 | 24 | 254 | 29 | 152 | 309 | 20 |
| Total Analysis Volume [veh/h] | 118 | 308 | 546 | 131 | 303 | 47 | 98 | 1015 | 118 | 609 | 1236 | 79 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 71 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 2 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | 2,7 | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 7 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 21 | 12 | 22 | 0 | 12 | 23 | 0 | 15 | 26 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | No | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | No | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 15 | 33 | 7 | 15 | 6 | 19 | 19 | 14 | 27 | 27 |
| g / C, Green / Cycle | 0.09 | 0.21 | 0.47 | 0.09 | 0.22 | 0.08 | 0.27 | 0.27 | 0.20 | 0.38 | 0.38 |
| (v / s)_i Volume / Saturation Flow Rate | 0.07 | 0.16 | 0.34 | 0.07 | 0.19 | 0.06 | 0.21 | 0.21 | 0.18 | 0.24 | 0.25 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1589 | 1781 | 1827 | 1781 | 3560 | 1772 | 3459 | 3560 | 1813 |
| c, Capacity [veh/h] | 160 | 400 | 741 | 168 | 398 | 151 | 965 | 480 | 678 | 1362 | 694 |
| d1, Uniform Delay [s] | 31.55 | 26.32 | 15.44 | 31.50 | 26.90 | 31.53 | 23.99 | 24.00 | 27.89 | 17.94 | 17.96 |
| k, delay calibration | 0.11 | 0.11 | 0.31 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 6.49 | 3.17 | 4.14 | 7.71 | 6.34 | 4.65 | 6.33 | 12.12 | 4.58 | 2.31 | 4.51 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.74 | 0.77 | 0.74 | 0.78 | 0.88 | 0.65 | 0.78 | 0.78 | 0.90 | 0.64 | 0.64 |
| d, Delay for Lane Group [s/veh] | 38.04 | 29.49 | 19.58 | 39.22 | 33.24 | 36.18 | 30.32 | 36.12 | 32.48 | 20.25 | 22.47 |
| Lane Group LOS | D | C | B | D | C | D | C | D | C | C | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.17 | 4.93 | 7.01 | 2.45 | 6.04 | 1.72 | 6.16 | 6.92 | 5.05 | 5.53 | 6.08 |
| 50th-Percentile Queue Length [ft/ln] | 54.17 | 123.17 | 175.15 | 61.23 | 150.95 | 43.07 | 154.09 | 172.90 | 126.34 | 138.25 | 151.94 |
| 95th-Percentile Queue Length [veh/ln] | 3.90 | 8.57 | 11.35 | 4.41 | 10.07 | 3.10 | 10.23 | 11.23 | 8.74 | 9.39 | 10.12 |
| 95th-Percentile Queue Length [ft/ln] | 97.50 | 214.18 | 283.68 | 110.22 | 251.70 | 77.53 | 255.87 | 280.72 | 218.51 | 234.66 | 253.01 |

**Movement, Approach, & Intersection Results**

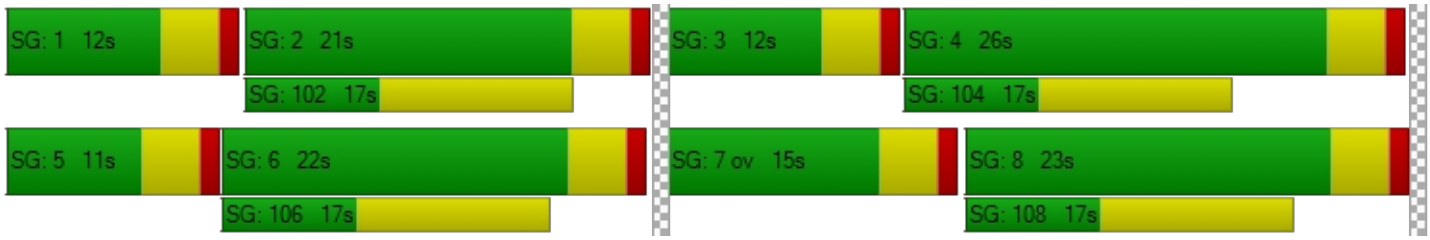
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 38.04 | 29.49 | 19.58 | 39.22 | 33.24 | 33.24 | 36.18 | 31.80 | 36.12 | 32.48 | 20.91 | 22.47 |
| Movement LOS | D | C | B | D | C | C | D | C | D | C | C | C |
| d_A, Approach Delay [s/veh] | 24.96 | | | 34.87 | | | 32.56 | | | 24.63 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 27.89 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.940 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 25.38 | 25.38 | 25.38 | 25.38 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.742 | 2.293 | 3.070 | 3.300 |
| Crosswalk LOS | B | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 478 | 507 | 535 | 619 |
| d_b, Bicycle Delay [s] | 20.57 | 19.81 | 19.07 | 16.94 |
| l_b,int, Bicycle LOS Score for Intersection | 3.163 | 2.353 | 2.237 | 2.618 |
| Bicycle LOS | C | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Rimpau Ave (NS) at California Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 6.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.473 |

**Intersection Setup**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 50.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 35.00 | | 40.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | Yes | |

**Volumes**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 692 | 11 | 0 | 872 | 1 | 181 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 8 | 0 | 4 | 5 | 0 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 742 | 12 | 4 | 929 | 1 | 204 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 195 | 3 | 1 | 244 | 0 | 54 |
| Total Analysis Volume [veh/h] | 781 | 13 | 4 | 978 | 1 | 215 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Split | Split |
|---|---|---|---|---|---|---|
| Signal Group | 2 | 0 | 0 | 6 | 7 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 21 | 0 | 0 | 21 | 39 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | C | L | R |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 42 | 42 | 42 | 10 | 10 |
| g / C, Green / Cycle | 0.70 | 0.70 | 0.70 | 0.17 | 0.17 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.14 | 0.27 | 0.00 | 0.14 |
| s, saturation flow rate [veh/h] | 3560 | 1854 | 3560 | 1781 | 1589 |
| c, Capacity [veh/h] | 2479 | 1291 | 2479 | 304 | 271 |
| d1, Uniform Delay [s] | 3.26 | 3.24 | 3.82 | 20.69 | 23.91 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.20 | 0.36 | 0.47 | 0.00 | 5.18 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.21 | 0.21 | 0.39 | 0.00 | 0.79 |
| d, Delay for Lane Group [s/veh] | 3.46 | 3.60 | 4.30 | 20.69 | 29.09 |
| Lane Group LOS | A | A | A | C | C |
| Critical Lane Group | No | No | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.67 | 0.73 | 1.47 | 0.01 | 3.01 |
| 50th-Percentile Queue Length [ft/ln] | 16.74 | 18.16 | 36.68 | 0.27 | 75.17 |
| 95th-Percentile Queue Length [veh/ln] | 1.20 | 1.31 | 2.64 | 0.02 | 5.41 |
| 95th-Percentile Queue Length [ft/ln] | 30.12 | 32.68 | 66.03 | 0.49 | 135.30 |

**Movement, Approach, & Intersection Results**

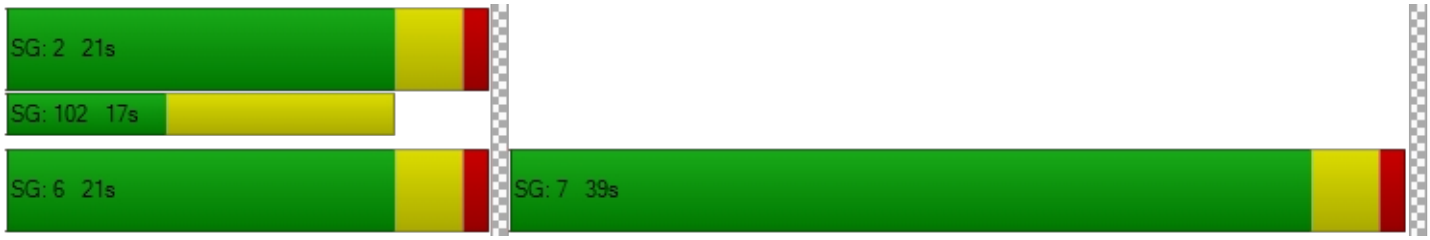
| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 3.50 | 3.60 | 0.00 | 4.30 | 20.69 | 29.09 |
| Movement LOS | A | A | | A | C | C |
| d_A, Approach Delay [s/veh] | 3.50 | | 4.30 | | 29.05 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 6.67 | | | | | |
| Intersection LOS | A | | | | | |
| Intersection V/C | 0.473 | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 20.04 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 0.000 | 2.183 |
| Crosswalk LOS | F | F | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 566 | 566 | 1165 |
| d_b, Bicycle Delay [s] | 15.44 | 15.44 | 5.23 |
| l_b,int, Bicycle LOS Score for Intersection | 1.996 | 2.366 | 1.560 |
| Bicycle LOS | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Rimpau Ave (NS) at Olympic Dr (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 20.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.834 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 140.00 | 100.00 | 100.00 | 140.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 31 | 420 | 17 | 181 | 517 | 175 | 223 | 14 | 119 | 70 | 36 | 59 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 8 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 33 | 453 | 18 | 192 | 553 | 186 | 236 | 15 | 126 | 74 | 38 | 63 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 119 | 5 | 51 | 146 | 49 | 62 | 4 | 33 | 19 | 10 | 17 |
| Total Analysis Volume [veh/h] | 35 | 477 | 19 | 202 | 582 | 196 | 248 | 16 | 133 | 78 | 40 | 66 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 61 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 7 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 14 | 24 | 0 | 11 | 26 | 0 | 0 | 15 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | Yes | No | | | No | |
| Maximum Recall | No | No | | No | No | | No | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | C | R | C | R |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 3 | 18 | 18 | 9 | 24 | 24 | 22 | 22 | 11 | 11 |
| g / C, Green / Cycle | 0.05 | 0.30 | 0.30 | 0.14 | 0.39 | 0.39 | 0.36 | 0.36 | 0.18 | 0.18 |
| (v / s)_i Volume / Saturation Flow Rate | 0.02 | 0.13 | 0.13 | 0.11 | 0.22 | 0.22 | 0.31 | 0.08 | 0.25 | 0.04 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1845 | 1781 | 1870 | 1711 | 848 | 1589 | 468 | 1589 |
| c, Capacity [veh/h] | 96 | 564 | 557 | 252 | 728 | 666 | 442 | 573 | 182 | 288 |
| d1, Uniform Delay [s] | 27.95 | 17.21 | 17.22 | 25.44 | 14.57 | 14.57 | 15.91 | 13.65 | 27.27 | 21.42 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.33 | 2.50 | 2.55 | 5.86 | 3.07 | 3.35 | 5.87 | 0.20 | 3.81 | 0.40 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.37 | 0.44 | 0.44 | 0.80 | 0.56 | 0.56 | 0.60 | 0.23 | 0.65 | 0.23 |
| d, Delay for Lane Group [s/veh] | 30.28 | 19.71 | 19.76 | 31.31 | 17.64 | 17.92 | 21.78 | 13.86 | 31.08 | 21.82 |
| Lane Group LOS | C | B | B | C | B | B | C | B | C | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.52 | 2.90 | 2.88 | 3.03 | 4.38 | 4.06 | 3.26 | 1.22 | 1.86 | 0.79 |
| 50th-Percentile Queue Length [ft/ln] | 13.12 | 72.56 | 71.96 | 75.64 | 109.44 | 101.42 | 81.45 | 30.54 | 46.39 | 19.78 |
| 95th-Percentile Queue Length [veh/ln] | 0.94 | 5.22 | 5.18 | 5.45 | 7.81 | 7.30 | 5.86 | 2.20 | 3.34 | 1.42 |
| 95th-Percentile Queue Length [ft/ln] | 23.62 | 130.61 | 129.53 | 136.16 | 195.22 | 182.56 | 146.61 | 54.98 | 83.50 | 35.60 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 30.28 | 19.74 | 19.76 | 31.31 | 17.72 | 17.92 | 21.78 | 21.78 | 13.86 | 31.08 | 31.08 | 21.82 |
| Movement LOS | C | B | B | C | B | B | C | C | B | C | C | C |
| d_A, Approach Delay [s/veh] | 20.43 | | | 20.56 | | | 19.12 | | | 27.76 | | |
| Approach LOS | C | | | C | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 20.89 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.834 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.54 | 0.00 | 20.54 | 20.54 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.691 | 0.000 | 2.100 | 2.056 |
| Crosswalk LOS | B | F | B | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 556 | 655 | 720 | 360 |
| d_b, Bicycle Delay [s] | 15.92 | 13.82 | 12.51 | 20.54 |
| l_b,int, Bicycle LOS Score for Intersection | 1.998 | 2.368 | 2.215 | 1.863 |
| Bicycle LOS | A | B | B | A |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**

**Intersection 4: Rimpau Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 18.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.621 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 34 | 401 | 47 | 106 | 323 | 108 | 78 | 109 | 38 | 35 | 86 | 92 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 4 | 1 | 1 | 4 | 0 | 0 | 0 | 0 | 2 | 1 | 4 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 36 | 429 | 51 | 113 | 346 | 114 | 83 | 116 | 40 | 39 | 92 | 102 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 113 | 13 | 30 | 91 | 30 | 22 | 31 | 11 | 10 | 24 | 27 |
| Total Analysis Volume [veh/h] | 38 | 452 | 54 | 119 | 364 | 120 | 87 | 122 | 42 | 41 | 97 | 107 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 488 | 503 | 486 | 519 | 439 | 494 | 439 | 490 |
| Degree of Utilization, x | 0.56 | 0.54 | 0.62 | 0.58 | 0.48 | 0.09 | 0.31 | 0.22 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 3.35 | 3.18 | 4.16 | 3.67 | 2.51 | 0.28 | 1.33 | 0.82 |
| 95th-Percentile Queue Length [ft] | 83.82 | 79.59 | 104.06 | 91.67 | 62.69 | 6.94 | 33.22 | 20.62 |
| Approach Delay [s/veh] | 18.45 | | 20.16 | | 16.88 | | 13.52 | |
| Approach LOS | C | | C | | C | | B | |
| Intersection Delay [s/veh] | 18.10 | | | | | | | |
| Intersection LOS | C | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 5: California Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 12.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.586 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | No | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 81 | 227 | 21 | 12 | 79 | 5 | 35 | 78 | 117 | 17 | 75 | 69 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 2 | 0 | 4 | 7 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 86 | 241 | 24 | 17 | 84 | 5 | 37 | 85 | 124 | 22 | 87 | 85 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 23 | 63 | 6 | 4 | 22 | 1 | 10 | 22 | 33 | 6 | 23 | 22 |
| Total Analysis Volume [veh/h] | 91 | 254 | 25 | 18 | 88 | 5 | 39 | 89 | 131 | 23 | 92 | 89 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 589 | 682 | 559 | 637 | 557 | 643 | 555 | 634 |
| Degree of Utilization, x | 0.59 | 0.04 | 0.19 | 0.01 | 0.23 | 0.20 | 0.21 | 0.14 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 3.78 | 0.11 | 0.69 | 0.02 | 0.88 | 0.76 | 0.77 | 0.49 |
| 95th-Percentile Queue Length [ft] | 94.47 | 2.85 | 17.34 | 0.59 | 22.01 | 18.98 | 19.34 | 12.17 |
| Approach Delay [s/veh] | 16.50 | | 10.54 | | 10.40 | | 10.19 | |
| Approach LOS | C | | B | | B | | B | |
| Intersection Delay [s/veh] | 12.76 | | | | | | | |
| Intersection LOS | B | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 6: Compton Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 10.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.469 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 216 | 108 | 13 | 0 | 8 | 0 | 7 | 11 | 60 | 10 | 18 | 7 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 8 | 0 | 5 | 23 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 229 | 114 | 16 | 0 | 8 | 0 | 7 | 20 | 64 | 16 | 42 | 7 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 60 | 30 | 4 | 0 | 2 | 0 | 2 | 5 | 17 | 4 | 11 | 2 |
| Total Analysis Volume [veh/h] | 241 | 120 | 17 | 0 | 8 | 0 | 7 | 21 | 67 | 17 | 44 | 7 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | |
|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 807 | 751 | 632 | 741 | 628 | 737 |
| Degree of Utilization, x | 0.47 | 0.01 | 0.04 | 0.09 | 0.10 | 0.01 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 2.53 | 0.03 | 0.14 | 0.30 | 0.32 | 0.03 |
| 95th-Percentile Queue Length [ft] | 63.23 | 0.81 | 3.47 | 7.43 | 8.03 | 0.72 |
| Approach Delay [s/veh] | 11.35 | 7.85 | 8.22 | | 8.90 | |
| Approach LOS | B | A | A | | A | |
| Intersection Delay [s/veh] | 10.45 | | | | | |
| Intersection LOS | B | | | | | |

**Intersection Level Of Service Report**
**Intersection 7: Laurel Canyon Way (NS) at Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 9.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.031 |

**Intersection Setup**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**Volumes**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 24 | 0 | 0 | 35 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 10 | 0 | 0 | 28 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 25 | 10 | 0 | 37 | 28 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 7 | 3 | 0 | 10 | 7 | 0 |
| Total Analysis Volume [veh/h] | 26 | 11 | 0 | 39 | 29 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop |
|---|---|---|---|
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 7.29 | 0.00 | 8.98 | 8.58 |
| Movement LOS | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.10 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 2.40 | 2.40 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.00 | | 8.98 | |
| Approach LOS | A | | A | | A | |
| d_I, Intersection Delay [s/veh] | 2.48 | | | | | |
| Intersection LOS | A | | | | | |

**Intersection Level Of Service Report**

**Intersection 8: State St (NS) at Bel Air St/Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 8.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.050 |

**Intersection Setup**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 25.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 9 | 0 | 0 | 12 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 10 | 17 | 0 | 13 | 0 | 0 | 0 | 2 | 46 | 0 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 3 | 4 | 0 | 3 | 0 | 0 | 0 | 1 | 12 | 0 | 0 |
| Total Analysis Volume [veh/h] | 2 | 11 | 18 | 0 | 14 | 0 | 0 | 0 | 2 | 48 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.25 | 0.00 | 0.00 | 7.27 | 0.00 | 0.00 | 8.73 | 9.27 | 8.38 | 8.94 | 9.42 | 8.60 |
| Movement LOS | A | A | A | A | A | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.16 | 0.16 | 0.16 |
| 95th-Percentile Queue Length [ft/ln] | 0.09 | 0.09 | 0.09 | 0.00 | 0.00 | 0.00 | 0.14 | 0.14 | 0.14 | 3.93 | 3.93 | 3.93 |
| d_A, Approach Delay [s/veh] | 0.47 | | | 0.00 | | | 8.38 | | | 8.94 | | |
| Approach LOS | A | | | A | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 4.84 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 38.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.045 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 5 | 0 | 1 | 19 | 0 | 75 | 47 | 388 | 2 | 1 | 960 | 12 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 11 | 0 | 37 | 15 | 2 | 0 | 0 | 2 | 4 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 0 | 1 | 31 | 0 | 117 | 65 | 413 | 2 | 1 | 1020 | 17 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 8 | 0 | 31 | 17 | 109 | 1 | 0 | 268 | 4 |
| Total Analysis Volume [veh/h] | 5 | 0 | 1 | 33 | 0 | 123 | 68 | 435 | 2 | 1 | 1074 | 18 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | Yes | | |
| Number of Storage Spaces in Median | 0 | 2 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.04 | 0.00 | 0.00 | 0.15 | 0.00 | 0.25 | 0.11 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 38.37 | 48.50 | 10.90 | 24.96 | 22.77 | 14.84 | 11.35 | 0.00 | 0.00 | 8.22 | 0.00 | 0.00 |
| Movement LOS | E | E | B | C | C | B | B | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.14 | 0.14 | 0.14 | 0.54 | 0.54 | 0.99 | 0.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 3.57 | 3.57 | 3.57 | 13.42 | 13.42 | 24.72 | 8.95 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 33.79 | | | 16.98 | | | 1.53 | | | 0.01 | | |
| Approach LOS | D | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 2.06 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |

**Intersection Level Of Service Report**

**Intersection 10: I-15 SB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.969 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 67.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 262 | 2 | 938 | 0 | 950 | 467 | 29 | 1345 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 16 | 0 | 1 | 0 | 9 | 4 | 17 | 15 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 294 | 2 | 995 | 0 | 1016 | 499 | 48 | 1441 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 77 | 1 | 262 | 0 | 267 | 131 | 13 | 379 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 309 | 2 | 1047 | 0 | 1069 | 525 | 51 | 1517 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 68 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 27 | 0 | 11 | 38 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 68 | 68 | 68 | 68 | 68 | 68 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 26 | 26 | 26 | 26 | 4 | 34 |
| g / C, Green / Cycle | | 0.38 | 0.38 | 0.38 | 0.38 | 0.06 | 0.50 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.17 | 0.37 | 0.30 | 0.33 | 0.03 | 0.43 |
| s, saturation flow rate [veh/h] | | 1781 | 2813 | 3560 | 1589 | 1781 | 3560 |
| c, Capacity [veh/h] | | 680 | 1074 | 1341 | 599 | 117 | 1783 |
| d1, Uniform Delay [s] | | 15.77 | 20.73 | 18.92 | 19.77 | 30.63 | 14.79 |
| k, delay calibration | | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.48 | 8.13 | 5.00 | 16.52 | 2.57 | 5.34 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.46 | 0.97 | 0.80 | 0.88 | 0.44 | 0.85 |
| d, Delay for Lane Group [s/veh] | | 16.25 | 28.86 | 23.92 | 36.28 | 33.20 | 20.13 |
| Lane Group LOS | | B | C | C | D | C | C |
| Critical Lane Group | | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | | 3.41 | 8.55 | 7.21 | 9.19 | 0.82 | 9.09 |
| 50th-Percentile Queue Length [ft/ln] | | 85.15 | 213.72 | 180.14 | 229.63 | 20.62 | 227.36 |
| 95th-Percentile Queue Length [veh/ln] | | 6.13 | 13.34 | 11.61 | 14.16 | 1.48 | 14.04 |
| 95th-Percentile Queue Length [ft/ln] | | 153.27 | 333.59 | 290.20 | 353.89 | 37.11 | 351.00 |

