San Luis Ranch Specific Plan Project

Final Supplemental Environmental Impact Report

State Clearinghouse Number ***2015101083***
Project # SPEC/ANNX/ER 1502-2015

Prepared by:
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Community Development Department
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San Luis Obispo, CA 93401

June 2018

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TABLE OF CONTENTS

Page

Tables

Appendices

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1.0 LEGAL BASIS AND PROJECT DESCRIPTION

This Supplement to the previously certified Final Environmental Impact Report for the San Luis Ranch Project (State Clearinghouse #2015101083) has been prepared by the City of San Luis Obispo to evaluate the environmental effects of a modification to the previously approved project. This document is interchangeably referred to as a "Supplement", a "Supplemental EIR", or by the acronym "SEIR."

1.1 PURPOSE AND LEGAL AUTHORITY

Basis for CEQA Approach. Section 15163 of the *State CEQA Guidelines* provides the following guidance with respect to the preparation of a Supplement to an EIR for minor changes to an approved project:

> *(a) The lead or responsible agency may choose to prepare a supplement to an EIR rather than a subsequent EIR if:*
>
> > *(1) Any of the conditions described in Section 15162 would require the preparation of a subsequent EIR, and*
> > *(2) Only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation.*
>
> *(b) The supplement to the EIR need contain only the information necessary to make the previous EIR adequate for the project as revised.*
>
> *(c) A supplement to an EIR shall be given the same kind of notice and public review as is given to a draft EIR under Section 15087.*
>
> *(d) A supplement to an EIR may be circulated by itself without recirculating the previous draft or final EIR.*
>
> *(e) When the agency decides whether to approve the project, the decision-making body shall consider the previous EIR as revised by the supplemental EIR. A finding under Section 15091 shall be made for each significant effect shown in the previous EIR as revised.*

Section 15163 of the *CEQA Guidelines* also refers to Section 15162 of the *Guidelines*, which describes the conditions under which a Subsequent EIR would be the appropriate document for actions not considered in a certified Final EIR. Specifically, a Subsequent EIR is appropriate when:

1. *Substantial changes are proposed in the project which will require major revisions of the previous EIR…due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;*
2. *Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR…due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or*

3. *New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete…*

Because the changes to the project, project circumstances, and new information contemplated at this time are not considered “substantial”, but instead considered “minor”, the criteria for preparing a Subsequent EIR are not met, and a Supplemental EIR pursuant to Section 15163 is considered appropriate.

Informational Document. In accordance with Section 15121 of the *State CEQA Guidelines*, the purpose of this SEIR is to serve as an informational document that:

> *...will inform public agency decision-makers and the public generally of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project.*

This SEIR is to serve as an informational document for the public and City of San Luis Obispo decision-makers. The process will culminate with Planning Commission and City Council hearings to consider certification of a Final SEIR as well as the applicant’s requested modifications to the previously-approved project.

1.2 SUMMARY OF PREVIOUSLY-APPROVED PROJECT

As summarized in the certified Final EIR, the San Luis Ranch Project consists of a Specific Plan, General Plan Amendment and Pre-Zone, Development Agreement/Memorandum of Understanding, and Development Plan/Vesting Tentative Tract Map for a 131-acre project site, including annexation of the site into the City of San Luis Obispo. The site is located in unincorporated San Luis Obispo County, generally between Madonna Road and U.S. Highway 101, south of Dalidio Drive, and is identified by assessor’s parcel number (APN) 067-121-022. The project is intended to be consistent with the development parameters described in the City’s General Plan Land Use and Circulation Elements, which were updated in December 2014. The project includes a mixture of residential, commercial, office, and hotel uses, with approximately 53 acres of the site preserved for agriculture and approximately 7.4 acres preserved for open space uses. Phases 1, 2, and 3 of the project would consist of residential development. Phases 4, 5, and 6 would consist of non-residential (commercial and office) development.

The City Council unanimously certified the Final EIR and approved the project with minor modifications on July 18, 2017, pursuant to City Council Resolution No. 10822 (2017 Series). These minor modifications were found to be consistent with the analysis included in the certified Final EIR, and thus covered under that document.

1.3 PROPOSED CHANGES TO THE APPROVED PROJECT

After further investigation the applicant has found that the required fixed sequential phasing of development and timing requirements associated Prado Road Interchange project creates constraints on financing options, which potentially renders the development project infeasible.