**Movement, Approach, & Intersection Results**

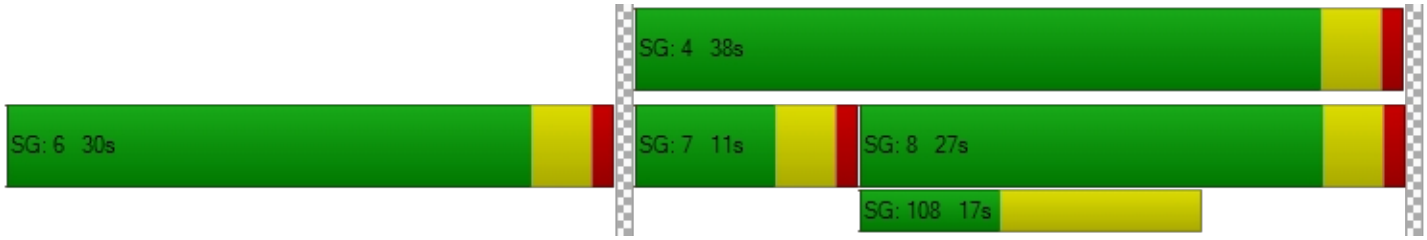
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 16.25 | 16.25 | 28.86 | 0.00 | 23.92 | 36.28 | 33.20 | 20.13 | 0.00 |
| Movement LOS | | | | B | B | C | | C | D | C | C | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 25.97 | | | 27.99 | | | 20.56 | | |
| Approach LOS | A | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 24.81 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.969 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 23.92 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 1.972 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | A | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 764 | 676 | 999 |
| d_b, Bicycle Delay [s] | 34.03 | 13.00 | 14.92 | 8.52 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 3.800 | 2.875 | 2.853 |
| Bicycle LOS | D | D | C | C |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**

**Intersection 11: I-15 NB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 19.6 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.810 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 354 | 2 | 33 | 0 | 0 | 0 | 618 | 539 | 0 | 0 | 1046 | 270 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0000 | 1.0000 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 0 | 12 | 0 | 0 | 0 | 2 | 23 | 0 | 0 | 28 | 24 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 378 | 2 | 47 | 0 | 0 | 0 | 657 | 594 | 0 | 0 | 1137 | 310 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 99 | 1 | 12 | 0 | 0 | 0 | 173 | 156 | 0 | 0 | 299 | 82 |
| Total Analysis Volume [veh/h] | 398 | 2 | 49 | 0 | 0 | 0 | 692 | 625 | 0 | 0 | 1197 | 326 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 28 | 0 | 0 | 0 | 0 | 11 | 32 | 0 | 0 | 21 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 9 | 9 | 9 | | 15 | 43 | 24 | 24 |
| g / C, Green / Cycle | 0.16 | 0.16 | 0.16 | | 0.25 | 0.71 | 0.40 | 0.40 |
| (v / s)_i Volume / Saturation Flow Rate | 0.11 | 0.11 | 0.03 | | 0.20 | 0.33 | 0.34 | 0.21 |
| s, saturation flow rate [veh/h] | 1781 | 1782 | 1589 | | 3459 | 1870 | 3560 | 1589 |
| c, Capacity [veh/h] | 281 | 281 | 251 | | 856 | 1326 | 1407 | 628 |
| d1, Uniform Delay [s] | 24.03 | 24.03 | 22.01 | | 21.29 | 3.82 | 16.58 | 13.84 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.33 | 3.32 | 0.38 | | 1.88 | 1.20 | 6.63 | 3.05 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.71 | 0.71 | 0.20 | | 0.81 | 0.47 | 0.85 | 0.52 |
| d, Delay for Lane Group [s/veh] | 27.36 | 27.36 | 22.39 | | 23.17 | 5.02 | 23.21 | 16.89 |
| Lane Group LOS | C | C | C | | C | A | C | B |
| Critical Lane Group | Yes | No | No | | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 2.78 | 2.78 | 0.59 | | 4.12 | 1.64 | 7.17 | 3.20 |
| 50th-Percentile Queue Length [ft/ln] | 69.47 | 69.50 | 14.79 | | 102.88 | 41.06 | 179.25 | 80.09 |
| 95th-Percentile Queue Length [veh/ln] | 5.00 | 5.00 | 1.07 | | 7.41 | 2.96 | 11.56 | 5.77 |
| 95th-Percentile Queue Length [ft/ln] | 125.05 | 125.11 | 26.63 | | 185.18 | 73.92 | 289.03 | 144.16 |

**Movement, Approach, & Intersection Results**

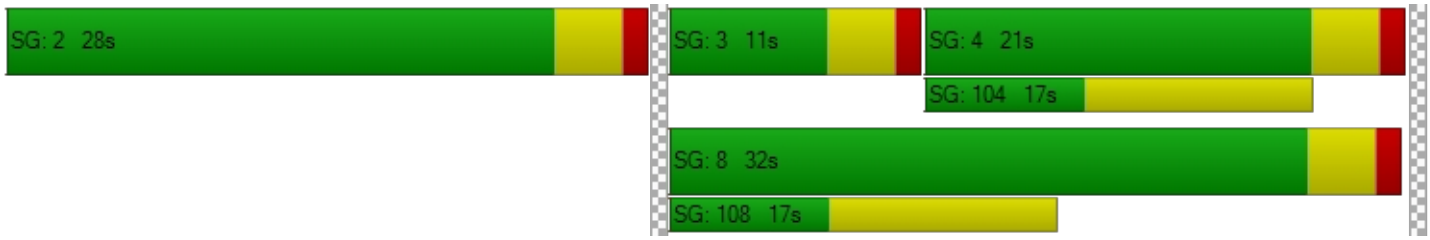
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 27.36 | 27.36 | 22.39 | 0.00 | 0.00 | 0.00 | 23.17 | 5.02 | 0.00 | 0.00 | 23.21 | 16.89 |
| Movement LOS | C | C | C | | | | C | A | | | C | B |
| d_A, Approach Delay [s/veh] | 26.82 | | | 0.00 | | | 14.56 | | | 21.86 | | |
| Approach LOS | C | | | A | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 19.61 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.810 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.05 | 20.05 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.064 | 2.190 | 0.000 | 0.000 |
| Crosswalk LOS | B | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 799 | 0 | 932 | 566 |
| d_b, Bicycle Delay [s] | 10.83 | 30.04 | 8.57 | 15.45 |
| l_b,int, Bicycle LOS Score for Intersection | 2.300 | 4.132 | 3.733 | 2.816 |
| Bicycle LOS | B | D | D | C |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 12: California Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 22.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.674 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 195.00 | 100.00 | 100.00 | 212.00 | 100.00 | 150.00 | 268.00 | 100.00 | 115.00 | 217.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 107 | 199 | 103 | 186 | 76 | 58 | 185 | 753 | 63 | 236 | 952 | 290 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 1 | 2 | 2 | 2 | 0 | 0 | 9 | 5 | 4 | 10 | 2 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 116 | 212 | 111 | 199 | 83 | 61 | 196 | 807 | 72 | 254 | 1019 | 309 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 31 | 56 | 29 | 52 | 22 | 16 | 52 | 212 | 19 | 67 | 268 | 81 |
| Total Analysis Volume [veh/h] | 122 | 223 | 117 | 209 | 87 | 64 | 206 | 849 | 76 | 267 | 1073 | 325 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 64 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 11 | 21 | 0 | 11 | 21 | 0 | 11 | 21 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 10 | 10 | 7 | 11 | 11 | 9 | 24 | 24 | 7 | 22 | 22 |
| g / C, Green / Cycle | 0.10 | 0.15 | 0.15 | 0.11 | 0.16 | 0.16 | 0.14 | 0.38 | 0.38 | 0.11 | 0.35 | 0.35 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.12 | 0.07 | 0.06 | 0.05 | 0.04 | 0.12 | 0.17 | 0.05 | 0.08 | 0.21 | 0.20 |
| s, saturation flow rate [veh/h] | 3459 | 1870 | 1589 | 3459 | 1870 | 1589 | 1781 | 5094 | 1589 | 3459 | 5094 | 1589 |
| c, Capacity [veh/h] | 341 | 290 | 246 | 373 | 307 | 261 | 256 | 1915 | 597 | 388 | 1756 | 548 |
| d1, Uniform Delay [s] | 27.07 | 26.05 | 24.77 | 27.22 | 23.54 | 23.39 | 26.66 | 15.02 | 13.15 | 27.45 | 17.49 | 17.35 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.63 | 4.29 | 1.42 | 1.32 | 0.50 | 0.48 | 5.92 | 0.75 | 0.44 | 2.17 | 1.60 | 4.67 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.36 | 0.77 | 0.47 | 0.56 | 0.28 | 0.25 | 0.81 | 0.44 | 0.13 | 0.69 | 0.61 | 0.59 |
| d, Delay for Lane Group [s/veh] | 27.70 | 30.35 | 26.19 | 28.54 | 24.04 | 23.87 | 32.58 | 15.77 | 13.59 | 29.62 | 19.09 | 22.03 |
| Lane Group LOS | C | C | C | C | C | C | C | B | B | C | B | C |
| Critical Lane Group | No | Yes | No | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.82 | 3.26 | 1.55 | 1.47 | 1.10 | 0.81 | 3.15 | 2.69 | 0.67 | 1.89 | 3.93 | 4.02 |
| 50th-Percentile Queue Length [ft/ln] | 20.52 | 81.44 | 38.74 | 36.65 | 27.43 | 20.15 | 78.63 | 67.30 | 16.86 | 47.26 | 98.19 | 100.46 |
| 95th-Percentile Queue Length [veh/ln] | 1.48 | 5.86 | 2.79 | 2.64 | 1.98 | 1.45 | 5.66 | 4.85 | 1.21 | 3.40 | 7.07 | 7.23 |
| 95th-Percentile Queue Length [ft/ln] | 36.94 | 146.60 | 69.73 | 65.97 | 49.38 | 36.26 | 141.54 | 121.13 | 30.35 | 85.06 | 176.74 | 180.83 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 27.70 | 30.35 | 26.19 | 28.54 | 24.04 | 23.87 | 32.58 | 15.77 | 13.59 | 29.62 | 19.09 | 22.03 |
| Movement LOS | C | C | C | C | C | C | C | B | B | C | B | C |
| d_A, Approach Delay [s/veh] | 28.60 | | | 26.62 | | | 18.68 | | | 21.35 | | |
| Approach LOS | C | | | C | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 21.97 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.674 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 22.01 | 22.01 | 22.01 | 22.01 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.746 | 2.676 | 3.144 | 3.292 |
| Crosswalk LOS | B | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 530 | 530 | 530 | 530 |
| d_b, Bicycle Delay [s] | 17.32 | 17.32 | 17.32 | 17.32 |
| l_b,int, Bicycle LOS Score for Intersection | 2.322 | 2.154 | 2.182 | 2.475 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**

**Intersection 13: El Sobrante Rd (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 38.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.628 |

**Intersection Setup**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 65.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 78.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 45.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 15 | 18 | 106 | 118 | 36 | 102 | 59 | 1286 | 41 | 96 | 1612 | 178 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 31 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 16 | 19 | 112 | 125 | 38 | 108 | 63 | 1463 | 43 | 102 | 1740 | 189 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 4 | 5 | 29 | 33 | 10 | 28 | 17 | 385 | 11 | 27 | 458 | 50 |
| Total Analysis Volume [veh/h] | 17 | 20 | 118 | 132 | 40 | 114 | 66 | 1540 | 45 | 107 | 1832 | 199 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 119 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 9 | 16 | 0 | 39 | 46 | 0 | 10 | 52 | 0 | 13 | 55 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 35 | 0 | 0 | 18 | 0 | 0 | 26 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 | 119 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 2 | 41 | 7 | 46 | 6 | 46 | 46 | 9 | 49 | 49 |
| g / C, Green / Cycle | 0.02 | 0.35 | 0.06 | 0.39 | 0.05 | 0.39 | 0.39 | 0.07 | 0.41 | 0.41 |
| (v / s)_i Volume / Saturation Flow Rate | 0.01 | 0.08 | 0.04 | 0.09 | 0.04 | 0.29 | 0.29 | 0.06 | 0.38 | 0.38 |
| s, saturation flow rate [veh/h] | 1781 | 1625 | 3459 | 1654 | 1781 | 3560 | 1843 | 1781 | 3560 | 1778 |
| c, Capacity [veh/h] | 33 | 567 | 196 | 640 | 85 | 1374 | 711 | 132 | 1468 | 733 |
| d1, Uniform Delay [s] | 57.88 | 27.57 | 55.07 | 24.66 | 56.04 | 31.76 | 31.76 | 54.28 | 33.11 | 33.33 |
| k, delay calibration | 0.11 | 0.50 | 0.11 | 0.50 | 0.11 | 0.11 | 0.26 | 0.11 | 0.11 | 0.39 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 11.85 | 1.02 | 4.00 | 0.89 | 13.84 | 0.89 | 4.05 | 11.16 | 2.81 | 16.49 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | 0.51 | 0.24 | 0.67 | 0.24 | 0.78 | 0.76 | 0.76 | 0.81 | 0.92 | 0.93 |
|---|---|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | 69.73 | 28.59 | 59.07 | 25.55 | 69.88 | 32.65 | 35.81 | 65.44 | 35.93 | 49.82 |
| Lane Group LOS | E | C | E | C | E | C | D | E | D | D |
| Critical Lane Group | No | Yes | Yes | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.62 | 3.01 | 2.00 | 3.00 | 2.26 | 12.68 | 13.76 | 3.51 | 18.03 | 21.10 |
| 50th-Percentile Queue Length [ft/ln] | 15.50 | 75.20 | 50.11 | 74.91 | 56.42 | 317.11 | 344.02 | 87.86 | 450.87 | 527.59 |
| 95th-Percentile Queue Length [veh/ln] | 1.12 | 5.41 | 3.61 | 5.39 | 4.06 | 18.53 | 19.84 | 6.33 | 25.00 | 28.64 |
| 95th-Percentile Queue Length [ft/ln] | 27.91 | 135.36 | 90.21 | 134.83 | 101.55 | 463.13 | 496.11 | 158.14 | 624.99 | 715.93 |

**Movement, Approach, & Intersection Results**

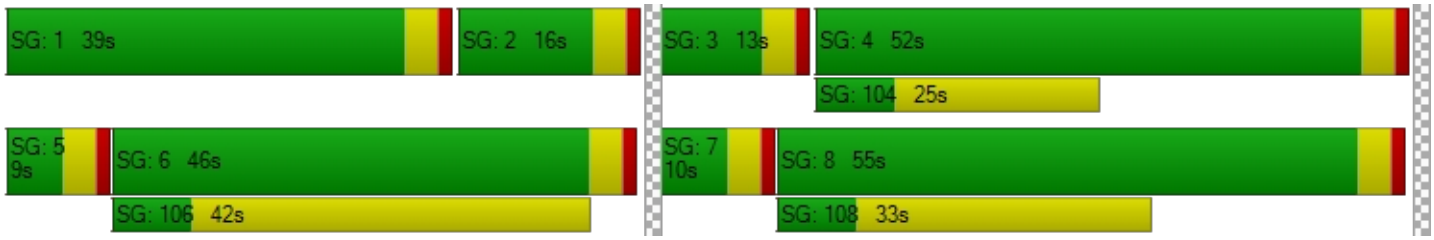
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 69.73 | 28.59 | 28.59 | 59.07 | 25.55 | 25.55 | 69.88 | 33.67 | 35.81 | 65.44 | 39.58 | 49.82 |
| Movement LOS | E | C | C | E | C | C | E | C | D | E | D | D |
| d_A, Approach Delay [s/veh] | 33.10 | | | 41.02 | | | 35.17 | | | 41.83 | | |
| Approach LOS | C | | | D | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 38.86 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.628 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 49.02 | 49.02 | 49.02 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.048 | 2.353 | 3.278 | 0.000 |
| Crosswalk LOS | B | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 202 | 706 | 807 | 857 |
| d_b, Bicycle Delay [s] | 48.11 | 24.92 | 21.19 | 19.44 |
| l_b,int, Bicycle LOS Score for Intersection | 1.815 | 2.032 | 2.468 | 2.736 |
| Bicycle LOS | A | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 14: I-15 SB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 33.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.979 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 310.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 460 | 0 | 1133 | 0 | 1331 | 179 | 327 | 757 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 99 | 0 | 2 | 0 | 99 | 1 | 25 | 29 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 587 | 0 | 1203 | 0 | 1510 | 191 | 372 | 831 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 154 | 0 | 317 | 0 | 397 | 50 | 98 | 219 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 618 | 0 | 1266 | 0 | 1589 | 201 | 392 | 875 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 77 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Split | Split | Overlap | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4 | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 38 | 38 | 0 | 26 | 0 | 13 | 39 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | No | | No | | No | No | |
| Maximum Recall | | | | | No | No | | No | | No | No | |
| Pedestrian Recall | | | | | No | No | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | C | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 77 | 77 | 77 | 77 | 77 | 77 | 77 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 34 | 34 | 34 | 22 | 22 | 9 | 35 |
| g / C, Green / Cycle | | 0.44 | 0.44 | 0.44 | 0.29 | 0.29 | 0.12 | 0.46 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.17 | 0.17 | 0.45 | 0.26 | 0.26 | 0.11 | 0.17 |
| s, saturation flow rate [veh/h] | | 1781 | 1781 | 2813 | 5094 | 1733 | 3459 | 5094 |
| c, Capacity [veh/h] | | 784 | 784 | 1238 | 1456 | 495 | 411 | 2324 |
| d1, Uniform Delay [s] | | 14.64 | 14.64 | 21.61 | 26.73 | 26.54 | 33.81 | 13.77 |
| k, delay calibration | | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.32 | 0.32 | 18.15 | 11.12 | 22.46 | 12.42 | 0.47 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | | 0.39 | 0.39 | 1.02 | 0.92 | 0.90 | 0.95 | 0.38 |
|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | | 14.97 | 14.97 | 39.76 | 37.85 | 49.01 | 46.23 | 14.24 |
| Lane Group LOS | | B | B | F | D | D | D | B |
| Critical Lane Group | | No | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 3.47 | 3.47 | 13.17 | 8.77 | 10.30 | 4.15 | 3.03 |
| 50th-Percentile Queue Length [ft/ln] | | 86.73 | 86.73 | 329.26 | 219.13 | 257.62 | 103.67 | 75.80 |
| 95th-Percentile Queue Length [veh/ln] | | 6.24 | 6.24 | 19.42 | 13.62 | 15.57 | 7.46 | 5.46 |
| 95th-Percentile Queue Length [ft/ln] | | 156.12 | 156.12 | 485.56 | 340.52 | 389.24 | 186.60 | 136.44 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 14.97 | 14.97 | 39.76 | 0.00 | 39.58 | 49.01 | 46.23 | 14.24 | 0.00 |
| Movement LOS | | | | B | B | F | | D | D | D | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 31.63 | | | 40.64 | | | 24.14 | | |
| Approach LOS | A | | | C | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 32.97 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.979 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 28.33 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 2.659 | 0.000 | 0.000 |
| Crosswalk LOS | F | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 882 | 571 | 908 |
| d_b, Bicycle Delay [s] | 38.55 | 12.05 | 19.69 | 11.49 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 4.668 | 2.298 | 2.256 |
| Bicycle LOS | D | E | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 15: I-15 NB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 15.3 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.799 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 262 | 0 | 471 | 0 | 0 | 0 | 0 | 929 | 860 | 0 | 822 | 323 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0000 | 1.0600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 99 | 0 | 0 | 0 | 0 | 194 | 4 | 0 | 54 | 25 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 278 | 0 | 598 | 0 | 0 | 0 | 0 | 1179 | 916 | 0 | 925 | 367 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 73 | 0 | 157 | 0 | 0 | 0 | 0 | 310 | 0 | 0 | 243 | 97 |
| Total Analysis Volume [veh/h] | 293 | 0 | 629 | 0 | 0 | 0 | 0 | 1241 | 0 | 0 | 974 | 386 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Split | Permiss | Split | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 18 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | | | | | No | | | No | |
| Maximum Recall | No | | | | | | | No | | | No | |
| Pedestrian Recall | No | | | | | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | | C | R | C | R |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 27 | 27 | | 25 | 25 | 25 | 25 |
| g / C, Green / Cycle | 0.44 | 0.44 | | 0.42 | 0.42 | 0.42 | 0.42 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.40 | | 0.24 | 0.00 | 0.19 | 0.24 |
| s, saturation flow rate [veh/h] | 3459 | 1589 | | 5094 | 2813 | 5094 | 1589 |
| c, Capacity [veh/h] | 1535 | 705 | | 2156 | 1191 | 2156 | 673 |
| d1, Uniform Delay [s] | 10.16 | 15.40 | | 13.22 | 0.00 | 12.36 | 13.21 |
| k, delay calibration | 0.11 | 0.18 | | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.06 | 6.75 | | 1.13 | 0.00 | 0.69 | 3.54 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.19 | 0.89 | | 0.58 | 0.00 | 0.45 | 0.57 |
| d, Delay for Lane Group [s/veh] | 10.22 | 22.14 | | 14.35 | 0.00 | 13.05 | 16.74 |
| Lane Group LOS | B | C | | B | A | B | B |
| Critical Lane Group | No | Yes | | Yes | No | No | No |
| 50th-Percentile Queue Length [veh/ln] | 1.04 | 7.99 | | 3.66 | 0.00 | 2.66 | 3.86 |
| 50th-Percentile Queue Length [ft/ln] | 25.95 | 199.75 | | 91.45 | 0.00 | 66.43 | 96.53 |
| 95th-Percentile Queue Length [veh/ln] | 1.87 | 12.63 | | 6.58 | 0.00 | 4.78 | 6.95 |
| 95th-Percentile Queue Length [ft/ln] | 46.72 | 315.64 | | 164.62 | 0.00 | 119.57 | 173.76 |

**Movement, Approach, & Intersection Results**

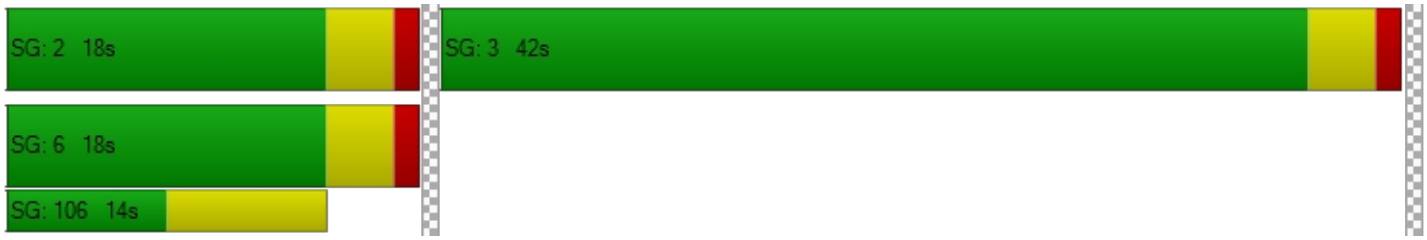
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 10.22 | 0.00 | 22.14 | 0.00 | 0.00 | 0.00 | 0.00 | 14.35 | 0.00 | 0.00 | 13.05 | 16.74 |
| Movement LOS | B | | C | | | | | B | A | | B | B |
| d_A, Approach Delay [s/veh] | 18.35 | | | 0.00 | | | 14.35 | | | 14.10 | | |
| Approach LOS | B | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 15.30 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.799 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 20.04 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 1.777 | 0.000 | 0.000 |
| Crosswalk LOS | F | A | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1265 | 0 | 466 | 466 |
| d_b, Bicycle Delay [s] | 4.05 | 30.03 | 17.66 | 17.66 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 4.132 | 2.242 | 2.308 |
| Bicycle LOS | A | D | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 16: Compton Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.750 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 197.00 | 100.00 | 83.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 323 | 0 | 0 | 134 | 0 | 1137 | 58 | 277 | 1508 | 572 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 16 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 342 | 0 | 0 | 134 | 0 | 1218 | 61 | 294 | 1614 | 572 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 90 | 0 | 0 | 35 | 0 | 321 | 16 | 77 | 425 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 360 | 0 | 0 | 141 | 0 | 1282 | 64 | 309 | 1699 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 61 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 7 | 0 | 5 | 0 | 0 |
| Maximum Green [s] | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 0 | 30 | 0 | 0 |
| Amber [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 0.0 |
| Split [s] | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 26 | 0 | 16 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | No | | | | | No | | | | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| Minimum Recall | | | No | | | | | No | | No | | |
| Maximum Recall | | | No | | | | | No | | No | | |
| Pedestrian Recall | | | No | | | | | No | | No | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | R | | C | C | L |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 61 | | 61 | 61 | 61 |
| L, Total Lost Time per Cycle [s] | 4.00 | | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 15 | | 22 | 22 | 12 |
| g / C, Green / Cycle | 0.25 | | 0.36 | 0.36 | 0.20 |
| (v / s)_i Volume / Saturation Flow Rate | 0.23 | | 0.25 | 0.25 | 0.17 |
| s, saturation flow rate [veh/h] | 1589 | | 3560 | 1824 | 1781 |
| c, Capacity [veh/h] | 392 | | 1281 | 656 | 353 |
| d1, Uniform Delay [s] | 22.50 | | 16.80 | 16.67 | 23.86 |
| k, delay calibration | 0.11 | | 0.50 | 0.50 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 9.00 | | 3.21 | 5.70 | 6.95 |
| d3, Initial Queue Delay [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.92 | | 0.70 | 0.68 | 0.88 |
| d, Delay for Lane Group [s/veh] | 31.50 | | 20.01 | 22.36 | 30.81 |
| Lane Group LOS | C | | C | C | C |
| Critical Lane Group | Yes | | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 5.60 | | 4.95 | 5.39 | 4.45 |
| 50th-Percentile Queue Length [ft/ln] | 139.94 | | 123.81 | 134.63 | 111.15 |
| 95th-Percentile Queue Length [veh/ln] | 9.48 | | 8.60 | 9.19 | 7.90 |
| 95th-Percentile Queue Length [ft/ln] | 236.94 | | 215.05 | 229.77 | 197.59 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 31.50 | 0.00 | 0.00 | 0.00 | 0.00 | 20.72 | 22.36 | 30.81 | 0.00 | 0.00 |
| Movement LOS | | | C | | | | | C | C | C | | |
| d_A, Approach Delay [s/veh] | 31.50 | | | 0.00 | | | 20.80 | | | 30.81 | | |
| Approach LOS | C | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 24.24 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.750 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.57 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.051 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | B | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 491 | 0 | 719 | 0 |
| d_b, Bicycle Delay [s] | 17.42 | 30.58 | 12.54 | 30.58 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 1.560 | 2.300 | 1.560 |
| Bicycle LOS | A | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Monte Olivo Phase 1

Vistro File: G:\...\PM E.vistro
Report File: G:\...\PM OYP.pdf

Scenario 4 Opening Year (2025) With Project
6/13/2023

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | Rimpau Ave (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | SB Left | 0.990 | 35.0 | D |
| 2 | Rimpau Ave (NS) at California Ave (EW) | Signalized | HCM 6th Edition | WB Right | 0.594 | 11.2 | B |
| 3 | Rimpau Ave (NS) at Olympic Dr (EW) | Signalized | HCM 6th Edition | WB Right | 0.489 | 17.1 | B |
| 4 | Rimpau Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | SB Left | 0.639 | 16.5 | C |
| 5 | California Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Thru | 0.633 | 14.5 | B |
| 6 | Compton Ave (NS) at Old Temescal Rd (EW) | All-way stop | HCM 6th Edition | NB Left | 0.265 | 8.6 | A |
| 7 | Laurel Canyon Way (NS) at Project Dwy (EW) | Two-way stop | HCM 6th Edition | WB Left | 0.023 | 9.0 | A |
| 8 | State St (NS) at Bel Air St/Project Dwy (EW) | Two-way stop | HCM 6th Edition | WB Left | 0.034 | 9.0 | A |
| 9 | State St (NS) at Ontario Ave (EW) | Two-way stop | HCM 6th Edition | NB Left | 0.058 | 60.7 | F |
| 10 | I-15 SB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | WB Left | 0.779 | 17.8 | B |
| 11 | I-15 NB Ramps (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | NB Left | 0.918 | 18.1 | B |
| 12 | California Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | EB Left | 0.663 | 24.8 | C |
| 13 | El Sobrante Rd (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | NB Left | 0.717 | 44.7 | D |
| 14 | I-15 SB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | WB Left | 1.041 | 53.8 | D |
| 15 | I-15 NB Ramps (NS) at Magnolia Ave (EW) | Signalized | HCM 6th Edition | NB Right | 0.914 | 13.2 | B |
| 16 | Compton Ave (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | WB Left | 0.665 | 23.9 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For

**Intersection Level Of Service Report**
**Intersection 1: Rimpau Ave (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 35.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.990 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 148.00 | 100.00 | 100.00 | 80.00 | 100.00 | 100.00 | 180.00 | 100.00 | 100.00 | 360.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 127 | 355 | 615 | 202 | 321 | 40 | 73 | 885 | 72 | 455 | 945 | 101 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 3 | 6 | 9 | 4 | 7 | 0 | 0 | 28 | 5 | 11 | 85 | 4 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 138 | 382 | 661 | 218 | 347 | 42 | 77 | 966 | 81 | 493 | 1087 | 111 |
| Peak Hour Factor | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 36 | 100 | 173 | 57 | 91 | 11 | 20 | 253 | 21 | 129 | 285 | 29 |
| Total Analysis Volume [veh/h] | 145 | 401 | 694 | 229 | 364 | 44 | 81 | 1014 | 85 | 517 | 1141 | 116 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 74 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 2 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | 2,7 | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 7 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 13 | 22 | 22 | 14 | 23 | 0 | 17 | 22 | 0 | 16 | 21 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | No | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | No | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 | 74 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 8 | 18 | 34 | 10 | 20 | 6 | 18 | 18 | 12 | 25 | 25 |
| g / C, Green / Cycle | 0.10 | 0.24 | 0.46 | 0.14 | 0.27 | 0.08 | 0.24 | 0.24 | 0.17 | 0.33 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.21 | 0.44 | 0.13 | 0.22 | 0.05 | 0.21 | 0.21 | 0.15 | 0.24 | 0.24 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1589 | 1781 | 1835 | 1781 | 3560 | 1797 | 3459 | 3560 | 1783 |
| c, Capacity [veh/h] | 182 | 446 | 733 | 241 | 499 | 137 | 859 | 434 | 584 | 1187 | 594 |
| d1, Uniform Delay [s] | 32.50 | 27.33 | 19.06 | 31.77 | 25.25 | 33.04 | 26.80 | 26.81 | 30.06 | 21.50 | 21.52 |
| k, delay calibration | 0.11 | 0.11 | 0.50 | 0.11 | 0.12 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 7.83 | 6.79 | 22.44 | 17.48 | 3.71 | 4.02 | 10.28 | 18.56 | 4.69 | 3.53 | 6.93 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | 0.80 | 0.90 | 0.95 | 0.95 | 0.82 | 0.59 | 0.85 | 0.85 | 0.88 | 0.71 | 0.71 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | 40.33 | 34.12 | 41.50 | 49.25 | 28.96 | 37.07 | 37.08 | 45.37 | 34.74 | 25.04 | 28.45 |
| Lane Group LOS | D | C | D | D | C | D | D | D | C | C | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.82 | 7.24 | 14.40 | 5.02 | 6.73 | 1.48 | 6.85 | 7.92 | 4.57 | 6.26 | 6.84 |
| 50th-Percentile Queue Length [ft/ln] | 70.47 | 181.09 | 360.05 | 125.61 | 168.37 | 37.01 | 171.20 | 197.99 | 114.14 | 156.40 | 171.08 |
| 95th-Percentile Queue Length [veh/ln] | 5.07 | 11.66 | 20.63 | 8.70 | 10.99 | 2.66 | 11.14 | 12.54 | 8.07 | 10.36 | 11.13 |
| 95th-Percentile Queue Length [ft/ln] | 126.84 | 291.44 | 515.64 | 217.51 | 274.78 | 66.62 | 278.50 | 313.38 | 201.75 | 258.95 | 278.33 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 40.33 | 34.12 | 41.50 | 49.25 | 28.96 | 28.96 | 37.07 | 39.40 | 45.37 | 34.74 | 25.95 | 28.45 |
| Movement LOS | D | C | D | D | C | C | D | D | D | C | C | C |
| d_A, Approach Delay [s/veh] | 38.98 | | | 36.25 | | | 39.67 | | | 28.67 | | |
| Approach LOS | D | | | D | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 35.00 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.990 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 26.82 | 26.82 | 26.82 | 26.82 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.791 | 2.398 | 3.049 | 3.318 |
| Crosswalk LOS | C | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 486 | 513 | 486 | 459 |
| d_b, Bicycle Delay [s] | 21.20 | 20.45 | 21.20 | 21.96 |
| l_b,int, Bicycle LOS Score for Intersection | 3.606 | 2.611 | 2.209 | 2.535 |
| Bicycle LOS | D | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 2: Rimpau Ave (NS) at California Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 11.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.594 |

**Intersection Setup**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 0 | 1 | 0 |
| Entry Pocket Length [ft] | 50.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 49.21 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | 35.00 | | 40.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Curb Present | No | | No | | No | |
| Crosswalk | No | | No | | Yes | |

**Volumes**

| Name | Rimpau Ave | | Rimpau Ave | | California Ave | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 636 | 6 | 0 | 793 | 13 | 366 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 9 | 0 | 12 | 11 | 0 | 9 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 683 | 6 | 12 | 852 | 14 | 397 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 180 | 2 | 3 | 224 | 4 | 104 |
| Total Analysis Volume [veh/h] | 719 | 6 | 13 | 897 | 15 | 418 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | 0 | | 0 | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | 0 | | 0 | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | 0 | | 0 | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Split | Split |
|---|---|---|---|---|---|---|
| Signal Group | 2 | 0 | 0 | 6 | 7 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 21 | 0 | 0 | 21 | 39 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 7 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | No | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | C | L | R |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 34 | 34 | 34 | 18 | 18 |
| g / C, Green / Cycle | 0.56 | 0.56 | 0.56 | 0.30 | 0.30 |
| (v / s)_i Volume / Saturation Flow Rate | 0.14 | 0.13 | 0.25 | 0.01 | 0.26 |
| s, saturation flow rate [veh/h] | 3560 | 1862 | 3560 | 1781 | 1589 |
| c, Capacity [veh/h] | 2008 | 1050 | 2008 | 540 | 482 |
| d1, Uniform Delay [s] | 6.61 | 6.57 | 7.64 | 14.73 | 19.82 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.28 | 0.51 | 0.72 | 0.02 | 4.91 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.24 | 0.23 | 0.45 | 0.03 | 0.87 |
| d, Delay for Lane Group [s/veh] | 6.90 | 7.08 | 8.36 | 14.75 | 24.73 |
| Lane Group LOS | A | A | A | B | C |
| Critical Lane Group | No | No | Yes | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 1.24 | 1.30 | 2.69 | 0.13 | 5.37 |
| 50th-Percentile Queue Length [ft/ln] | 31.02 | 32.57 | 67.30 | 3.22 | 134.15 |
| 95th-Percentile Queue Length [veh/ln] | 2.23 | 2.35 | 4.85 | 0.23 | 9.16 |
| 95th-Percentile Queue Length [ft/ln] | 55.84 | 58.63 | 121.14 | 5.79 | 229.12 |

**Movement, Approach, & Intersection Results**

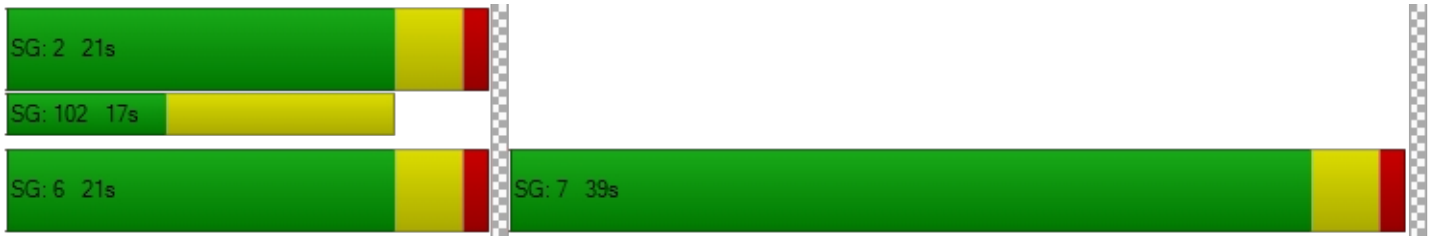
| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 6.96 | 7.08 | 0.00 | 8.36 | 14.75 | 24.73 |
| Movement LOS | A | A | | A | B | C |
| d_A, Approach Delay [s/veh] | 6.96 | | 8.36 | | 24.38 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 11.24 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.594 | | | | | |

**Other Modes**

| | | | |
|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 0.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 0.00 | 20.04 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 0.000 | 2.251 |
| Crosswalk LOS | F | F | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 566 | 566 | 1165 |
| d_b, Bicycle Delay [s] | 15.44 | 15.44 | 5.23 |
| l_b,int, Bicycle LOS Score for Intersection | 1.958 | 2.300 | 1.560 |
| Bicycle LOS | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 3: Rimpau Ave (NS) at Olympic Dr (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 17.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.489 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 140.00 | 100.00 | 100.00 | 140.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Olympic Dr | | | Olympic Dr | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 32 | 488 | 10 | 109 | 626 | 71 | 64 | 8 | 26 | 9 | 13 | 128 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 9 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 34 | 526 | 11 | 116 | 675 | 75 | 68 | 8 | 28 | 10 | 14 | 136 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 138 | 3 | 31 | 178 | 20 | 18 | 2 | 7 | 3 | 4 | 36 |
| Total Analysis Volume [veh/h] | 36 | 554 | 12 | 122 | 711 | 79 | 72 | 8 | 29 | 11 | 15 | 143 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 62 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | ProtPer | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 7 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 11 | 21 | 0 | 11 | 30 | 0 | 0 | 19 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | Yes | No | | | No | |
| Maximum Recall | No | No | | No | No | | No | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | C | R | C | R |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 | 62 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 3 | 26 | 26 | 6 | 28 | 28 | 18 | 18 | 7 | 7 |
| g / C, Green / Cycle | 0.05 | 0.41 | 0.41 | 0.10 | 0.46 | 0.46 | 0.29 | 0.29 | 0.12 | 0.12 |
| (v / s)_i Volume / Saturation Flow Rate | 0.02 | 0.15 | 0.15 | 0.07 | 0.21 | 0.21 | 0.06 | 0.02 | 0.02 | 0.09 |
| s, saturation flow rate [veh/h] | 1781 | 1870 | 1856 | 1781 | 1870 | 1805 | 1361 | 1589 | 1409 | 1589 |
| c, Capacity [veh/h] | 97 | 768 | 762 | 180 | 855 | 825 | 532 | 470 | 250 | 189 |
| d1, Uniform Delay [s] | 28.38 | 12.74 | 12.74 | 26.99 | 11.68 | 11.68 | 16.21 | 15.72 | 24.51 | 26.54 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.34 | 1.37 | 1.38 | 4.45 | 1.86 | 1.92 | 0.13 | 0.05 | 0.18 | 6.10 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | 0.37 | 0.37 | 0.37 | 0.68 | 0.47 | 0.47 | 0.15 | 0.06 | 0.10 | 0.76 |
|---|---|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | 30.72 | 14.11 | 14.12 | 31.44 | 13.54 | 13.60 | 16.34 | 15.77 | 24.69 | 32.64 |
| Lane Group LOS | C | B | B | C | B | B | B | B | C | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.55 | 2.65 | 2.63 | 1.85 | 3.63 | 3.52 | 0.82 | 0.29 | 0.34 | 2.26 |
| 50th-Percentile Queue Length [ft/ln] | 13.72 | 66.16 | 65.81 | 46.19 | 90.75 | 88.00 | 20.38 | 7.20 | 8.44 | 56.46 |
| 95th-Percentile Queue Length [veh/ln] | 0.99 | 4.76 | 4.74 | 3.33 | 6.53 | 6.34 | 1.47 | 0.52 | 0.61 | 4.06 |
| 95th-Percentile Queue Length [ft/ln] | 24.70 | 119.09 | 118.45 | 83.14 | 163.35 | 158.40 | 36.68 | 12.96 | 15.20 | 101.62 |

**Movement, Approach, & Intersection Results**

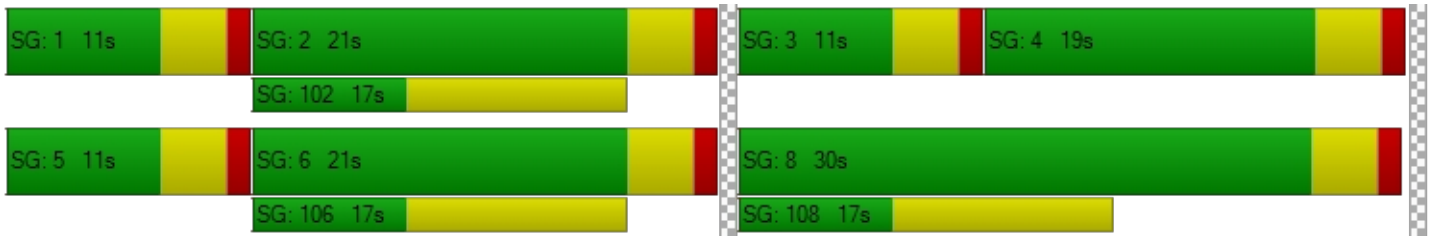
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 30.72 | 14.11 | 14.12 | 31.44 | 13.57 | 13.60 | 16.34 | 16.34 | 15.77 | 24.69 | 24.69 | 32.64 |
| Movement LOS | C | B | B | C | B | B | B | B | B | C | C | C |
| d_A, Approach Delay [s/veh] | 15.11 | | | 15.96 | | | 16.19 | | | 31.42 | | |
| Approach LOS | B | | | B | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 17.14 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.489 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 21.02 | 0.00 | 21.02 | 21.02 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.603 | 0.000 | 1.984 | 2.021 |
| Crosswalk LOS | B | F | A | B |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 548 | 548 | 837 | 483 |
| d_b, Bicycle Delay [s] | 16.38 | 16.38 | 10.49 | 17.86 |
| l_b,int, Bicycle LOS Score for Intersection | 2.056 | 2.312 | 1.739 | 1.838 |
| Bicycle LOS | B | B | A | A |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**