In order to address financing constraints, the project applicant proposes to modify the previously approved project by adjusting the phasing plan description such that each of the project phases could overlap, be out of sequence, or be concurrent, depending on market conditions and to adjust project conditions and/or mitigation measures to implement such adjusted phasing plan, including:

(i) Removing phase numbering from mitigation measures T-1, T-2, & T-3;

(ii) Removing condition of approval #6 "Project construction and infrastructure shall be completed in the sequential phase order as evaluated in the San Luis Ranch EIR..."; and

(iii) Revising the mitigation measure monitoring program such that construction of the Prado Road Overpass & Northbound Ramp is not a requirement prior to occupancy of Phase 2 or any other project Phase.

The Prado Overpass & Northbound Ramps project is a joint City and Caltrans effort currently on schedule to begin construction in 2021. The proposed change in the San Luis Ranch project description does not affect the Interchange Schedule or the project's requirement to dedicate the necessary right-of-way and pay its fair share.

Based on item (i), Mitigation Measures T-1, T-2 and T-3 would now be revised based on an updated analysis, as described in Section 2.4, Transportation.

In addition, the revised project includes an amendment to the Specific Plan to permit the Community Development Director to authorize the developer, in any given year, to also construct 50% of the units allocated to the project in the following year if the Director determines that doing so is necessary to facilitate construction of beneficial public facilities and infrastructure. The purpose of this authorization is to realize the public benefits associated with the project, mitigate known potential impacts resulting from the project, and implement development requirements, including infrastructure requirements, which the City has found to be consistent with, and not a waiver of, the requirements of the City's Growth Management Ordinance.

These changes would be reflected in the Specific Plan and Development Agreement. No other approved entitlements would be affected. The proposed revision envisions no change to the land use plan or development potential compared to what was approved by the City on July 18, 2017.

However, for the purpose of analyzing a "worst-case scenario" to provide a conservative evaluation of potential environmental impacts, this SEIR assumes that all residential and non-residential growth could occur in the first year following approval of the revised project. Table 1-1 summarizes the difference between the residential growth anticipated in the adopted Specific Plan compared to what could occur in the revised project.

Table 1-1. Residential Growth Comparison

Year	Adopted Specific Plan *	SEIR "Worst-Case" Assumption **
1	196	580
2	86	-
3	175	-
4	123	-
Total	**580**	**580**

** Table 7-11 of the adopted Specific Plan, on which this table is based, incorrectly showed 86 units in year 1, and 196 units in year 2. This table corrects that error. Figure 7-7 of the Specific Plan accurately showed intended phasing, which showed single family residential in Phase 1, and medium density residential in Phase 2. Table 2-3 of the adopted Specific Plan accurately shows up to 200 single family residential units in Phase 1, and 100 medium density residential units in Phase 2, which formed the basis of the analysis used in the certified Final EIR analysis. The above correction reflects that intent, and does not affect the analysis in this SEIR, nor would it introduce new impacts or mitigation measures as a result.*

*** Full buildout in first year used as a "worst-case" basis for analysis in this SEIR. The actual pace of development will depend on market factors.*

<u>Specific Plan</u>. The development potential under the San Luis Ranch Specific Plan would remain unchanged from what was approved in July 2017. However, development could now occur more rapidly or in a different order than previously contemplated as described above and irrespective of when the Prado Road Interchange will be completed. The pace of residential and commercial development would still be subject to limitations set forth in the Specific Plan and Development Agreement for the project. The applicant will be required to pay its fair share contribution to the Prado Road Interchange project and the Interchange project will continued to be development by the City and Caltrans with construction anticipated to begin in year 2021.

The portions of the approved Specific Plan that relate to phasing and the timing of development and related improvements will be modified to reflect the changes described above. This modification is considered a Specific Plan Amendment and is being processed as such.