**Intersection 4: Rimpau Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 16.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.639 |

**Intersection Setup**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 35.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | Rimpau Ave | | | Rimpau Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 23 | 277 | 45 | 99 | 448 | 52 | 26 | 122 | 43 | 33 | 101 | 115 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 7 | 2 | 4 | 7 | 0 | 0 | 1 | 0 | 1 | 1 | 2 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 24 | 301 | 50 | 109 | 482 | 55 | 28 | 130 | 46 | 36 | 108 | 124 |
| Peak Hour Factor | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 6 | 77 | 13 | 28 | 123 | 14 | 7 | 33 | 12 | 9 | 28 | 32 |
| Total Analysis Volume [veh/h] | 25 | 308 | 51 | 112 | 493 | 56 | 29 | 133 | 47 | 37 | 111 | 127 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 497 | 515 | 517 | 539 | 459 | 511 | 463 | 518 |
| Degree of Utilization, x | 0.39 | 0.37 | 0.64 | 0.61 | 0.35 | 0.09 | 0.32 | 0.24 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 1.81 | 1.71 | 4.46 | 4.10 | 1.57 | 0.30 | 1.36 | 0.95 |
| 95th-Percentile Queue Length [ft] | 45.14 | 42.84 | 111.59 | 102.61 | 39.24 | 7.57 | 34.02 | 23.86 |
| Approach Delay [s/veh] | 14.13 | | 20.28 | | 13.79 | | 13.06 | |
| Approach LOS | B | | C | | B | | B | |
| Intersection Delay [s/veh] | 16.55 | | | | | | | |
| Intersection LOS | C | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 5: California Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 14.5 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.633 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | No | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 118 | 191 | 26 | 17 | 156 | 25 | 16 | 77 | 169 | 57 | 74 | 44 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 5 | 12 | 0 | 0 | 0 | 7 | 0 | 3 | 4 | 9 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 125 | 202 | 33 | 30 | 165 | 27 | 17 | 89 | 179 | 63 | 82 | 56 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 33 | 53 | 9 | 8 | 43 | 7 | 4 | 23 | 47 | 17 | 22 | 15 |
| Total Analysis Volume [veh/h] | 132 | 213 | 35 | 32 | 174 | 28 | 18 | 94 | 188 | 66 | 86 | 59 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 545 | 630 | 534 | 603 | 523 | 590 | 504 | 579 |
| Degree of Utilization, x | 0.63 | 0.06 | 0.39 | 0.05 | 0.21 | 0.32 | 0.30 | 0.10 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 4.40 | 0.18 | 1.81 | 0.15 | 0.81 | 1.37 | 1.26 | 0.34 |
| 95th-Percentile Queue Length [ft] | 110.06 | 4.40 | 45.18 | 3.64 | 20.14 | 34.16 | 31.49 | 8.47 |
| Approach Delay [s/veh] | 18.98 | | 13.07 | | 11.57 | | 11.98 | |
| Approach LOS | C | | B | | B | | B | |
| Intersection Delay [s/veh] | 14.46 | | | | | | | |
| Intersection LOS | B | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 6: Compton Ave (NS) at Old Temescal Rd (EW)**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 8.6 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.265 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 40.00 | | | 40.00 | | | 40.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Old Temescal Rd | | | Old Temescal Rd | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 100 | 85 | 12 | 1 | 25 | 19 | 13 | 21 | 65 | 5 | 21 | 1 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0000 | 1.0000 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 24 | 0 | 4 | 16 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 100 | 85 | 18 | 1 | 25 | 20 | 14 | 46 | 65 | 9 | 38 | 1 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 26 | 22 | 5 | 0 | 7 | 5 | 4 | 12 | 17 | 2 | 10 | 0 |
| Total Analysis Volume [veh/h] | 105 | 89 | 19 | 1 | 26 | 21 | 15 | 48 | 68 | 9 | 40 | 1 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

| | | | | | | |
|---|---|---|---|---|---|---|
| Capacity per Entry Lane [veh/h] | 804 | 824 | 674 | 798 | 668 | 785 |
| Degree of Utilization, x | 0.26 | 0.06 | 0.09 | 0.09 | 0.07 | 0.00 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 1.07 | 0.19 | 0.31 | 0.28 | 0.24 | 0.00 |
| 95th-Percentile Queue Length [ft] | 26.65 | 4.63 | 7.70 | 6.97 | 5.92 | 0.10 |
| Approach Delay [s/veh] | 9.08 | 7.64 | 8.09 | | 8.49 | |
| Approach LOS | A | A | A | | A | |
| Intersection Delay [s/veh] | 8.57 | | | | | |
| Intersection LOS | A | | | | | |

**Intersection Level Of Service Report**
**Intersection 7: Laurel Canyon Way (NS) at Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 9.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.023 |

**Intersection Setup**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | 30.00 | | 25.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**Volumes**

| Name | Laurel Canyon Way | | Laurel Canyon Way | | Project Dwy | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 34 | 0 | 0 | 27 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 30 | 0 | 0 | 20 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 36 | 30 | 0 | 29 | 20 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 8 | 0 | 8 | 5 | 0 |
| Total Analysis Volume [veh/h] | 38 | 32 | 0 | 31 | 21 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|---|---|---|---|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 |
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 7.35 | 0.00 | 9.02 | 8.65 |
| Movement LOS | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 | 0.07 |
| 95th-Percentile Queue Length [ft/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 1.76 | 1.76 |
| d_A, Approach Delay [s/veh] | 0.00 | | 0.00 | | 9.02 | |
| Approach LOS | A | | A | | A | |
| d_I, Intersection Delay [s/veh] | 1.55 | | | | | |
| Intersection LOS | A | | | | | |

**Intersection Level Of Service Report**

**Intersection 8: State St (NS) at Bel Air St/Project Dwy (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 9.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.034 |

**Intersection Setup**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 35.00 | | | 35.00 | | | 25.00 | | | 25.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | State St | | | State St | | | Bel Air St | | | Project Dwy | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 1 | 9 | 0 | 0 | 12 | 2 | 0 | 0 | 3 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 1 | 10 | 52 | 0 | 13 | 2 | 0 | 0 | 3 | 30 | 0 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 3 | 14 | 0 | 3 | 1 | 0 | 0 | 1 | 8 | 0 | 0 |
| Total Analysis Volume [veh/h] | 1 | 11 | 55 | 0 | 14 | 2 | 0 | 0 | 3 | 32 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.25 | 0.00 | 0.00 | 7.34 | 0.00 | 0.00 | 8.83 | 9.47 | 8.39 | 8.98 | 9.45 | 8.62 |
| Movement LOS | A | A | A | A | A | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.11 | 0.11 | 0.11 |
| 95th-Percentile Queue Length [ft/ln] | 0.05 | 0.05 | 0.05 | 0.00 | 0.00 | 0.00 | 0.21 | 0.21 | 0.21 | 2.65 | 2.65 | 2.65 |
| d_A, Approach Delay [s/veh] | 0.11 | | | 0.00 | | | 8.39 | | | 8.98 | | |
| Approach LOS | A | | | A | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 2.71 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 60.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.058 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 4 | 0 | 0 | 37 | 0 | 59 | 41 | 936 | 5 | 0 | 528 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 7 | 0 | 24 | 42 | 3 | 0 | 0 | 3 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 0 | 0 | 46 | 0 | 87 | 85 | 995 | 5 | 0 | 563 | 27 |
| Peak Hour Factor | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 12 | 0 | 22 | 22 | 257 | 1 | 0 | 146 | 7 |
| Total Analysis Volume [veh/h] | 4 | 0 | 0 | 48 | 0 | 90 | 88 | 1029 | 5 | 0 | 582 | 28 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | Yes | | |
| Number of Storage Spaces in Median | 0 | 2 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.06 | 0.00 | 0.00 | 0.16 | 0.00 | 0.13 | 0.09 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 60.75 | 59.65 | 15.38 | 19.49 | 24.89 | 10.85 | 9.11 | 0.00 | 0.00 | 10.39 | 0.00 | 0.00 |
| Movement LOS | F | F | C | C | C | B | A | A | A | B | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.18 | 0.18 | 0.18 | 0.57 | 0.57 | 0.44 | 0.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 4.55 | 4.55 | 4.55 | 14.25 | 14.25 | 10.90 | 7.51 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 60.75 | | | 13.85 | | | 0.71 | | | 0.00 | | |
| Approach LOS | F | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 1.58 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**

**Intersection 10: I-15 SB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 17.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.779 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 67.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.21 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 401 | 2 | 674 | 0 | 1094 | 428 | 23 | 840 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 29 | 0 | 2 | 0 | 15 | 4 | 16 | 17 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 454 | 2 | 716 | 0 | 1175 | 458 | 40 | 907 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9730 | 0.9730 | 0.9730 | 0.9500 | 0.9730 | 0.9730 | 0.9730 | 0.9730 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 117 | 1 | 184 | 0 | 302 | 118 | 10 | 233 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 467 | 2 | 736 | 0 | 1208 | 471 | 41 | 932 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 61 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 21 | 0 | 18 | 39 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | | | No | | No | No | |
| Maximum Recall | | | | | No | | | No | | No | No | |
| Pedestrian Recall | | | | | No | | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | C | R | C | R | L | C |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 61 | 61 | 61 | 61 | 61 | 61 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 18 | 18 | 28 | 28 | 4 | 35 |
| g / C, Green / Cycle | | 0.29 | 0.29 | 0.45 | 0.45 | 0.06 | 0.58 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.26 | 0.26 | 0.34 | 0.30 | 0.02 | 0.26 |
| s, saturation flow rate [veh/h] | | 1781 | 2813 | 3560 | 1589 | 1781 | 3560 |
| c, Capacity [veh/h] | | 520 | 821 | 1610 | 719 | 106 | 2055 |
| d1, Uniform Delay [s] | | 20.81 | 20.76 | 13.89 | 13.04 | 27.68 | 7.40 |
| k, delay calibration | | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 6.17 | 3.78 | 3.26 | 4.62 | 2.29 | 0.72 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | | 0.90 | 0.90 | 0.75 | 0.66 | 0.39 | 0.45 |
| d, Delay for Lane Group [s/veh] | | 26.98 | 24.54 | 17.15 | 17.66 | 29.96 | 8.13 |
| Lane Group LOS | | C | C | B | B | C | A |
| Critical Lane Group | | Yes | No | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 6.71 | 4.98 | 5.95 | 4.74 | 0.59 | 2.48 |
| 50th-Percentile Queue Length [ft/ln] | | 167.71 | 124.62 | 148.69 | 118.58 | 14.70 | 62.02 |
| 95th-Percentile Queue Length [veh/ln] | | 10.96 | 8.65 | 9.95 | 8.31 | 1.06 | 4.47 |
| 95th-Percentile Queue Length [ft/ln] | | 273.90 | 216.16 | 248.67 | 207.87 | 26.46 | 111.63 |

**Movement, Approach, & Intersection Results**

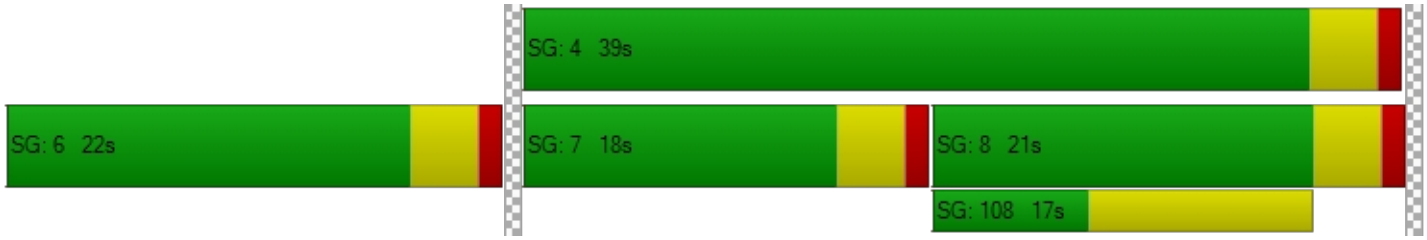
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 26.98 | 26.98 | 24.54 | 0.00 | 17.15 | 17.66 | 29.96 | 8.13 | 0.00 |
| Movement LOS | | | | C | C | C | | B | B | C | A | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 25.49 | | | 17.29 | | | 9.05 | | |
| Approach LOS | A | | | C | | | B | | | A | | |
| d_I, Intersection Delay [s/veh] | 17.77 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.779 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.53 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 1.903 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | A | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 589 | 557 | 1146 |
| d_b, Bicycle Delay [s] | 30.54 | 15.19 | 15.91 | 5.57 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 3.548 | 2.945 | 2.362 |
| Bicycle LOS | D | D | C | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**

**Intersection 11: I-15 NB Ramps (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 18.1 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.918 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 354 | 2 | 35 | 0 | 0 | 0 | 549 | 1032 | 0 | 0 | 421 | 278 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0000 | 1.0000 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 6 | 0 | 22 | 0 | 0 | 0 | 1 | 43 | 0 | 0 | 27 | 20 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 381 | 2 | 59 | 0 | 0 | 0 | 583 | 1137 | 0 | 0 | 473 | 315 |
| Peak Hour Factor | 0.9740 | 0.9740 | 0.9740 | 0.9500 | 0.9500 | 0.9500 | 0.9740 | 0.9740 | 0.9500 | 0.9500 | 0.9740 | 0.9740 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 98 | 1 | 15 | 0 | 0 | 0 | 150 | 292 | 0 | 0 | 121 | 81 |
| Total Analysis Volume [veh/h] | 391 | 2 | 61 | 0 | 0 | 0 | 599 | 1167 | 0 | 0 | 486 | 323 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 28 | 0 | 0 | 0 | 0 | 11 | 32 | 0 | 0 | 21 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | | | No | No | | | No | |
| Maximum Recall | | No | | | | | No | No | | | No | |
| Pedestrian Recall | | No | | | | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | | L | C | C | R |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 9 | 9 | 9 | | 13 | 43 | 26 | 26 |
| g / C, Green / Cycle | 0.16 | 0.16 | 0.16 | | 0.22 | 0.71 | 0.42 | 0.42 |
| (v / s)_i Volume / Saturation Flow Rate | 0.11 | 0.11 | 0.04 | | 0.17 | 0.62 | 0.14 | 0.20 |
| s, saturation flow rate [veh/h] | 1781 | 1782 | 1589 | | 3459 | 1870 | 3560 | 1589 |
| c, Capacity [veh/h] | 278 | 278 | 248 | | 763 | 1329 | 1508 | 673 |
| d1, Uniform Delay [s] | 24.07 | 24.07 | 22.27 | | 22.09 | 6.69 | 11.57 | 12.54 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.28 | 3.28 | 0.51 | | 1.82 | 8.44 | 0.57 | 2.44 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.71 | 0.71 | 0.25 | | 0.78 | 0.88 | 0.32 | 0.48 |
| d, Delay for Lane Group [s/veh] | 27.35 | 27.35 | 22.78 | | 23.92 | 15.13 | 12.14 | 14.98 |
| Lane Group LOS | C | C | C | | C | B | B | B |
| Critical Lane Group | Yes | No | No | | No | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.73 | 2.73 | 0.75 | | 3.62 | 7.00 | 1.82 | 2.90 |
| 50th-Percentile Queue Length [ft/ln] | 68.23 | 68.26 | 18.66 | | 90.39 | 174.97 | 45.45 | 72.60 |
| 95th-Percentile Queue Length [veh/ln] | 4.91 | 4.91 | 1.34 | | 6.51 | 11.34 | 3.27 | 5.23 |
| 95th-Percentile Queue Length [ft/ln] | 122.81 | 122.87 | 33.59 | | 162.70 | 283.43 | 81.80 | 130.68 |

**Movement, Approach, & Intersection Results**

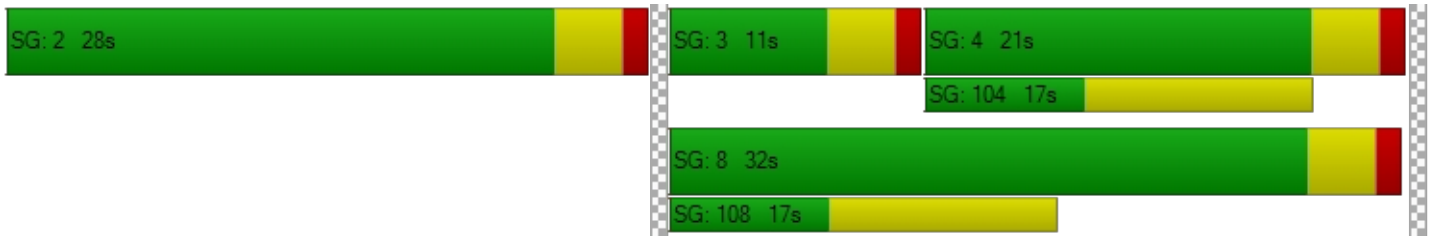
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 27.35 | 27.35 | 22.78 | 0.00 | 0.00 | 0.00 | 23.92 | 15.13 | 0.00 | 0.00 | 12.14 | 14.98 |
| Movement LOS | C | C | C | | | | C | B | | | B | B |
| d_A, Approach Delay [s/veh] | 26.74 | | | 0.00 | | | 18.11 | | | 13.27 | | |
| Approach LOS | C | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 18.11 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.918 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 20.05 | 20.05 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.065 | 2.143 | 0.000 | 0.000 |
| Crosswalk LOS | B | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 799 | 0 | 932 | 566 |
| d_b, Bicycle Delay [s] | 10.83 | 30.04 | 8.57 | 15.45 |
| l_b,int, Bicycle LOS Score for Intersection | 2.309 | 4.132 | 4.474 | 2.227 |
| Bicycle LOS | B | D | E | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 12: California Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.663 |

**Intersection Setup**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 2 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 195.00 | 100.00 | 100.00 | 212.00 | 100.00 | 150.00 | 268.00 | 100.00 | 115.00 | 217.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 45.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**Volumes**

| Name | California Ave | | | California Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 201 | 205 | 139 | 360 | 209 | 118 | 249 | 799 | 163 | 315 | 568 | 119 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 10 | 2 | 4 | 3 | 1 | 0 | 0 | 12 | 10 | 2 | 13 | 4 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 223 | 219 | 151 | 385 | 223 | 125 | 264 | 859 | 183 | 336 | 615 | 130 |
| Peak Hour Factor | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 56 | 55 | 38 | 97 | 56 | 32 | 67 | 217 | 46 | 85 | 155 | 33 |
| Total Analysis Volume [veh/h] | 225 | 221 | 153 | 389 | 225 | 126 | 267 | 868 | 185 | 339 | 621 | 131 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 66 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 | 7 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 11 | 21 | 0 | 13 | 23 | 0 | 11 | 21 | 0 | 11 | 21 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 7 | 10 | 10 | 9 | 12 | 12 | 12 | 22 | 22 | 9 | 19 | 19 |
| g / C, Green / Cycle | 0.10 | 0.15 | 0.15 | 0.14 | 0.18 | 0.18 | 0.18 | 0.34 | 0.34 | 0.13 | 0.29 | 0.29 |
| (v / s)_i Volume / Saturation Flow Rate | 0.07 | 0.12 | 0.10 | 0.11 | 0.12 | 0.08 | 0.15 | 0.17 | 0.12 | 0.10 | 0.12 | 0.08 |
| s, saturation flow rate [veh/h] | 3459 | 1870 | 1589 | 3459 | 1870 | 1589 | 1781 | 5094 | 1589 | 3459 | 5094 | 1589 |
| c, Capacity [veh/h] | 363 | 287 | 244 | 473 | 346 | 294 | 313 | 1712 | 534 | 457 | 1489 | 465 |
| d1, Uniform Delay [s] | 28.34 | 26.89 | 26.24 | 27.77 | 24.97 | 23.86 | 26.42 | 17.57 | 16.50 | 27.61 | 18.86 | 18.05 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.73 | 4.39 | 2.66 | 3.65 | 2.06 | 0.99 | 6.54 | 1.08 | 1.78 | 2.40 | 0.86 | 1.51 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.62 | 0.77 | 0.63 | 0.82 | 0.65 | 0.43 | 0.85 | 0.51 | 0.35 | 0.74 | 0.42 | 0.28 |
| d, Delay for Lane Group [s/veh] | 30.07 | 31.28 | 28.89 | 31.42 | 27.03 | 24.84 | 32.96 | 18.65 | 18.27 | 30.01 | 19.72 | 19.56 |
| Lane Group LOS | C | C | C | C | C | C | C | B | B | C | B | B |
| Critical Lane Group | No | Yes | No | Yes | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 1.64 | 3.35 | 2.21 | 2.98 | 3.17 | 1.67 | 4.20 | 3.17 | 2.07 | 2.48 | 2.34 | 1.54 |
| 50th-Percentile Queue Length [ft/ln] | 40.89 | 83.81 | 55.21 | 74.53 | 79.29 | 41.79 | 104.92 | 79.37 | 51.67 | 61.88 | 58.52 | 38.53 |
| 95th-Percentile Queue Length [veh/ln] | 2.94 | 6.03 | 3.97 | 5.37 | 5.71 | 3.01 | 7.55 | 5.71 | 3.72 | 4.46 | 4.21 | 2.77 |
| 95th-Percentile Queue Length [ft/ln] | 73.60 | 150.87 | 99.37 | 134.15 | 142.72 | 75.22 | 188.86 | 142.87 | 93.01 | 111.39 | 105.34 | 69.35 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 30.07 | 31.28 | 28.89 | 31.42 | 27.03 | 24.84 | 32.96 | 18.65 | 18.27 | 30.01 | 19.72 | 19.56 |
| Movement LOS | C | C | C | C | C | C | C | B | B | C | B | B |
| d_A, Approach Delay [s/veh] | 30.22 | | | 28.97 | | | 21.49 | | | 22.90 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 24.77 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.663 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 11.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 22.95 | 22.95 | 22.95 | 22.95 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.807 | 2.730 | 3.127 | 3.239 |
| Crosswalk LOS | C | B | C | C |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 515 | 575 | 515 | 515 |
| d_b, Bicycle Delay [s] | 18.22 | 16.77 | 18.22 | 18.22 |
| l_b,int, Bicycle LOS Score for Intersection | 2.548 | 2.781 | 2.286 | 2.160 |
| Bicycle LOS | B | C | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**

**Intersection 13: El Sobrante Rd (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 44.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.717 |

**Intersection Setup**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Entry Pocket Length [ft] | 65.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 | 78.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 45.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**Volumes**

| Name | El Sobrante Rd | | | El Sobrante Rd | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 70 | 28 | 192 | 159 | 44 | 125 | 84 | 1542 | 75 | 118 | 1395 | 186 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 | 0 | 0 | 100 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 74 | 30 | 204 | 169 | 47 | 133 | 89 | 1676 | 80 | 125 | 1579 | 197 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 19 | 8 | 54 | 44 | 12 | 35 | 23 | 441 | 21 | 33 | 416 | 52 |
| Total Analysis Volume [veh/h] | 78 | 32 | 215 | 178 | 49 | 140 | 94 | 1764 | 84 | 132 | 1662 | 207 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 16.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 5 | 2 | 0 | 1 | 6 | 0 | 7 | 4 | 0 | 3 | 8 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 10 | 24 | 0 | 32 | 46 | 0 | 12 | 50 | 0 | 14 | 52 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 35 | 0 | 0 | 18 | 0 | 0 | 26 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 41 | 8 | 44 | 8 | 44 | 44 | 10 | 46 | 46 |
| g / C, Green / Cycle | 0.05 | 0.34 | 0.07 | 0.36 | 0.07 | 0.37 | 0.37 | 0.08 | 0.39 | 0.39 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.15 | 0.05 | 0.11 | 0.05 | 0.34 | 0.34 | 0.07 | 0.35 | 0.35 |
| s, saturation flow rate [veh/h] | 1781 | 1621 | 3459 | 1654 | 1781 | 3560 | 1827 | 1781 | 3560 | 1766 |
| c, Capacity [veh/h] | 90 | 559 | 245 | 604 | 118 | 1309 | 672 | 149 | 1372 | 680 |
| d1, Uniform Delay [s] | 56.60 | 30.41 | 54.64 | 27.32 | 55.27 | 36.51 | 36.56 | 54.43 | 34.89 | 35.04 |
| k, delay calibration | 0.11 | 0.50 | 0.11 | 0.50 | 0.11 | 0.11 | 0.39 | 0.11 | 0.11 | 0.38 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 21.20 | 2.53 | 4.11 | 1.35 | 11.65 | 3.65 | 18.41 | 15.59 | 2.64 | 15.46 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | 0.87 | 0.44 | 0.73 | 0.31 | 0.80 | 0.93 | 0.93 | 0.89 | 0.91 | 0.92 |
|---|---|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | 77.80 | 32.93 | 58.75 | 28.67 | 66.91 | 40.16 | 54.97 | 70.02 | 37.54 | 50.50 |
| Lane Group LOS | E | C | E | C | E | D | D | E | D | D |
| Critical Lane Group | No | Yes | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 2.89 | 5.99 | 2.71 | 3.99 | 3.14 | 17.11 | 20.38 | 4.53 | 16.92 | 19.40 |
| 50th-Percentile Queue Length [ft/ln] | 72.36 | 149.73 | 67.81 | 99.67 | 78.49 | 427.73 | 509.41 | 113.13 | 423.03 | 485.12 |
| 95th-Percentile Queue Length [veh/ln] | 5.21 | 10.00 | 4.88 | 7.18 | 5.65 | 23.89 | 27.78 | 8.01 | 23.67 | 26.63 |
| 95th-Percentile Queue Length [ft/ln] | 130.25 | 250.07 | 122.06 | 179.41 | 141.29 | 597.32 | 694.48 | 200.34 | 591.69 | 665.73 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 77.80 | 32.93 | 32.93 | 58.75 | 28.67 | 28.67 | 66.91 | 44.73 | 54.97 | 70.02 | 40.78 | 50.50 |
| Movement LOS | E | C | C | E | C | C | E | D | D | E | D | D |
| d_A, Approach Delay [s/veh] | 43.70 | | | 43.26 | | | 46.25 | | | 43.72 | | |
| Approach LOS | D | | | D | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 44.74 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.717 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 11.0 | 11.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 49.51 | 49.51 | 49.51 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.114 | 2.401 | 3.317 | 0.000 |
| Crosswalk LOS | B | B | C | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 333 | 700 | 767 | 800 |
| d_b, Bicycle Delay [s] | 41.67 | 25.36 | 22.82 | 21.61 |
| l_b,int, Bicycle LOS Score for Intersection | 2.096 | 2.165 | 2.628 | 2.660 |
| Bicycle LOS | B | B | B | B |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 14: I-15 SB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 53.8 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.041 |

**Intersection Setup**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 310.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 SB Ramps | | | I-15 SB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 378 | 0 | 1227 | 0 | 1624 | 180 | 333 | 634 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 28 | 0 | 5 | 0 | 41 | 0 | 90 | 95 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 429 | 0 | 1306 | 0 | 1762 | 191 | 443 | 767 | 0 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 113 | 0 | 344 | 0 | 464 | 50 | 117 | 202 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 452 | 0 | 1375 | 0 | 1855 | 201 | 466 | 807 | 0 |
| Presence of On-Street Parking | | | | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 109 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Split | Split | Overlap | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | 4 | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 5 | 7 | 0 |
| Maximum Green [s] | 0 | 0 | 0 | 0 | 30 | 30 | 0 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 1.0 | 0.0 | 1.0 | 1.0 | 0.0 |
| Split [s] | 0 | 0 | 0 | 0 | 53 | 53 | 0 | 38 | 0 | 18 | 56 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 27 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Minimum Recall | | | | | No | No | | No | | No | No | |
| Maximum Recall | | | | | No | No | | No | | No | No | |
| Pedestrian Recall | | | | | No | No | | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | | L | C | R | C | C | L | C |
|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | | 109 | 109 | 109 | 109 | 109 | 109 | 109 |
| L, Total Lost Time per Cycle [s] | | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | | 49 | 49 | 49 | 34 | 34 | 14 | 52 |
| g / C, Green / Cycle | | 0.45 | 0.45 | 0.45 | 0.31 | 0.31 | 0.13 | 0.48 |
| (v / s)_i Volume / Saturation Flow Rate | | 0.13 | 0.13 | 0.49 | 0.30 | 0.29 | 0.13 | 0.16 |
| s, saturation flow rate [veh/h] | | 1781 | 1781 | 2813 | 5094 | 1749 | 3459 | 5094 |
| c, Capacity [veh/h] | | 799 | 799 | 1262 | 1591 | 546 | 446 | 2435 |
| d1, Uniform Delay [s] | | 18.98 | 18.98 | 30.05 | 36.95 | 36.49 | 47.46 | 17.64 |
| k, delay calibration | | 0.11 | 0.11 | 0.13 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | | 0.19 | 0.19 | 44.30 | 16.36 | 26.34 | 32.46 | 0.37 |
| d3, Initial Queue Delay [s] | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| X, volume / capacity | | 0.28 | 0.28 | 1.09 | 0.97 | 0.94 | 1.04 | 0.33 |
|---|---|---|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | | 19.17 | 19.17 | 74.35 | 53.31 | 62.83 | 79.92 | 18.00 |
| Lane Group LOS | | B | B | F | D | E | F | B |
| Critical Lane Group | | No | No | Yes | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | | 3.61 | 3.61 | 23.55 | 15.30 | 16.73 | 7.92 | 4.07 |
| 50th-Percentile Queue Length [ft/ln] | | 90.34 | 90.34 | 588.70 | 382.50 | 418.15 | 197.88 | 101.78 |
| 95th-Percentile Queue Length [veh/ln] | | 6.50 | 6.50 | 33.51 | 21.71 | 23.43 | 12.76 | 7.33 |
| 95th-Percentile Queue Length [ft/ln] | | 162.61 | 162.61 | 837.79 | 542.87 | 585.83 | 318.97 | 183.20 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 19.17 | 19.17 | 74.35 | 0.00 | 54.92 | 62.83 | 79.92 | 18.00 | 0.00 |
| Movement LOS | | | | B | B | F | | D | E | F | B | |
| d_A, Approach Delay [s/veh] | 0.00 | | | 60.70 | | | 55.69 | | | 40.67 | | |
| Approach LOS | A | | | E | | | E | | | D | | |
| d_I, Intersection Delay [s/veh] | 53.76 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 1.041 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 44.05 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 2.665 | 0.000 | 0.000 |
| Crosswalk LOS | F | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 0 | 899 | 624 | 954 |
| d_b, Bicycle Delay [s] | 54.49 | 16.51 | 25.80 | 14.90 |
| l_b,int, Bicycle LOS Score for Intersection | 4.132 | 4.574 | 2.408 | 2.260 |
| Bicycle LOS | D | E | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 15: I-15 NB Ramps (NS) at Magnolia Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 13.2 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.914 |

**Intersection Setup**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | | | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 40.00 | | | 40.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | I-15 NB Ramps | | | I-15 NB Ramps | | | Magnolia Ave | | | Magnolia Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 148 | 0 | 376 | 0 | 0 | 0 | 0 | 985 | 1044 | 0 | 829 | 555 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0000 | 1.0600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0000 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 1 | 0 | 28 | 0 | 0 | 0 | 0 | 66 | 3 | 0 | 184 | 90 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 158 | 0 | 427 | 0 | 0 | 0 | 0 | 1110 | 1110 | 0 | 1063 | 678 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 42 | 0 | 112 | 0 | 0 | 0 | 0 | 292 | 0 | 0 | 280 | 178 |
| Total Analysis Volume [veh/h] | 166 | 0 | 449 | 0 | 0 | 0 | 0 | 1168 | 0 | 0 | 1119 | 714 |
| Presence of On-Street Parking | No | | No | | | | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 12.00 |

**Phasing & Timing**

| Control Type | Split | Permiss | Split | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 42 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 18 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 7 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | No | | | | | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | No | | | | | | | No | | | No | |
| Maximum Recall | No | | | | | | | No | | | No | |
| Pedestrian Recall | No | | | | | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | | C | R | C | R |
|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 20 | 20 | | 32 | 32 | 32 | 32 |
| g / C, Green / Cycle | 0.33 | 0.33 | | 0.54 | 0.54 | 0.54 | 0.54 |
| (v / s)_i Volume / Saturation Flow Rate | 0.05 | 0.28 | | 0.23 | 0.00 | 0.22 | 0.45 |
| s, saturation flow rate [veh/h] | 3459 | 1589 | | 5094 | 2813 | 5094 | 1589 |
| c, Capacity [veh/h] | 1137 | 523 | | 2741 | 1514 | 2741 | 855 |
| d1, Uniform Delay [s] | 14.22 | 18.87 | | 8.32 | 0.00 | 8.22 | 11.65 |
| k, delay calibration | 0.11 | 0.11 | | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.06 | 4.25 | | 0.49 | 0.00 | 0.45 | 9.44 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.15 | 0.86 | | 0.43 | 0.00 | 0.41 | 0.83 |
| d, Delay for Lane Group [s/veh] | 14.28 | 23.12 | | 8.81 | 0.00 | 8.67 | 21.08 |
| Lane Group LOS | B | C | | A | A | A | C |
| Critical Lane Group | No | Yes | | No | No | No | Yes |
| 50th-Percentile Queue Length [veh/ln] | 0.73 | 5.83 | | 2.33 | 0.00 | 2.20 | 7.90 |
| 50th-Percentile Queue Length [ft/ln] | 18.37 | 145.63 | | 58.16 | 0.00 | 54.98 | 197.38 |
| 95th-Percentile Queue Length [veh/ln] | 1.32 | 9.78 | | 4.19 | 0.00 | 3.96 | 12.50 |
| 95th-Percentile Queue Length [ft/ln] | 33.07 | 244.59 | | 104.69 | 0.00 | 98.97 | 312.58 |

**Movement, Approach, & Intersection Results**

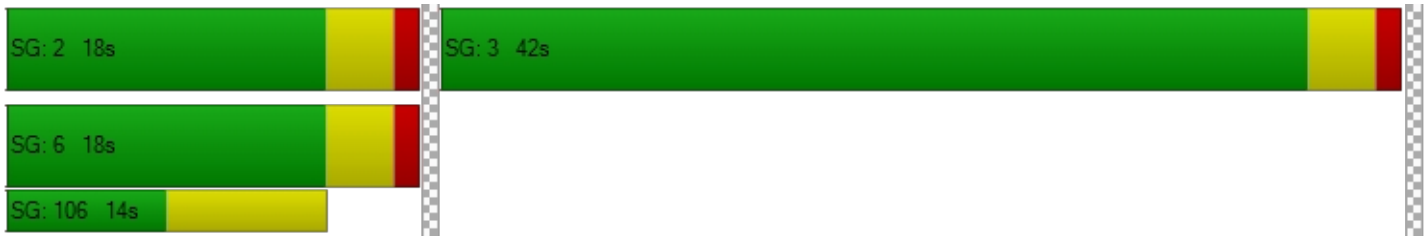
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 14.28 | 0.00 | 23.12 | 0.00 | 0.00 | 0.00 | 0.00 | 8.81 | 0.00 | 0.00 | 8.67 | 21.08 |
| Movement LOS | B | | C | | | | | A | A | | A | C |
| d_A, Approach Delay [s/veh] | 20.73 | | | 0.00 | | | 8.81 | | | 13.51 | | |
| Approach LOS | C | | | A | | | A | | | B | | |
| d_I, Intersection Delay [s/veh] | 13.22 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.914 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 20.04 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 2.097 | 0.000 | 0.000 |
| Crosswalk LOS | F | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1265 | 0 | 466 | 466 |
| d_b, Bicycle Delay [s] | 4.05 | 30.03 | 17.66 | 17.66 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 4.132 | 2.202 | 2.568 |
| Bicycle LOS | A | D | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 16: Compton Ave (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 23.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.665 |

**Intersection Setup**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 197.00 | 100.00 | 83.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 30.00 | | | 40.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | Yes | | | No | | | No | | | No | | |

**Volumes**

| Name | Compton Ave | | | Compton Ave | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 259 | 0 | 0 | 216 | 0 | 1292 | 75 | 275 | 883 | 258 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0000 | 1.0600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0000 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 19 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 275 | 0 | 0 | 216 | 0 | 1388 | 80 | 292 | 955 | 258 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 72 | 0 | 0 | 57 | 0 | 365 | 21 | 77 | 251 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 289 | 0 | 0 | 227 | 0 | 1461 | 84 | 307 | 1005 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 83 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 |
| Maximum Green [s] | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 30 | 0 | 30 | 0 | 0 |
| Amber [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 1.0 | 0.0 | 0.0 |
| Split [s] | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 48 | 0 | 87 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | | No | | | | | No | | | | |
| I1, Start-Up Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| Minimum Recall | | | No | | | | | No | | No | | |
| Maximum Recall | | | No | | | | | No | | No | | |
| Pedestrian Recall | | | No | | | | | No | | No | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | R | | C | C | L |
|---|---|---|---|---|---|
| C, Cycle Length [s] | 27 | | 27 | 27 | 27 |
| L, Total Lost Time per Cycle [s] | 4.00 | | 4.00 | 4.00 | 0.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | | 2.00 | 2.00 | 0.00 |
| g_i, Effective Green Time [s] | 7 | | 13 | 13 | 0 |
| g / C, Green / Cycle | 0.24 | | 0.47 | 0.47 | 0.00 |
| (v / s)_i Volume / Saturation Flow Rate | 0.18 | | 0.29 | 0.28 | 0.92 |
| s, saturation flow rate [veh/h] | 1589 | | 3560 | 1818 | 335 |
| c, Capacity [veh/h] | 387 | | 1658 | 846 | 262 |
| d1, Uniform Delay [s] | 9.62 | | 5.53 | 5.48 | 13.77 |
| k, delay calibration | 0.11 | | 0.11 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.87 | | 0.38 | 0.71 | 111.02 |
| d3, Initial Queue Delay [s] | 0.00 | | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.75 | | 0.62 | 0.61 | 1.17 |
| d, Delay for Lane Group [s/veh] | 12.50 | | 5.91 | 6.20 | 124.79 |
| Lane Group LOS | B | | A | A | F |
| Critical Lane Group | Yes | | Yes | No | No |
| 50th-Percentile Queue Length [veh/ln] | 1.33 | | 0.45 | 0.53 | 10.06 |
| 50th-Percentile Queue Length [ft/ln] | 33.17 | | 11.35 | 13.24 | 251.39 |
| 95th-Percentile Queue Length [veh/ln] | 2.39 | | 0.82 | 0.95 | 15.26 |
| 95th-Percentile Queue Length [ft/ln] | 59.70 | | 20.43 | 23.84 | 381.40 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 12.50 | 0.00 | 0.00 | 0.00 | 0.00 | 6.00 | 6.20 | 124.79 | 0.00 | 0.00 |
| Movement LOS | | | B | | | | | A | A | F | | |
| d_A, Approach Delay [s/veh] | 12.50 | | | 0.00 | | | 6.01 | | | 124.79 | | |
| Approach LOS | B | | | A | | | A | | | F | | |
| d_I, Intersection Delay [s/veh] | 23.92 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.665 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 11.0 | 0.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 4.91 | 0.00 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 2.404 | 0.000 | 0.000 | 0.000 |
| Crosswalk LOS | B | F | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 2262 | 0 | 3211 | 0 |
| d_b, Bicycle Delay [s] | 0.24 | 13.70 | 5.03 | 13.70 |
| l_b,int, Bicycle LOS Score for Intersection | 1.560 | 1.560 | 2.409 | 1.560 |
| Bicycle LOS | A | A | B | A |

## Sequence

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Monte Olivo Phase 1

Vistro File: G:\...\AM MIT.vistro
Report File: G:\...\AM OYP MIT.pdf

Scenario 4 Opening Year (2025) With Project
1/10/2023

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 9 | State St (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | SB Right | 0.748 | 8.9 | A |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 8.9 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.748 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 5 | 0 | 1 | 19 | 0 | 75 | 47 | 388 | 2 | 1 | 960 | 12 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 12 | 0 | 41 | 15 | 2 | 0 | 0 | 2 | 4 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 0 | 1 | 32 | 0 | 121 | 65 | 413 | 2 | 1 | 1020 | 17 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 8 | 0 | 32 | 17 | 109 | 1 | 0 | 268 | 4 |
| Total Analysis Volume [veh/h] | 5 | 0 | 1 | 34 | 0 | 127 | 68 | 435 | 2 | 1 | 1074 | 18 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 64 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 8 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 47 | 0 | 0 | 47 | 0 | 0 | 17 | 0 | 0 | 17 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 6 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | R | L | C | C | L | C | R |
|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 7 | 7 | 7 | 49 | 49 | 49 | 49 | 49 | 49 |
| g / C, Green / Cycle | 0.11 | 0.11 | 0.11 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 | 0.77 |
| (v / s)_i Volume / Saturation Flow Rate | 0.01 | 0.02 | 0.08 | 0.13 | 0.12 | 0.12 | 0.00 | 0.57 | 0.01 |
| s, saturation flow rate [veh/h] | 921 | 1588 | 1589 | 516 | 1870 | 1867 | 952 | 1870 | 1589 |
| c, Capacity [veh/h] | 205 | 287 | 175 | 315 | 1430 | 1428 | 769 | 1430 | 1216 |
| d1, Uniform Delay [s] | 25.47 | 25.84 | 27.55 | 13.65 | 2.00 | 2.00 | 3.08 | 4.16 | 1.79 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.06 | 0.18 | 5.61 | 1.57 | 0.23 | 0.23 | 0.00 | 3.67 | 0.02 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.03 | 0.12 | 0.73 | 0.22 | 0.15 | 0.15 | 0.00 | 0.75 | 0.01 |
| d, Delay for Lane Group [s/veh] | 25.53 | 26.03 | 33.17 | 15.22 | 2.23 | 2.23 | 3.08 | 7.83 | 1.81 |
| Lane Group LOS | C | C | C | B | A | A | A | A | A |
| Critical Lane Group | No | No | Yes | No | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.08 | 0.46 | 2.03 | 0.70 | 0.24 | 0.24 | 0.00 | 2.96 | 0.02 |
| 50th-Percentile Queue Length [ft/ln] | 2.07 | 11.39 | 50.76 | 17.60 | 5.95 | 5.94 | 0.06 | 74.11 | 0.46 |
| 95th-Percentile Queue Length [veh/ln] | 0.15 | 0.82 | 3.65 | 1.27 | 0.43 | 0.43 | 0.00 | 5.34 | 0.03 |
| 95th-Percentile Queue Length [ft/ln] | 3.72 | 20.51 | 91.37 | 31.68 | 10.70 | 10.70 | 0.12 | 133.40 | 0.83 |