<u>Development Agreement</u>. The Development Agreement was originally conceived to address the project as approved in July 2017. The proposed phasing modifications would now need to be reflected in the following relevant provisions of the Development Agreement before it can be approved:

> ***Section 6.01.2. Phasing Plan.*** *The conceptual phasing plan for the Project from the adopted Specific Plan is attached to this Agreement as **Exhibit D**.*
>
> ***Section 6.01.3.*** *The conceptual phasing plan may be amended by agreement of the Parties to take advantage of new technologies, to respond to changes in the underlying land use assumptions upon which the plan is based, or for such other reasons as the Parties may agree, consistent with the Project EIR or a subsequent environmental review, if required.*
>
> ***Section 7.02.1. Timing Requirements. b.*** *Developer shall complete the first phase of development depicted in **Exhibit D** to this Agreement by ____ [DATE TO BE DETERMINED].*

Otherwise, Developer may proceed with the development of any portion of the Project consistent with the Project Approvals, or make any financial commitment associated with any such development when, in Developer's sole and absolute discretion, Developer determines it is in Developer's best financial or other interest to do so. The foregoing sentence shall not, however, limit any obligation of Developer under this Development Agreement with respect to any development activities that Developer chooses to undertake hereunder, nor shall anything herein be interpreted to relieve Developer from compliance with any condition of approval, environmental mitigation compliance measure or other applicable regulatory requirement under Applicable Law.

Exhibit D. *[This is the conceptual phasing plan graphic, which will be modified to reflect the updated phasing concept.]*

1.4 LEAD, RESPONSIBLE, AND TRUSTEE AGENCIES

The *State CEQA Guidelines* define "lead," "responsible" and "trustee" agencies. The City of San Luis Obispo is the lead agency for the project because it has the principal responsibility for approving the project. Discretionary approval of the project (including acquisition of the project site) is vested with the San Luis Obispo City Council.

A "responsible agency" refers to public agencies other than the "lead agency" that have discretionary approval over the project. The Local Agency Formation Commission (LAFCO) would be the responsible agency for annexation of the project site to the City. The State Department of Transportation (Caltrans) would be a responsible agency for any improvements on U.S. Highway 101 (U.S. 101). Other responsible agencies include the Airport Land Use Commission, Army Corps of Engineers for review of a Nationwide or Individual permit (dependent upon the acreage of total wetland disturbance), and the Regional Water Quality Control Board (RWQCB) for Section 401 Water Quality Certification and the National Pollutant Discharge Elimination System (NPDES) Storm Water Permit.

A "trustee agency" refers to a state agency having jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California. The California Department of Fish and Wildlife (CDFW) has jurisdiction over biological resources, including waters of the State and rare and endangered plant species, which may be affected by project development, and is, therefore, a trustee agency.

1.5 ENVIRONMENTAL REVIEW PROCESS

The environmental impact review process, as required under CEQA, and as it relates to a Supplemental EIR, is outlined below. The steps are presented in sequential order.

1. **Draft Supplemental Environmental Impact Report.** The Draft SEIR contains only the new information and analysis needed to address proposed changes to the previously-approved project.

2. **Public Notice and Review.** A lead agency must prepare a Notice of Availability of an SEIR. The Notice must be placed in the County Clerk's office for 30 days (Public Resources Code Section 21092). The lead agency must send a copy of its Notice to anyone requesting it (*State CEQA Guidelines* Section 15087). Additionally, public notice

of DSEIR availability must be given through at least one of the following procedures: (a) publication in a newspaper of general circulation; (b) posting on and off of the project site; or (c) direct mailing to owners and occupants of contiguous properties. The lead agency must consult with and request comments on the Draft SEIR from responsible and trustee agencies, and adjacent cities and counties (Public Resources Code Sections 21104 and 21253). The public review period for the Draft SEIR is 45 days, because it is being sent to the State Clearinghouse for review (Public Resources Code 21091).

3. **Final SEIR.** A Final SEIR must include: (a) the DSEIR; (b) copies of comments received during public review; (c) a list of persons and entities commenting; and (d) responses to comments.

4. **Final SEIR Certification.** Prior to approving the revised project, the lead agency must certify that: (a) the Final SEIR has been completed in compliance with CEQA; (b) the Final SEIR was presented to the decision-making body of the lead agency and that the lead agency considered the information in the Final SEIR; and c) the Final SEIR reflects the lead agency's independent judgment and analysis (*State CEQA Guidelines* Section 15090).