**Movement, Approach, & Intersection Results**

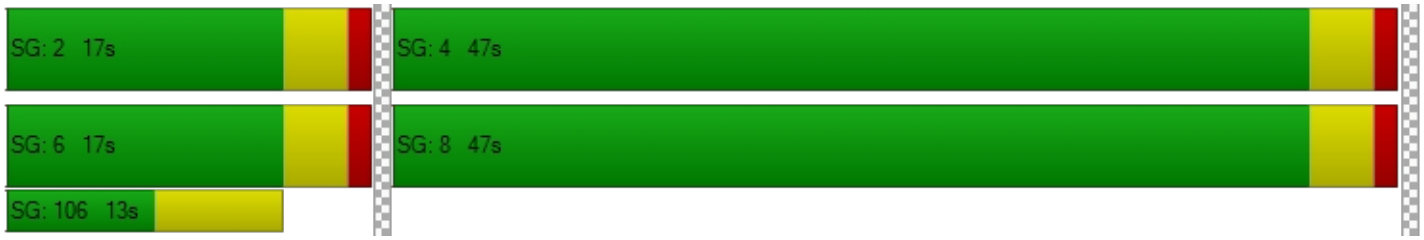
| d_M, Delay for Movement [s/veh] | 25.53 | 25.53 | 25.53 | 26.03 | 26.03 | 33.17 | 15.22 | 2.23 | 2.23 | 3.08 | 7.83 | 1.81 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement LOS | C | C | C | C | C | C | B | A | A | A | A | A |
| d_A, Approach Delay [s/veh] | 25.53 | | | 31.66 | | | 3.98 | | | 7.73 | | |
| Approach LOS | C | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 8.90 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |
| Intersection V/C | 0.748 | | | | | | | | | | | |

**Other Modes**

| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
|---|---|---|---|---|
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 21.95 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 2.112 | 0.000 | 0.000 |
| Crosswalk LOS | F | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 1343 | 1343 | 406 | 406 |
| d_b, Bicycle Delay [s] | 3.45 | 3.45 | 20.33 | 20.33 |
| l_b,int, Bicycle LOS Score for Intersection | 1.570 | 1.825 | 1.976 | 3.363 |
| Bicycle LOS | A | A | A | C |

## Sequence

| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Monte Olivo Phase 1

Vistro File: G:\...\PM MIT.vistro
Report File: G:\...\PM OYP MIT.pdf

Scenario 4 Opening Year (2025) With Project
1/10/2023

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 9 | State St (NS) at Ontario Ave (EW) | Signalized | HCM 6th Edition | SB Right | 0.400 | 5.0 | A |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 5.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.400 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Curb Present | No | | | No | | | No | | | No | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 4 | 0 | 0 | 37 | 0 | 59 | 41 | 936 | 5 | 0 | 528 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0000 | 1.0400 | 1.0400 | 1.0400 | 1.0400 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0400 | 1.0000 | 1.0400 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 7 | 0 | 23 | 49 | 3 | 0 | 0 | 3 | 15 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 0 | 0 | 45 | 0 | 82 | 90 | 939 | 5 | 0 | 531 | 30 |
| Peak Hour Factor | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 12 | 0 | 21 | 23 | 243 | 1 | 0 | 137 | 8 |
| Total Analysis Volume [veh/h] | 4 | 0 | 0 | 47 | 0 | 85 | 93 | 971 | 5 | 0 | 549 | 31 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| v_do, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_di, Inbound Pedestrian Volume crossing m | 0 | | | 0 | | | 0 | | | 0 | | |
| v_co, Outbound Pedestrian Volume crossing | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ci, Inbound Pedestrian Volume crossing mi | 0 | | | 0 | | | 0 | | | 0 | | |
| v_ab, Corner Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | Lead Green - Beginning of First Green |
| Permissive Mode | SingleBand |
| Lost time [s] | 8.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal Group | 0 | 8 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| Split [s] | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 47 | 0 | 0 | 47 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 7 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 6 | 0 |
| Delayed Vehicle Green [s] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Rest In Walk | | No | | | No | | | No | | | No | |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | R | L | C | C | L | C | R |
|---|---|---|---|---|---|---|---|---|---|
| C, Cycle Length [s] | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| L, Total Lost Time per Cycle [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| g_i, Effective Green Time [s] | 6 | 6 | 6 | 46 | 46 | 46 | 46 | 46 | 46 |
| g / C, Green / Cycle | 0.11 | 0.11 | 0.11 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 |
| (v / s)_i Volume / Saturation Flow Rate | 0.01 | 0.03 | 0.05 | 0.11 | 0.26 | 0.26 | 0.00 | 0.29 | 0.02 |
| s, saturation flow rate [veh/h] | 711 | 1649 | 1589 | 834 | 1870 | 1867 | 576 | 1870 | 1589 |
| c, Capacity [veh/h] | 196 | 296 | 170 | 632 | 1421 | 1418 | 483 | 1421 | 1208 |
| d1, Uniform Delay [s] | 26.74 | 24.60 | 25.31 | 5.03 | 2.34 | 2.34 | 0.00 | 2.45 | 1.77 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.04 | 0.25 | 2.27 | 0.49 | 0.66 | 0.66 | 0.00 | 0.80 | 0.04 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.02 | 0.16 | 0.50 | 0.15 | 0.34 | 0.34 | 0.00 | 0.39 | 0.03 |
| d, Delay for Lane Group [s/veh] | 26.78 | 24.85 | 27.58 | 5.52 | 3.01 | 3.01 | 0.00 | 3.25 | 1.80 |
| Lane Group LOS | C | C | C | A | A | A | A | A | A |
| Critical Lane Group | No | No | Yes | No | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh/ln] | 0.05 | 0.59 | 1.17 | 0.38 | 0.53 | 0.53 | 0.00 | 0.64 | 0.03 |
| 50th-Percentile Queue Length [ft/ln] | 1.37 | 14.76 | 29.19 | 9.59 | 13.37 | 13.36 | 0.00 | 15.88 | 0.66 |
| 95th-Percentile Queue Length [veh/ln] | 0.10 | 1.06 | 2.10 | 0.69 | 0.96 | 0.96 | 0.00 | 1.14 | 0.05 |
| 95th-Percentile Queue Length [ft/ln] | 2.46 | 26.57 | 52.54 | 17.26 | 24.06 | 24.04 | 0.00 | 28.59 | 1.18 |

**Movement, Approach, & Intersection Results**

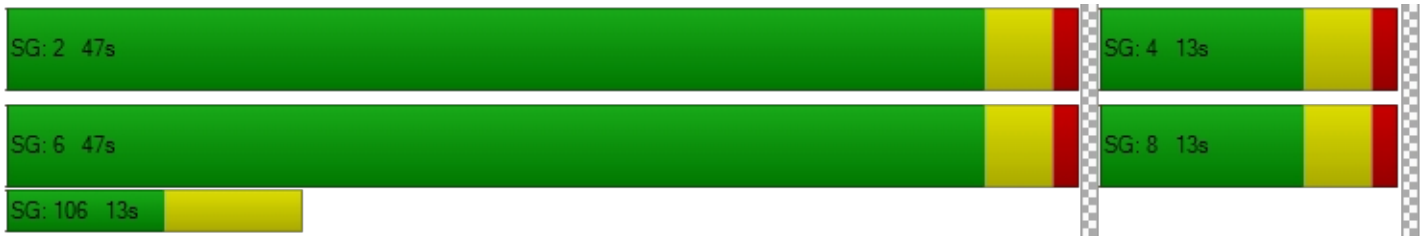
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 26.78 | 26.78 | 26.78 | 24.85 | 24.85 | 27.58 | 5.52 | 3.01 | 3.01 | 0.00 | 3.25 | 1.80 |
| Movement LOS | C | C | C | C | C | C | A | A | A | A | A | A |
| d_A, Approach Delay [s/veh] | 26.78 | | | 26.61 | | | 3.22 | | | 3.17 | | |
| Approach LOS | C | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 4.99 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |
| Intersection V/C | 0.400 | | | | | | | | | | | |

**Other Modes**

| | | | | |
|---|---|---|---|---|
| g_Walk,mi, Effective Walk Time [s] | 0.0 | 11.0 | 0.0 | 0.0 |
| M_corner, Corner Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| M_CW, Crosswalk Circulation Area [ft²/ped] | 0.00 | 0.00 | 0.00 | 0.00 |
| d_p, Pedestrian Delay [s] | 0.00 | 20.02 | 0.00 | 0.00 |
| l_p,int, Pedestrian LOS Score for Intersection | 0.000 | 2.147 | 0.000 | 0.000 |
| Crosswalk LOS | F | B | F | F |
| s_b, Saturation Flow Rate of the bicycle lane | 2000 | 2000 | 2000 | 2000 |
| c_b, Capacity of the bicycle lane [bicycles/h] | 300 | 300 | 1433 | 1433 |
| d_b, Bicycle Delay [s] | 21.69 | 21.69 | 2.42 | 2.42 |
| l_b,int, Bicycle LOS Score for Intersection | 1.566 | 1.777 | 2.442 | 2.517 |
| Bicycle LOS | A | A | B | B |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



# APPENDIX F

# TRAFFIC SIGNAL WARRANT ANALYSIS

# PEAK HOUR VOLUME WARRANT
# (Rural Areas)

## Existing AM

Major Street Name = Ontario Ave

Total of Both Approaches (VPH) = 1410

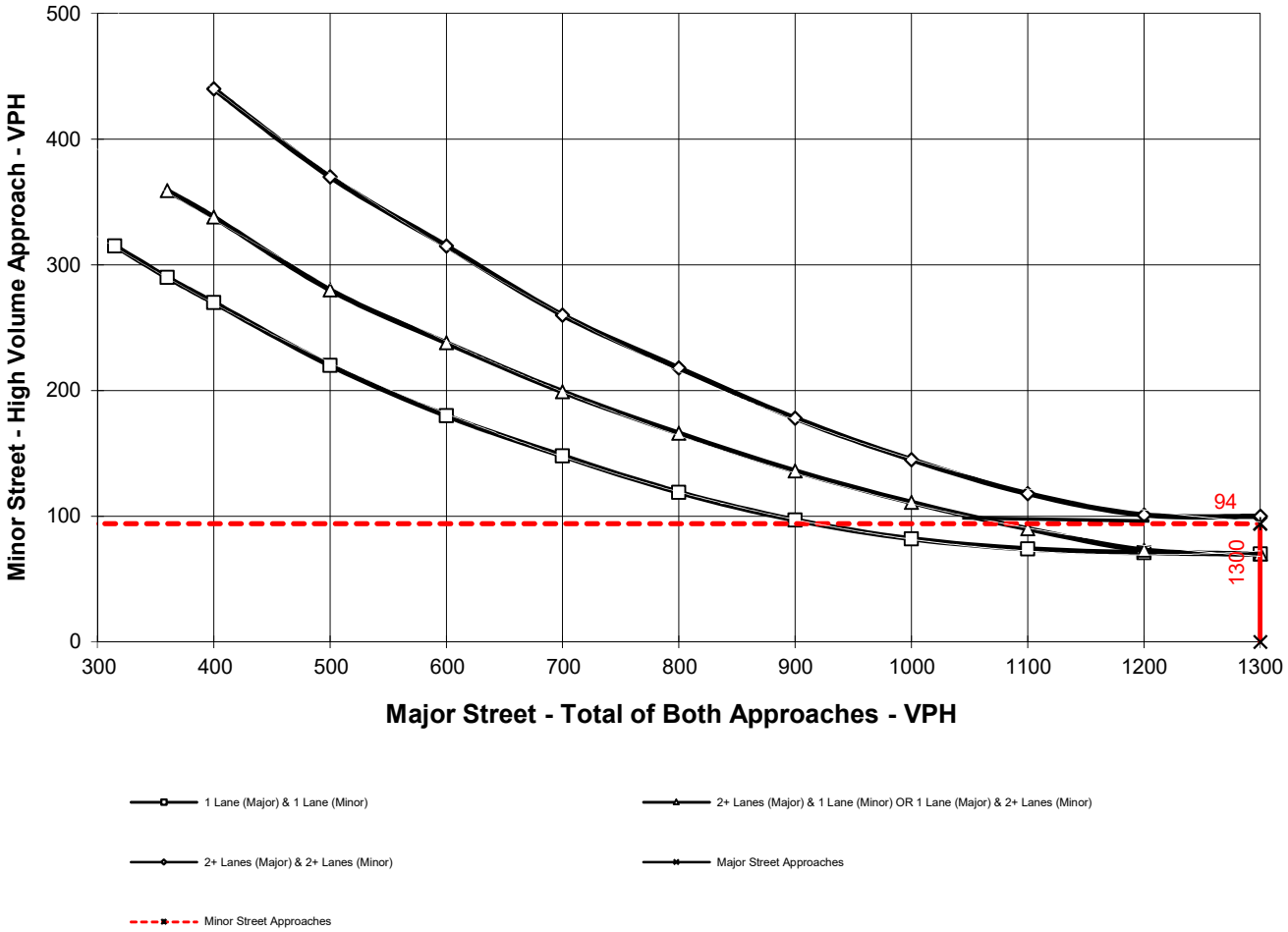
Number of Approach Lanes Major Street = 2

Minor Street Name = State St

High Volume Approach (VPH) = 94

Number of Approach Lanes Minor Street = 1

WARRANTED FOR A SIGNAL




** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

# PEAK HOUR VOLUME WARRANT
# (Rural Areas)

## Existing PM

Major Street Name = Ontario Ave

Total of Both Approaches (VPH) = 1524

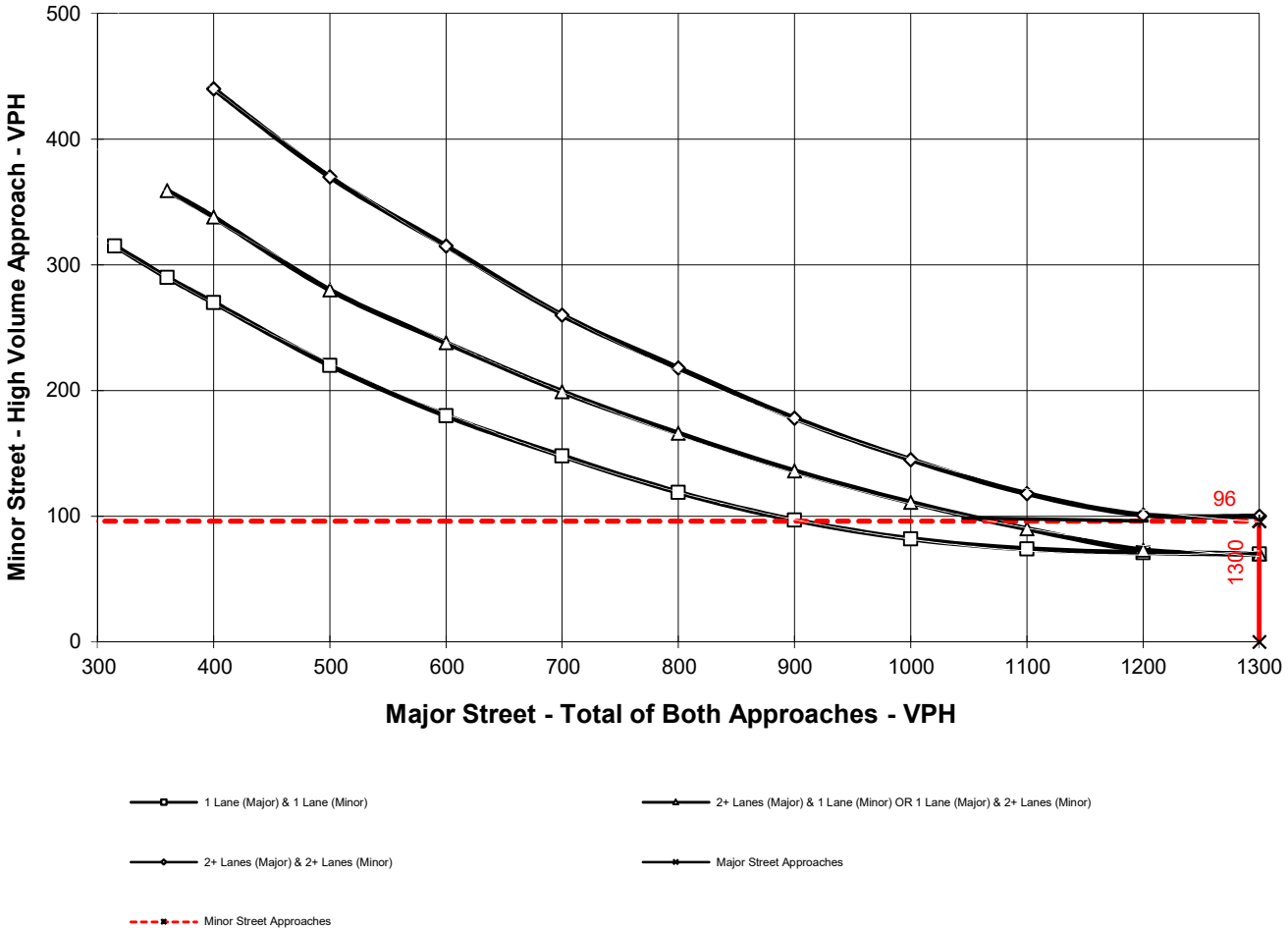
Number of Approach Lanes Major Street = 2

Minor Street Name = State St

High Volume Approach (VPH) = 96

Number of Approach Lanes Minor Street = 1

WARRANTED FOR A SIGNAL




** NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

# APPENDIX G

# ROADWAY LINK AVERAGE DAILY TRAFFIC (ADT) SUMMARY

## Appendix G (1 of 2)

## Roadway Link Average Daily Traffic (ADT) Summary

| | Roadway Segment | | Existing 2022 | Project Only | Other Development Only | Existing Plus Project | Opening Year 2025 Without Project | Opening Year 2025 Without Project |
|---|---|---|---|---|---|---|---|---|
| A | Rimpau Ave | North of Magnolia Ave | 15,100 [2] | 50 | 180 | 15,200 | 16,200 | 16,300 |
| B | Rimpau Ave | Magnolia Ave to California Ave | 21,800 [1] | 190 | 220 | 22,000 | 23,100 | 23,300 |
| C | Rimpau Ave | California Ave to Olympic Dr | 16,800 [1] | 50 | 170 | 16,900 | 18,000 | 18,100 |
| D | Rimpau Ave | Olympic Dr to Old Temescal Rd | 13,500 [1] | 50 | 170 | 13,600 | 14,500 | 14,600 |
| E | Rimpau Ave | Old Temescal Rd to Ontario Ave | 10,600 [2] | 30 | 160 | 10,600 | 11,400 | 11,400 |
| F | California Ave | Olympic Dr to Old Temescal Rd | 7,600 [2] | 140 | 50 | 7,700 | 8,100 | 8,200 |
| G | California Ave | Old Temescal Rd to Shopping Ctr | 7,800 [2] | 70 | - | 7,900 | 8,300 | 8,400 |
| H | California Ave | Shopping Center to Ontario Ave | 13,600 [2] | 70 | 20 | 13,700 | 14,400 | 14,500 |
| I | California Ave | South of Ontario Ave | 15,500 [2] | 50 | 300 | 15,600 | 16,700 | 16,800 |
| J | Compton Ave | North of Old Temescal Rd | 1,300 [1] | - | - | 1,300 | 1,400 | 1,400 |
| K | Compton Ave | Old Temescal Rd to Ontario Ave | 7,000 [1] | 100 | - | 7,100 | 7,400 | 7,500 |
| L | State St | Bel Air St to Ontario Ave | 1,700 [1] | 560 | 330 | 2,300 | 2,100 | 2,700 |
| M | State St | South of Ontario Ave | 100 [3] | - | - | 100 | 100 | 100 |
| N | Laurel Cyn Wy | North of Project Dwy | 700 [3] | - | - | 700 | 700 | 700 |
| O | Laurel Cyn Wy | Project Dwy to Bel Air St | 700 [3] | 410 | 70 | 1,100 | 800 | 1,200 |
| P | Magnolia Ave | West of Rimpau Ave | 26,000 [3] | 50 | 1,080 | 26,100 | 28,600 | 28,700 |
| Q | Magnolia Ave | Rimpau Ave to El Sobrante Rd | 39,900 [1] | 100 | 1,250 | 40,000 | 43,500 | 43,600 |
| R | Magnolia Ave | El Sobrante Rd to I-15 SB Ramps | 44,500 [3] | 100 | 1,250 | 44,600 | 48,400 | 48,500 |
| S | Magnolia Ave | I-15 SB Ramps to I-15 NB Ramps | 36,500 [3] | 70 | 2,300 | 36,600 | 41,000 | 41,100 |
| T | Magnolia Ave | East of I-15 NB Ramps | 33,300 [3] | 50 | 3,340 | 33,400 | 38,600 | 38,700 |
| U | California Ave | East of Rimpau Ave | 5,600 [2] | 70 | 30 | 5,700 | 6,000 | 6,100 |
| V | Olympic Dr | West of Rimpau Ave | 3,000 [4] | - | - | 3,000 | 3,200 | 3,200 |
| W | Olympic Dr | East of Rimpau Ave | 4,200 [2] | - | - | 4,200 | 4,500 | 4,500 |
| X | Old Temescal Rd | West of Rimpau Ave | 4,500 [2] | 20 | 10 | 4,500 | 4,800 | 4,800 |
| Y | Old Temescal Rd | Rimpau Ave to California Ave | 5,300 [1] | 100 | 20 | 5,400 | 5,600 | 5,700 |
| Z | Old Temescal Rd | California Ave to Compton Ave | 3,100 [1] | 320 | 70 | 3,400 | 3,400 | 3,700 |

## Appendix G (2 of 2)

## Roadway Link Average Daily Traffic (ADT) Summary

| Roadway Segment | | | Existing 2022 | Project Only | Other Development Only | Existing Plus Project | Opening Year 2025 Without Project | Opening Year 2025 Without Project |
|---|---|---|---|---|---|---|---|---|
| AA | Old Temescal Rd | Compton Ave to Bel Air St | 700 [1] | 410 | 70 | 1,100 | 800 | 1,200 |
| BB | Ontario Ave | Rimpau Ave to California Ave | 32,500 [2] | 50 | 500 | 32,600 | 35,000 | 35,100 |
| CC | Ontario Ave | California Ave to Compton Ave | 35,600 [1] | 120 | 290 | 35,700 | 38,000 | 38,100 |
| DD | Ontario Ave | Compton Ave to I-15 SB Ramps | 42,000 [4] | 120 | 290 | 42,100 | 44,800 | 44,900 |
| EE | Ontario Ave | I-15 SB Ramps to I-15 NB Ramps | 32,600 [4] | 270 | 600 | 32,900 | 35,200 | 35,500 |
| FF | Ontario Ave | I-15 NB Ramps to State St | 18,700 [1] | 410 | 900 | 19,100 | 20,700 | 21,100 |
| GG | Ontario Ave | East of State St | 16,100 [2] | 150 | 130 | 16,300 | 17,200 | 17,400 |

Note:

[1] 2022 segment counts.

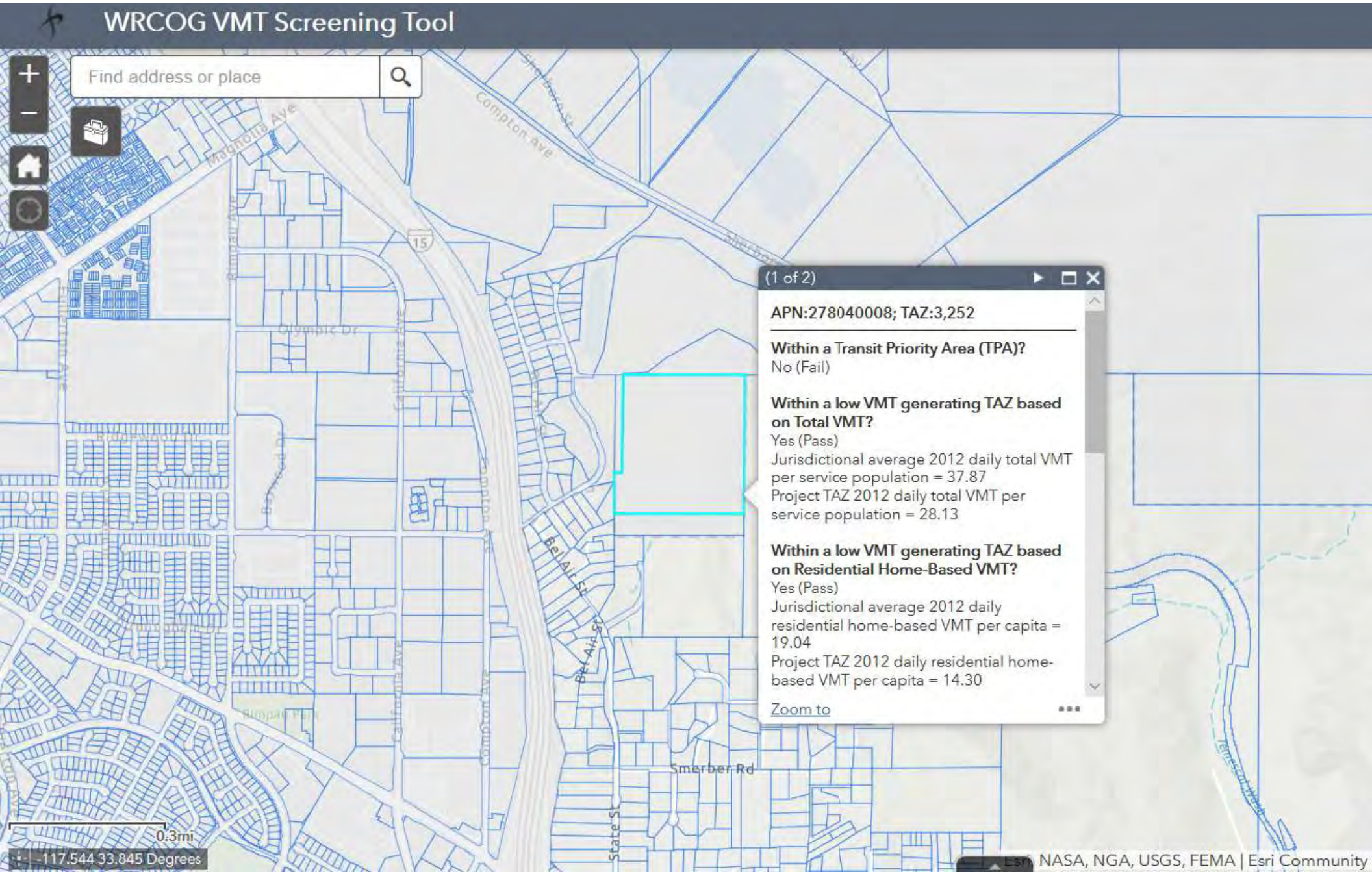
[2] 2017 City of Corona Average Daily Traffic Volumes with a 2% Annual Growth Rate (1.10 Total Growth Factor) to factor up to 2022 conditions.

[3] Existing 2022 average daily traffic estimated based on a assumption that peak hour-to-daily ratio is similar to adjacent roadway segments.

[4] Existing 2022 average daily traffic estimated based on a assumption that peak hour volumes of the street is approximately 7.2% of the daily traffic.

# APPENDIX H

# VMT SCREENING TOOL


WRCOG VMT Screening Tool
Find address or place
(1 of 2)
APN:278040008; TAZ:3,252
Within a Transit Priority Area (TPA)?
No (Fail)
Within a low VMT generating TAZ based on Total VMT?
Yes (Pass)
Jurisdictional average 2012 daily total VMT per service population = 37.87
Project TAZ 2012 daily total VMT per service population = 28.13
Within a low VMT generating TAZ based on Residential Home-Based VMT?
Yes (Pass)
Jurisdictional average 2012 daily residential home-based VMT per capita = 19.04
Project TAZ 2012 daily residential home-based VMT per capita = 14.30
Zoom to
Magnolia Ave
Compton Ave
Olympic Dr
Bel Air St
Smerber Rd
State St
0.3mi
-117.544 33.845 Degrees
NASA, NGA, USGS, FEMA | Esri Community

# APPENDIX I

# SPEED SURVEY

## SPEED State between Popper and Smember.
## Combined

**Project#** **SC**

**Tuesday, October 25, 2022**

**PREPARED BY: AimTD 714 253 7888 cs@aimtd.com**

| Time | 5-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70-74 | 75+ | TOTAL | %VEHICLES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:00:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 12:15:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 12:30:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 12:45:00 AM | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.27% |
| 1:00:00 AM | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.27% |
| 1:15:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 1:30:00 AM | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.46% |
| 1:45:00 AM | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0.37% |
| 2:00:00 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.09% |
| 2:15:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 7 | 0.64% |
| 2:30:00 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.09% |
| 2:45:00 AM | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0.55% |
| 3:00:00 AM | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 0.46% |
| 3:15:00 AM | 0 | 0 | 0 | 2 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0.64% |
| 3:30:00 AM | 0 | 1 | 1 | 0 | 1 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0.82% |
| 3:45:00 AM | 0 | 1 | 1 | 1 | 4 | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 1.28% |
| 4:00:00 AM | 0 | 0 | 2 | 1 | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0.82% |
| 4:15:00 AM | 0 | 0 | 0 | 2 | 2 | 3 | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 14 | 1.28% |
| 4:30:00 AM | 0 | 0 | 1 | 1 | 5 | 2 | 4 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 18 | 1.64% |
| 4:45:00 AM | 1 | 0 | 3 | 2 | 0 | 5 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 1.55% |
| 5:00:00 AM | 0 | 3 | 1 | 7 | 4 | 7 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 2.28% |
| 5:15:00 AM | 0 | 1 | 0 | 0 | 4 | 7 | 3 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 21 | 1.92% |
| 5:30:00 AM | 0 | 0 | 0 | 2 | 5 | 4 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 15 | 1.37% |
| 5:45:00 AM | 1 | 0 | 0 | 0 | 4 | 4 | 5 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 17 | 1.55% |
| 6:00:00 AM | 0 | 0 | 2 | 1 | 3 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 10 | 0.91% |
| 6:15:00 AM | 2 | 0 | 1 | 3 | 4 | 4 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 19 | 1.74% |
| 6:30:00 AM | 0 | 0 | 3 | 2 | 2 | 2 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 14 | 1.28% |
| 6:45:00 AM | 0 | 0 | 1 | 2 | 5 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 1.19% |
| 7:00:00 AM | 2 | 0 | 3 | 6 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 1.74% |
| 7:15:00 AM | 0 | 0 | 1 | 2 | 3 | 2 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 1.19% |
| 7:30:00 AM | 0 | 0 | 0 | 4 | 8 | 3 | 5 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 23 | 2.10% |
| 7:45:00 AM | 1 | 1 | 1 | 0 | 6 | 6 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 2.19% |
| 8:00:00 AM | 1 | 0 | 0 | 1 | 5 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.91% |
| 8:15:00 AM | 2 | 0 | 1 | 0 | 3 | 6 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 1.37% |
| 8:30:00 AM | 1 | 0 | 1 | 4 | 6 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 1.64% |
| 8:45:00 AM | 1 | 0 | 0 | 3 | 5 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 1.19% |
| 9:00:00 AM | 1 | 0 | 0 | 3 | 1 | 4 | 3 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 14 | 1.28% |
| 9:15:00 AM | 0 | 0 | 1 | 3 | 6 | 4 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 19 | 1.74% |
| 9:30:00 AM | 0 | 0 | 1 | 6 | 4 | 6 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 22 | 2.01% |
| 9:45:00 AM | 0 | 0 | 0 | 2 | 5 | 6 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 1.64% |
| 10:00:00 AM | 0 | 1 | 0 | 5 | 7 | 9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 2.10% |
| 10:15:00 AM | 1 | 1 | 1 | 2 | 5 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 1.46% |
| 10:30:00 AM | 0 | 1 | 1 | 3 | 5 | 5 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 18 | 1.64% |
| 10:45:00 AM | 1 | 2 | 2 | 0 | 9 | 7 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 2.10% |
| 11:00:00 AM | 1 | 1 | 2 | 2 | 8 | 5 | 4 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 25 | 2.28% |
| 11:15:00 AM | 0 | 2 | 0 | 2 | 8 | 4 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 20 | 1.83% |
| 11:30:00 AM | 0 | 0 | 0 | 1 | 10 | 2 | 5 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 24 | 2.19% |
| 11:45:00 AM | 0 | 1 | 1 | 6 | 5 | 7 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 2.19% |
| AM TOTAL | 16 | 16 | 33 | 85 | 167 | 146 | 88 | 58 | 21 | 5 | 1 | 2 | 0 | 0 | 638 | 58.26% |
| PERCENTAGE | 2.5% | 2.5% | 5.2% | 13.3% | 26.2% | 22.9% | 13.8% | 9.1% | 3.3% | 0.8% | 0.2% | 0.3% | 0.0% | 0.0% | | |
| CUMULATIVE | 16 | 32 | 65 | 150 | 317 | 463 | 551 | 609 | 630 | 635 | 636 | 638 | 638 | 638 | | |
| PERCENTAGE | 2.5% | 5.0% | 10.2% | 23.5% | 49.7% | 72.6% | 86.4% | 95.5% | 98.7% | 99.5% | 99.7% | 100.0% | 100.0% | 100.0% | | |

| | | | |
|---|---|---|---|
| 15th Percentile | 22 | Mean Speed Average | 31 |
| 50th Percentile | 31 | 10 MPH Pace Speed | 26-35 |
| 85th Percentile | 40 | Number in Pace | 260 |
| 95th Percentile | 45 | Percent in Pace | 41% |

## SPEED State between Popper and Smember.
## Combined

**Project#** **SC**

**Tuesday, October 25, 2022**

**PREPARED BY: AimTD 714 253 7888 cs@aimtd.com**

| Time | 5-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70-74 | 75+ | TOTAL | %VEHICLES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:00:00 PM | 0 | 0 | 1 | 2 | 7 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 1.46% |
| 12:15:00 PM | 2 | 2 | 2 | 4 | 5 | 5 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 27 | 2.47% |
| 12:30:00 PM | 0 | 0 | 1 | 1 | 3 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 1.00% |
| 12:45:00 PM | 2 | 1 | 0 | 5 | 10 | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 2.28% |
| 1:00:00 PM | 0 | 0 | 4 | 4 | 5 | 3 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 1.92% |
| 1:15:00 PM | 0 | 1 | 1 | 1 | 5 | 6 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 1.64% |
| 1:30:00 PM | 0 | 0 | 0 | 5 | 3 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 1.10% |
| 1:45:00 PM | 0 | 0 | 2 | 2 | 5 | 6 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 18 | 1.64% |
| 2:00:00 PM | 1 | 1 | 2 | 4 | 11 | 7 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 2.74% |
| 2:15:00 PM | 0 | 0 | 1 | 3 | 4 | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 14 | 1.28% |
| 2:30:00 PM | 1 | 1 | 0 | 6 | 5 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 1.74% |
| 2:45:00 PM | 2 | 0 | 2 | 7 | 3 | 5 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 23 | 2.10% |
| 3:00:00 PM | 2 | 0 | 3 | 2 | 5 | 5 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 21 | 1.92% |
| 3:15:00 PM | 1 | 0 | 1 | 3 | 4 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 1.28% |
| 3:30:00 PM | 0 | 2 | 5 | 3 | 3 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 1.74% |
| 3:45:00 PM | 1 | 0 | 0 | 1 | 1 | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.91% |
| 4:00:00 PM | 0 | 0 | 2 | 3 | 8 | 4 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 20 | 1.83% |
| 4:15:00 PM | 0 | 0 | 0 | 5 | 5 | 4 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 18 | 1.64% |
| 4:30:00 PM | 0 | 2 | 1 | 1 | 0 | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 1.10% |
| 4:45:00 PM | 0 | 0 | 1 | 2 | 4 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 12 | 1.10% |
| 5:00:00 PM | 0 | 0 | 0 | 3 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0.55% |
| 5:15:00 PM | 0 | 0 | 2 | 0 | 7 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 13 | 1.19% |
| 5:30:00 PM | 0 | 0 | 0 | 3 | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0.91% |
| 5:45:00 PM | 0 | 0 | 0 | 1 | 3 | 4 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 11 | 1.00% |
| 6:00:00 PM | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.46% |
| 6:15:00 PM | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.37% |
| 6:30:00 PM | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.46% |
| 6:45:00 PM | 0 | 1 | 1 | 1 | 2 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0.73% |
| 7:00:00 PM | 0 | 0 | 0 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.46% |
| 7:15:00 PM | 0 | 0 | 0 | 0 | 2 | 4 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 9 | 0.82% |
| 7:30:00 PM | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0.37% |
| 7:45:00 PM | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.18% |
| 8:00:00 PM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.18% |
| 8:15:00 PM | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.18% |
| 8:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 8:45:00 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.09% |
| 9:00:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 9:15:00 PM | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.18% |
| 9:30:00 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.09% |
| 9:45:00 PM | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.27% |
| 10:00:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 10:15:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 10:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 10:45:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 11:00:00 PM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.18% |
| 11:15:00 PM | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.18% |
| 11:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 11:45:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| PM TOTAL | 12 | 12 | 37 | 82 | 126 | 101 | 50 | 20 | 9 | 7 | 1 | 0 | 0 | 0 | 457 | 41.74% |
| PERCENTAGE | 2.6% | 2.6% | 8.1% | 17.9% | 27.6% | 22.1% | 10.9% | 4.4% | 2.0% | 1.5% | 0.2% | 0.0% | 0.0% | 0.0% | | |
| CUMULATIVE | 12 | 24 | 61 | 143 | 269 | 370 | 420 | 440 | 449 | 456 | 457 | 457 | 457 | 457 | | |
| PERCENTAGE | 2.6% | 5.3% | 13.3% | 31.3% | 58.9% | 81.0% | 91.9% | 96.3% | 98.2% | 99.8% | 100.0% | 100.0% | 100.0% | 100.0% | | |

| | | | |
|---|---|---|---|
| 15th Percentile | 22 | Mean Speed Average | 29 |
| 50th Percentile | 29 | 10 MPH Pace Speed | 25-34 |
| 85th Percentile | 37 | Number in Pace | 249 |
| 95th Percentile | 44 | Percent in Pace | 54% |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DAY TOTAL | 28 | 28 | 70 | 167 | 293 | 247 | 138 | 78 | 30 | 12 | 2 | 2 | 0 | 0 | 1,095 | |
| PERCENTAGE | 2.6% | 2.6% | 6.4% | 15.3% | 26.8% | 22.6% | 12.6% | 7.1% | 2.7% | 1.1% | 0.2% | 0.2% | 0.0% | 0.0% | 1,095 | 100.00% |
| | 2.6% | 5.1% | 11.5% | 26.8% | 53.5% | 76.1% | 88.7% | 95.8% | 98.5% | 99.6% | 99.8% | 100.0% | 100.0% | 100.0% | | |
| 85th Percentile | 39 | | | | | | | | | | | | | | | |

## SPEED State between Popper and Smember.
## Northbound

**Project#** **SC**

**Tuesday, October 25, 2022**

**PREPARED BY: AimTD 714 253 7888 cs@aimtd.com**

| Time | 5-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70-74 | 75+ | TOTAL | %VEHICLES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:00:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 12:15:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 12:30:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 12:45:00 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.35% |
| 1:00:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.35% |
| 1:15:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 1:30:00 AM | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.70% |
| 1:45:00 AM | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0.70% |
| 2:00:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 2:15:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 7 | 1.23% |
| 2:30:00 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.18% |
| 2:45:00 AM | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.70% |
| 3:00:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0.70% |
| 3:15:00 AM | 0 | 0 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.88% |
| 3:30:00 AM | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.06% |
| 3:45:00 AM | 0 | 1 | 0 | 0 | 1 | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1.58% |
| 4:00:00 AM | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.88% |
| 4:15:00 AM | 0 | 0 | 0 | 1 | 1 | 2 | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 11 | 1.94% |
| 4:30:00 AM | 0 | 0 | 1 | 0 | 2 | 2 | 4 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 14 | 2.46% |
| 4:45:00 AM | 0 | 0 | 1 | 0 | 0 | 3 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 1.76% |
| 5:00:00 AM | 0 | 1 | 1 | 2 | 1 | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 2.11% |
| 5:15:00 AM | 0 | 0 | 0 | 0 | 2 | 5 | 3 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 16 | 2.82% |
| 5:30:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 4 | 0.70% |
| 5:45:00 AM | 1 | 0 | 0 | 0 | 2 | 4 | 5 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 15 | 2.64% |
| 6:00:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0.53% |
| 6:15:00 AM | 1 | 0 | 1 | 0 | 1 | 3 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 11 | 1.94% |
| 6:30:00 AM | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 9 | 1.58% |
| 6:45:00 AM | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1.23% |
| 7:00:00 AM | 1 | 0 | 2 | 3 | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 1.94% |
| 7:15:00 AM | 0 | 0 | 0 | 2 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1.41% |
| 7:30:00 AM | 0 | 0 | 0 | 1 | 2 | 3 | 5 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 14 | 2.46% |
| 7:45:00 AM | 1 | 0 | 0 | 0 | 2 | 3 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 2.64% |
| 8:00:00 AM | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.06% |
| 8:15:00 AM | 1 | 0 | 1 | 0 | 3 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 2.11% |
| 8:30:00 AM | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.06% |
| 8:45:00 AM | 1 | 0 | 0 | 1 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1.41% |
| 9:00:00 AM | 0 | 0 | 0 | 2 | 0 | 3 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 9 | 1.58% |
| 9:15:00 AM | 0 | 0 | 0 | 2 | 3 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 12 | 2.11% |
| 9:30:00 AM | 0 | 0 | 0 | 1 | 1 | 4 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 11 | 1.94% |
| 9:45:00 AM | 0 | 0 | 0 | 0 | 2 | 3 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 1.76% |
| 10:00:00 AM | 0 | 0 | 0 | 1 | 1 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1.41% |
| 10:15:00 AM | 0 | 1 | 1 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1.23% |
| 10:30:00 AM | 0 | 1 | 1 | 2 | 3 | 4 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 14 | 2.46% |
| 10:45:00 AM | 0 | 1 | 0 | 0 | 3 | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 1.76% |
| 11:00:00 AM | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 11 | 1.94% |
| 11:15:00 AM | 0 | 1 | 0 | 0 | 1 | 3 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 8 | 1.41% |
| 11:30:00 AM | 0 | 0 | 0 | 0 | 2 | 1 | 5 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 14 | 2.46% |
| 11:45:00 AM | 0 | 0 | 1 | 2 | 1 | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 2.11% |
| AM TOTAL | 7 | 7 | 12 | 24 | 57 | 95 | 84 | 57 | 21 | 5 | 0 | 2 | 0 | 0 | 371 | 65.32% |
| PERCENTAGE | 1.9% | 1.9% | 3.2% | 6.5% | 15.4% | 25.6% | 22.6% | 15.4% | 5.7% | 1.3% | 0.0% | 0.5% | 0.0% | 0.0% | | |
| CUMULATIVE | 7 | 14 | 26 | 50 | 107 | 202 | 286 | 343 | 364 | 369 | 369 | 371 | 371 | 371 | | |
| PERCENTAGE | 1.9% | 3.8% | 7.0% | 13.5% | 28.8% | 54.4% | 77.1% | 92.5% | 98.1% | 99.5% | 99.5% | 100.0% | 100.0% | 100.0% | | |

| | | | |
|---|---|---|---|
| 15th Percentile | 27 | Mean Speed Average | 34 |
| 50th Percentile | 35 | 10 MPH Pace Speed | 31-40 |
| 85th Percentile | 42 | Number in Pace | 193 |
| 95th Percentile | 47 | Percent in Pace | 52% |