5. **Lead Agency Decision.** A lead agency may: (a) disapprove a project because of its significant environmental effects; (b) require changes to a project to reduce or avoid significant environmental effects; or (c) approve a project despite its significant environmental effects, if the proper findings and statement of overriding considerations are adopted (*State CEQA Guidelines* Sections 15042 and 15043). Note that in this case, if the Lead Agency denies the proposed revised project, the previously approved project would still remain in effect.

6. **Findings/Statement of Overriding Considerations.** For each significant impact of the project identified in the SEIR that has not already been previously identified through the certified July 2017 Final EIR, the lead or responsible agency must find, based on substantial evidence, that either: (a) the project has been changed to avoid or substantially reduce the magnitude of the impact; (b) changes to the project are within another agency's jurisdiction and such changes have or should be adopted; or (c) specific economic, social, or other considerations make the mitigation measures or project alternatives infeasible (*State CEQA Guidelines* Section 15091). If an agency approves a project with unavoidably significant environmental effects, it must prepare a written Statement of Overriding Considerations that set forth the specific social, economic or other reasons supporting the agency's decision.

7. **Mitigation Monitoring/Reporting Program.** When a lead agency makes findings on significant effects identified in a Final SEIR, it must adopt a reporting or monitoring program for mitigation measures that were adopted or made conditions of project approval to mitigate significant effects.

8. **Notice of Determination.** The lead agency must file a Notice of Determination after deciding to approve a project for which an SEIR is prepared (*State CEQA Guidelines* Section 15094). A local agency must file the Notice with the County Clerk. The Notice must be posted for 30 days and sent to anyone previously requesting notice. Posting of the Notice starts a 30-day statute of limitations on CEQA challenges (Public Resources Code Section 21167[c]).

2.0 ENVIRONMENTAL IMPACT ANALYSIS

This section of the Final SEIR discusses the possible environmental effects of the revised project. Consistent with the requirements for a Supplemental EIR, only those issues for which potential impacts or the analysis related to those impacts are substantively different are included in this SEIR. The key issues and approach to the analysis contained in the SEIR are described below. Note that any analysis, impacts, or mitigation measures described in this SEIR would supersede those included in the July 2017 certified Final EIR. Otherwise, all information included in the certified Final EIR would still apply to the revised project.

KEY ENVIRONMENTAL ISSUES STUDIED IN THIS SEIR

In general, the resulting overall impact of development would be similar to what was previously described in the certified Final EIR, because the same amount of development would be contemplated. However, there could be differences in the analysis of impacts and mitigation measures for certain issue areas that relate to project phasing, which could affect the timing and need for certain mitigation measures or result in a different level of significance for such impacts during the time the project is being developed. This is potentially the case for the following issues areas, which are the focus of the analysis in this Supplemental EIR:

- **Air Quality** (Section 4.3 of the certified Final EIR)
- **Greenhouse Gas Emissions** (Section 4.6 of the certified Final EIR)
- **Land Use/Policy Consistency** (Section 4.9 of the certified Final EIR)
- **Transportation** (Section 4.12 of the certified Final EIR)

These issues as they relate to updated project conditions are studied in Sections 2.1, 2.2, 2.3 and 2.4 of this SEIR, respectively.

The proposed project modifications would also result in minor changes to a few descriptive passages of other sections of the certified Final EIR that refer to phasing. Such changes would occur with respect to the following issues:

- Aesthetics (Section 4.1 of the certified Final EIR). Impact AES-1. Minor change in description of views from Madonna Road related to project phasing.
- Agriculture (Section 4.12 of the certified Final EIR). Impact AG-3. Minor change in description of short-term agriculturally-related conflicts related to project phasing.
- Hydrology (Section 4.8 of the certified Final EIR). Impact HWQ-1. Minor change in description of grading related to project phasing.
- Noise (Section 4.10 of the certified Final EIR). Impact N-1. Minor change in description of construction related to project phasing.

Note that these changes are only descriptive and would not affect the analysis or mitigation measures included in that document for these issues. These minor descriptive changes are included in Section 2.5 of this SEIR.

Consistent with *CEQA Guidelines* Section 15163(d), only the new information in this SEIR needs to be recirculated, and not the original certified Final EIR in its entirety.

APPROACH TO THE SEIR ANALYSIS

The analysis for the identified issues will focus only on those portions of the original certified FEIR analysis that are substantively different than what was previously included. Setting information will be included only to the extent it is necessary to understand the analysis and impacts described. For complete setting information for a given issue, please refer to the certified Final EIR.

Similarly, the analysis will focus only on those impacts where a substantive modification to the original analysis may be required. The same approach will be used for the mitigation measures. Only those mitigation measures that are changed or otherwise modified as a result of the analysis, or new mitigation measures if they are necessary, will be included is this SEIR. As necessary to provide context and clarity, the original mitigation measure could also be referenced. Otherwise, the reader will find all the original analysis and mitigation measures within the certified Final EIR.

IMPACT CLASSIFICATION

"Significant effect" is defined by the *State CEQA Guidelines* §15382 as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment, but may be considered in determining whether the physical change is significant."

The assessment of each issue area begins with a discussion of the environmental setting related to the issue, which is followed by the impact analysis. Within the impact analysis, the first subsection identifies the methodologies used and the "significance thresholds," which are those criteria adopted by the City, other agencies, universally recognized, or developed specifically for this analysis to determine whether potential effects are significant. The next subsection describes each impact of the proposed project, mitigation measures for significant impacts, and the level of significance after mitigation. Each effect under consideration for an issue area is separately listed in bold text, with the discussion of the effect and its significance following. Each bolded impact listing also contains a statement of the significance determination for the environmental impact as follows:

> ***Class I****. Significant and Unavoidable: An impact that cannot be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires a Statement of Overriding Considerations to be issued if the project is approved per §15093 of the CEQA Guidelines.*

> ***Class II****. Significant but Mitigable: An impact that can be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires findings to be made under §15091 of the CEQA Guidelines.*

> ***Class III****. Not Significant: An impact that may be adverse, but does not exceed the threshold levels and does not require mitigation measures. However, mitigation measures that could further lessen the environmental effect may be suggested if readily available and easily achievable.*

***Class IV**. Beneficial: An effect that would reduce existing environmental problems or hazards.*

Following each environmental impact discussion is a listing of mitigation measures (if recommended or required) and the residual effects or level of significance remaining after the implementation of the measures. In those cases where the mitigation measure for an impact could have a significant environmental impact in another issue area, this impact is discussed and evaluated as a secondary impact. As noted previously, only those impacts that have the potential to be substantively different (i.e., a new impact or a substantial increase in the severity of a previously identified impact) than those described in the certified Final EIR will be included in this SEIR.

2.1 AIR QUALITY

2.1.1 Setting

Setting information with respect to this issue remains unchanged from the certified Final EIR. Please refer to Section 4.3.1 of the Final EIR for a full description of the air quality setting.

2.1.2 Impact Analysis

a. Methodology and Significance Thresholds. Procedures and guidance regarding the evaluation of air quality impacts associated with land development projects are provided by SLOAPCD's *CEQA Air Quality Handbook* (2012). The significance thresholds are the same as those used in the certified Final EIR, but are repeated in this document for clarity. Differences in methodology are described below.

Methodology. The California Emissions Estimator Model (CalEEMod) version 2016.3.1 was used to estimate regional air pollutant emissions associated with project construction and operation, as it was for the certified Final EIR. However, different phasing assumptions were applied for the SEIR analysis, as summarized below, and more fully described in **Appendix A**, which is a memorandum and related air emission modeling prepared for the revised project by Rincon Consultants.

Consistent with the revised project phasing, this analysis conservatively assumes that all residential and non-residential buildout may occur simultaneously, and considers two potential development scenarios:

1. In Scenario 1, buildout would occur consistent with the construction scenario default developed in the California Emissions Estimator Model (CalEEMod), which is consistent with San Luis Obispo Air Pollution Control District (SLOAPCD) guidelines for projects in the South Central Coast Air Basin (SCCAB).
2. In Scenario 2, all residential and non-residential buildout would occur within a single year.