## SPEED State between Popper and Smember.
## Northbound

**Project#** **SC**

**Tuesday, October 25, 2022**

**PREPARED BY: AimTD 714 253 7888 cs@aimtd.com**

| Time | 5-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70-74 | 75+ | TOTAL | %VEHICLES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:00:00 PM | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1.23% |
| 12:15:00 PM | 2 | 2 | 0 | 0 | 1 | 1 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 13 | 2.29% |
| 12:30:00 PM | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.06% |
| 12:45:00 PM | 2 | 0 | 0 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1.58% |
| 1:00:00 PM | 0 | 0 | 4 | 3 | 1 | 2 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 2.64% |
| 1:15:00 PM | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1.23% |
| 1:30:00 PM | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.88% |
| 1:45:00 PM | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 6 | 1.06% |
| 2:00:00 PM | 1 | 1 | 1 | 2 | 0 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 1.94% |
| 2:15:00 PM | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 1.06% |
| 2:30:00 PM | 1 | 1 | 0 | 2 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 1.76% |
| 2:45:00 PM | 0 | 0 | 1 | 1 | 0 | 5 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 10 | 1.76% |
| 3:00:00 PM | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 9 | 1.58% |
| 3:15:00 PM | 1 | 0 | 0 | 1 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.06% |
| 3:30:00 PM | 0 | 2 | 2 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1.41% |
| 3:45:00 PM | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.70% |
| 4:00:00 PM | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 7 | 1.23% |
| 4:15:00 PM | 0 | 0 | 0 | 2 | 3 | 1 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 10 | 1.76% |
| 4:30:00 PM | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.06% |
| 4:45:00 PM | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0.70% |
| 5:00:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.18% |
| 5:15:00 PM | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 5 | 0.88% |
| 5:30:00 PM | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.70% |
| 5:45:00 PM | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 6 | 1.06% |
| 6:00:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.18% |
| 6:15:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.18% |
| 6:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.18% |
| 6:45:00 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.53% |
| 7:00:00 PM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.35% |
| 7:15:00 PM | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 0.88% |
| 7:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0.18% |
| 7:45:00 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.18% |
| 8:00:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 8:15:00 PM | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.35% |
| 8:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 8:45:00 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.18% |
| 9:00:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 9:15:00 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.18% |
| 9:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 9:45:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.18% |
| 10:00:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 10:15:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 10:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 10:45:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 11:00:00 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.18% |
| 11:15:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.18% |
| 11:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 11:45:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| PM TOTAL | 8 | 7 | 13 | 19 | 24 | 48 | 42 | 19 | 9 | 7 | 1 | 0 | 0 | 0 | 197 | 34.68% |
| PERCENTAGE | 4.1% | 3.6% | 6.6% | 9.6% | 12.2% | 24.4% | 21.3% | 9.6% | 4.6% | 3.6% | 0.5% | 0.0% | 0.0% | 0.0% | | |
| CUMULATIVE | 8 | 15 | 28 | 47 | 71 | 119 | 161 | 180 | 189 | 196 | 197 | 197 | 197 | 197 | | |
| PERCENTAGE | 4.1% | 7.6% | 14.2% | 23.9% | 36.0% | 60.4% | 81.7% | 91.4% | 95.9% | 99.5% | 100.0% | 100.0% | 100.0% | 100.0% | | |

| | | | |
|---|---|---|---|
| 15th Percentile | 21 | Mean Speed Average | 32 |
| 50th Percentile | 34 | 10 MPH Pace Speed | 31-40 |
| 85th Percentile | 41 | Number in Pace | 99 |
| 95th Percentile | 48 | Percent in Pace | 50% |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DAY TOTAL | 15 | 14 | 25 | 43 | 81 | 143 | 126 | 76 | 30 | 12 | 1 | 2 | 0 | 0 | 568 | |
| PERCENTAGE | 2.6% | 2.5% | 4.4% | 7.6% | 14.3% | 25.2% | 22.2% | 13.4% | 5.3% | 2.1% | 0.2% | 0.4% | 0.0% | 0.0% | 568 | 100.00% |
| | 2.6% | 5.1% | 9.5% | 17.1% | 31.3% | 56.5% | 78.7% | 92.1% | 97.4% | 99.5% | 99.6% | 100.0% | 100.0% | 100.0% | | |
| 85th Percentile | 42 | | | | | | | | | | | | | | | |

## SPEED State between Popper and Smember.
## Southbound

Project# **SC**

**Tuesday, October 25, 2022**

**PREPARED BY: AimTD 714 253 7888 cs@aimtd.com**

| Time | 5-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70-74 | 75+ | TOTAL | %VEHICLES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:00:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 12:15:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 12:30:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 12:45:00 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.19% |
| 1:00:00 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.19% |
| 1:15:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 1:30:00 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.19% |
| 1:45:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 2:00:00 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.19% |
| 2:15:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 2:30:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 2:45:00 AM | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.38% |
| 3:00:00 AM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.19% |
| 3:15:00 AM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.38% |
| 3:30:00 AM | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.57% |
| 3:45:00 AM | 0 | 0 | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.95% |
| 4:00:00 AM | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.76% |
| 4:15:00 AM | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.57% |
| 4:30:00 AM | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.76% |
| 4:45:00 AM | 1 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1.33% |
| 5:00:00 AM | 0 | 2 | 0 | 5 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 2.47% |
| 5:15:00 AM | 0 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.95% |
| 5:30:00 AM | 0 | 0 | 0 | 2 | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 2.09% |
| 5:45:00 AM | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.38% |
| 6:00:00 AM | 0 | 0 | 2 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1.33% |
| 6:15:00 AM | 1 | 0 | 0 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1.52% |
| 6:30:00 AM | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.95% |
| 6:45:00 AM | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.14% |
| 7:00:00 AM | 1 | 0 | 1 | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1.52% |
| 7:15:00 AM | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.95% |
| 7:30:00 AM | 0 | 0 | 0 | 3 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1.71% |
| 7:45:00 AM | 0 | 1 | 1 | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1.71% |
| 8:00:00 AM | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.76% |
| 8:15:00 AM | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.57% |
| 8:30:00 AM | 1 | 0 | 1 | 3 | 5 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 2.28% |
| 8:45:00 AM | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.95% |
| 9:00:00 AM | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.95% |
| 9:15:00 AM | 0 | 0 | 1 | 1 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1.33% |
| 9:30:00 AM | 0 | 0 | 1 | 5 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 2.09% |
| 9:45:00 AM | 0 | 0 | 0 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1.52% |
| 10:00:00 AM | 0 | 1 | 0 | 4 | 6 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 2.85% |
| 10:15:00 AM | 1 | 0 | 0 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1.71% |
| 10:30:00 AM | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.76% |
| 10:45:00 AM | 1 | 1 | 2 | 0 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 2.47% |
| 11:00:00 AM | 1 | 1 | 2 | 2 | 5 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 2.66% |
| 11:15:00 AM | 0 | 1 | 0 | 2 | 7 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 12 | 2.28% |
| 11:30:00 AM | 0 | 0 | 0 | 1 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 1.90% |
| 11:45:00 AM | 0 | 1 | 0 | 4 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 2.28% |
| AM TOTAL | 9 | 9 | 21 | 61 | 110 | 51 | 4 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 267 | 50.66% |
| PERCENTAGE | 3.4% | 3.4% | 7.9% | 22.8% | 41.2% | 19.1% | 1.5% | 0.4% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | | |
| CUMULATIVE | 9 | 18 | 39 | 100 | 210 | 261 | 265 | 266 | 266 | 266 | 267 | 267 | 267 | 267 | | |
| PERCENTAGE | 3.4% | 6.7% | 14.6% | 37.5% | 78.7% | 97.8% | 99.3% | 99.6% | 99.6% | 99.6% | 100.0% | 100.0% | 100.0% | 100.0% | | |

| | | | |
|---|---|---|---|
| 15th Percentile | 22 | Mean Speed Average | 26 |
| 50th Percentile | 27 | 10 MPH Pace Speed | 23-32 |
| 85th Percentile | 31 | Number in Pace | 191 |
| 95th Percentile | 34 | Percent in Pace | 72% |

## SPEED State between Popper and Smember.
## Southbound

**Project#** **SC**

**Tuesday, October 25, 2022**

**PREPARED BY: AimTD 714 253 7888 cs@aimtd.com**

| Time | 5-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70-74 | 75+ | TOTAL | %VEHICLES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:00:00 PM | 0 | 0 | 1 | 2 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1.71% |
| 12:15:00 PM | 0 | 0 | 2 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 2.66% |
| 12:30:00 PM | 0 | 0 | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.95% |
| 12:45:00 PM | 0 | 1 | 0 | 5 | 8 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 3.04% |
| 1:00:00 PM | 0 | 0 | 0 | 1 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.14% |
| 1:15:00 PM | 0 | 1 | 1 | 1 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 2.09% |
| 1:30:00 PM | 0 | 0 | 0 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1.33% |
| 1:45:00 PM | 0 | 0 | 2 | 2 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 2.28% |
| 2:00:00 PM | 0 | 0 | 1 | 2 | 11 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 3.61% |
| 2:15:00 PM | 0 | 0 | 1 | 1 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1.52% |
| 2:30:00 PM | 0 | 0 | 0 | 4 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1.71% |
| 2:45:00 PM | 2 | 0 | 1 | 6 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 2.47% |
| 3:00:00 PM | 1 | 0 | 3 | 2 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 2.28% |
| 3:15:00 PM | 0 | 0 | 1 | 2 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1.52% |
| 3:30:00 PM | 0 | 0 | 3 | 3 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 2.09% |
| 3:45:00 PM | 1 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.14% |
| 4:00:00 PM | 0 | 0 | 2 | 3 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 2.47% |
| 4:15:00 PM | 0 | 0 | 0 | 3 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1.52% |
| 4:30:00 PM | 0 | 2 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.14% |
| 4:45:00 PM | 0 | 0 | 1 | 1 | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1.52% |
| 5:00:00 PM | 0 | 0 | 0 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.95% |
| 5:15:00 PM | 0 | 0 | 1 | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1.52% |
| 5:30:00 PM | 0 | 0 | 0 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1.14% |
| 5:45:00 PM | 0 | 0 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.95% |
| 6:00:00 PM | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.76% |
| 6:15:00 PM | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.57% |
| 6:30:00 PM | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.76% |
| 6:45:00 PM | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0.95% |
| 7:00:00 PM | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.57% |
| 7:15:00 PM | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0.76% |
| 7:30:00 PM | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0.57% |
| 7:45:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.19% |
| 8:00:00 PM | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.38% |
| 8:15:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 8:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 8:45:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 9:00:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 9:15:00 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.19% |
| 9:30:00 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.19% |
| 9:45:00 PM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.38% |
| 10:00:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 10:15:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 10:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 10:45:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 11:00:00 PM | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.19% |
| 11:15:00 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.19% |
| 11:30:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 11:45:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| PM TOTAL | 4 | 5 | 24 | 63 | 102 | 53 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 260 | 49.34% |
| PERCENTAGE | 1.5% | 1.9% | 9.2% | 24.2% | 39.2% | 20.4% | 3.1% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | |
| CUMULATIVE | 4 | 9 | 33 | 96 | 198 | 251 | 259 | 260 | 260 | 260 | 260 | 260 | 260 | 260 | | |
| PERCENTAGE | 1.5% | 3.5% | 12.7% | 36.9% | 76.2% | 96.5% | 99.6% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | | |

| | | | |
|---|---|---|---|
| 15th Percentile | 22 | Mean Speed Average | 27 |
| 50th Percentile | 27 | 10 MPH Pace Speed | 23-32 |
| 85th Percentile | 32 | Number in Pace | 194 |
| 95th Percentile | 34 | Percent in Pace | 75% |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DAY TOTAL | 13 | 14 | 45 | 124 | 212 | 104 | 12 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 527 | |
| PERCENTAGE | 2.5% | 2.7% | 8.5% | 23.5% | 40.2% | 19.7% | 2.3% | 0.4% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.00% | 527 | 100.00% |
| | 2.5% | 5.1% | 13.7% | 37.2% | 77.4% | 97.2% | 99.4% | 99.8% | 99.8% | 99.8% | 100.0% | 100.0% | 100.0% | 100.00% | | |
| 85th Percentile | 31 | | | | | | | | | | | | | | | |

# APPENDIX J

# PROJECT FAIR SHARE CALCULATIONS

## Table 8
## Project Fair Share Intersection Traffic Contribution

| Study Intersection | Peak Hour | Average Intersection Delay | | | | | Project Fair Share[5] |
|---|---|---|---|---|---|---|---|
| | | Opening Year (2025) Without Project[1] | Opening Year (2025) With Project[2] | Change Due to Project[3] | Delay at Acceptable LOS[4] | Difference Over Acceptable LOS | |
| 9. State St at Ontario Ave | AM | 35.0 | 38.4 | 3.4 | 35.0 | 3.4 | 100.0% |
| | PM | 53.0 | 60.7 | 7.7 | 35.0 | 25.7 | 30.0% |

Notes:

(1) Total delay of the intersection during critical peak hour without the project (Without Northern and Southern Portions).

(2) D(t) - Total delay of the intersection during critical peak hour including that generated by the project (Northern and Southern Portions).

(3) D(p) - Project only delay increase of the intersection during critical peak hour. (Northern and Southern Portions)

(4) D(a) - Total delay of the intersection during critical peak hour under acceptable Level of Service conditions.

(5) The percentage of fair share for the project (Northern and Southern Portions) shall be calculated at each location as the ratio of the increase in delay from project trips divided by the difference between total delay (including project) and delay at acceptable Level of Service.

$P = [ D(p) / D(t) - D(a) ] * 100$

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 35.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.040 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 5 | 0 | 1 | 19 | 0 | 75 | 47 | 388 | 2 | 1 | 960 | 12 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 3 | 0 | 15 | 6 | 2 | 0 | 0 | 2 | 1 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 0 | 1 | 23 | 0 | 95 | 56 | 413 | 2 | 1 | 1020 | 14 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 6 | 0 | 25 | 15 | 109 | 1 | 0 | 268 | 4 |
| Total Analysis Volume [veh/h] | 5 | 0 | 1 | 24 | 0 | 100 | 59 | 435 | 2 | 1 | 1074 | 15 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | Yes | | |
| Number of Storage Spaces in Median | 0 | 2 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.04 | 0.00 | 0.00 | 0.11 | 0.00 | 0.20 | 0.09 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 34.97 | 46.37 | 10.65 | 23.91 | 21.64 | 14.26 | 11.23 | 0.00 | 0.00 | 8.22 | 0.00 | 0.00 |
| Movement LOS | D | E | B | C | C | B | B | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.13 | 0.13 | 0.13 | 0.37 | 0.37 | 0.76 | 0.31 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 3.22 | 3.22 | 3.22 | 9.32 | 9.32 | 19.02 | 7.63 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 30.92 | | | 16.13 | | | 1.34 | | | 0.01 | | |
| Approach LOS | D | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 1.66 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 53.0 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.051 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 4 | 0 | 0 | 37 | 0 | 59 | 41 | 936 | 5 | 0 | 528 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 2 | 0 | 9 | 16 | 3 | 0 | 0 | 3 | 3 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 0 | 0 | 41 | 0 | 72 | 59 | 995 | 5 | 0 | 563 | 18 |
| Peak Hour Factor | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 11 | 0 | 19 | 15 | 257 | 1 | 0 | 146 | 5 |
| Total Analysis Volume [veh/h] | 4 | 0 | 0 | 42 | 0 | 74 | 61 | 1029 | 5 | 0 | 582 | 19 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | Yes | | |
| Number of Storage Spaces in Median | 0 | 2 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.05 | 0.00 | 0.00 | 0.13 | 0.00 | 0.10 | 0.06 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 53.00 | 52.97 | 14.57 | 18.10 | 22.95 | 10.70 | 8.95 | 0.00 | 0.00 | 10.39 | 0.00 | 0.00 |
| Movement LOS | F | F | B | C | C | B | A | A | A | B | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.16 | 0.16 | 0.16 | 0.45 | 0.45 | 0.35 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 3.93 | 3.93 | 3.93 | 11.32 | 11.32 | 8.75 | 5.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 53.00 | | | 13.38 | | | 0.50 | | | 0.00 | | |
| Approach LOS | F | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 1.27 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 38.4 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.045 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 5 | 0 | 1 | 19 | 0 | 75 | 47 | 388 | 2 | 1 | 960 | 12 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 11 | 0 | 37 | 15 | 2 | 0 | 0 | 2 | 4 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 0 | 1 | 31 | 0 | 117 | 65 | 413 | 2 | 1 | 1020 | 17 |
| Peak Hour Factor | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 8 | 0 | 31 | 17 | 109 | 1 | 0 | 268 | 4 |
| Total Analysis Volume [veh/h] | 5 | 0 | 1 | 33 | 0 | 123 | 68 | 435 | 2 | 1 | 1074 | 18 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | Yes | | |
| Number of Storage Spaces in Median | 0 | 2 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.04 | 0.00 | 0.00 | 0.15 | 0.00 | 0.25 | 0.11 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 38.37 | 48.50 | 10.90 | 24.96 | 22.77 | 14.84 | 11.35 | 0.00 | 0.00 | 8.22 | 0.00 | 0.00 |
| Movement LOS | E | E | B | C | C | B | B | A | A | A | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.14 | 0.14 | 0.14 | 0.54 | 0.54 | 0.99 | 0.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 3.57 | 3.57 | 3.57 | 13.42 | 13.42 | 24.72 | 8.95 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 33.79 | | | 16.98 | | | 1.53 | | | 0.01 | | |
| Approach LOS | D | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 2.06 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 9: State St (NS) at Ontario Ave (EW)**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 60.7 |
| Analysis Method: | HCM 6th Edition | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.058 |

**Intersection Setup**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Entry Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Entry Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| No. of Lanes in Exit Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exit Pocket Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Speed [mph] | 25.00 | | | 35.00 | | | 45.00 | | | 45.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**Volumes**

| Name | State St | | | State St | | | Ontario Ave | | | Ontario Ave | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 4 | 0 | 0 | 37 | 0 | 59 | 41 | 936 | 5 | 0 | 528 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Growth Factor | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 | 1.0600 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 7 | 0 | 24 | 42 | 3 | 0 | 0 | 3 | 12 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 4 | 0 | 0 | 46 | 0 | 87 | 85 | 995 | 5 | 0 | 563 | 27 |
| Peak Hour Factor | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 | 0.9670 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 0 | 0 | 12 | 0 | 22 | 22 | 257 | 1 | 0 | 146 | 7 |
| Total Analysis Volume [veh/h] | 4 | 0 | 0 | 48 | 0 | 90 | 88 | 1029 | 5 | 0 | 582 | 28 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | Yes | | |
| Number of Storage Spaces in Median | 0 | 2 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.06 | 0.00 | 0.00 | 0.16 | 0.00 | 0.13 | 0.09 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 60.75 | 59.65 | 15.38 | 19.49 | 24.89 | 10.85 | 9.11 | 0.00 | 0.00 | 10.39 | 0.00 | 0.00 |
| Movement LOS | F | F | C | C | C | B | A | A | A | B | A | A |
| 95th-Percentile Queue Length [veh/ln] | 0.18 | 0.18 | 0.18 | 0.57 | 0.57 | 0.44 | 0.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft/ln] | 4.55 | 4.55 | 4.55 | 14.25 | 14.25 | 10.90 | 7.51 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 60.75 | | | 13.85 | | | 0.71 | | | 0.00 | | |
| Approach LOS | F | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 1.58 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |



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