Rincon estimated criteria pollutant and greenhouse gas (GHG) emissions for the Specific Plan using CalEEMod version 2016.3.1[1]. CalEEMod construction schedule defaults were used for Scenario 1, except in the case of architectural coating for Scenario 1. For Scenario 2, CalEEMod construction schedule defaults were shortened proportionally to reflect the conservative assumption that the residential and non-residential development would be completed within a single year. Similar to the methodology employed in the emissions modeling in the FEIR, the architectural coating phase for each model run was extended in Scenario 1 and Scenario 2 to overlap with half of the building construction phase because painting is generally completed as

[1] The current version of CalEEMod is 2016.3.2. This analysis uses the previous version 2016.3.1 for consistency with the emissions estimates provided in the certified FEIR. Version 2016.3.2 does not include substantial methodological changes from version 2016.3.1, including emissions factors. Therefore, the results from version 2016.3.1 reflect appropriate and up-to-date methodologies and emissions factors, and results from this version of CalEEMod are appropriate for analyzing project emissions.

buildings within a phase are completed, rather than subsequent to all building construction. Construction assumptions are detailed in the CalEEMod output files (refer to attachment).

All other modeling assumptions included in the original FEIR emissions estimates were incorporated into the revised emissions model runs, including offsite hauling of import soil material, demolition of the existing buildings in the northern area of the project site, estimates of vehicle trips associated with the proposed development, and the open space and park areas' use of reclaimed water. All other values utilized in the emissions modeling were based on applicable SLOAPCD recommended defaults.

The FEIR included mitigation measures intended to reduce temporary construction emissions, and estimated both unmitigated and mitigated criteria pollutant emissions. This analysis includes updated emissions estimates for both the unmitigated and mitigated scenarios.

Significance Thresholds. The following thresholds are based on Appendix G of the *State CEQA Guidelines*. Impacts would be significant if the project would:

1. *Conflict with or obstruct implementation of the applicable air quality plan;*
2. *Violate any air quality standard or contribute substantially to an existing or projected air quality violation;*
3. *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative guidelines for ozone precursors);*
4. *Expose sensitive receptors to substantial pollutant concentrations; or*
5. *Create objectionable odors affecting a substantial number of people.*

The Initial Study (Appendix A of the certified Final EIR) determined that the project would not create objectionable odors that would affect a substantial number of people, nor would the project expose people to objectionable odors. Therefore, Threshold 5 is not discussed further in this section. See Section 4.14 of the certified Final EIR, *Issues Addressed in the Initial Study*, for a discussion of this issue.

As stated in the *State CEQA Guidelines*, the significance criteria established by the regional air quality management or air quality pollution control district may be relied upon to make determinations. SLOAPCD's recommended significance criteria are described in its *CEQA Air Quality Handbook* (2012) and included below.

Consistency with the 2001 CAP. Projects and programs requiring an analysis of consistency with the CAP include: General Plan updates and amendments, Community Plans, Specific Plans, Area Plans, large residential developments and large commercial/industrial developments. Therefore, the proposed San Luis Ranch Specific Plan Area is evaluated for impacts related to CAP consistency. The *CEQA Air Quality Handbook* (2012) indicates that if a project is consistent with the land use and transportation control measures and strategies outlined in the 2001 CAP, then the project is considered consistent with the 2001 CAP. The 2001 CAP guidance for project consistency analysis states that the following questions should be evaluated:

1. *Are the population projections used in the plan or project equal to or less than those used in the most recent CAP for the same area?*
2. *Is rate of increase in vehicle trips and miles traveled less than or equal to the rate of population growth for the same area?*
3. *Have all applicable land use and transportation control measures from the CAP been included in the plan or project to the maximum extent feasible?*

According to the 2001 CAP, if the answer to all of the above questions is yes, then the project is consistent with the CAP. If the answer to any of the above questions is no, the project is inconsistent with the CAP.

Construction Emissions Thresholds. The SLOAPCD has developed specific daily and quarterly numeric thresholds that apply to projects within the SCCAB. Daily thresholds are for projects that would be completed in less than one quarter (90 days). The SLOAPCD's quarterly construction thresholds are applicable to the proposed project because construction would last for more than one quarter. These include:

ROG and NO_X Emissions

- Quarterly – Tier 1: For construction projects lasting more than one quarter, exceedance of the 2.5 tons per quarter threshold requires Standard Mitigation Measures and Best Available Control Technology (BACT) for construction equipment. If implementation of the Standard Mitigation and BACT measures cannot bring the project below the threshold, off-site mitigation may be necessary; and,
- Quarterly – Tier 2: For construction projects lasting more than one quarter, exceedance of the 6.3 tons per quarter threshold requires Standard Mitigation Measures, BACT, implementation of a Construction Activity Management Plan (CAMP), and off-site mitigation.

Diesel Particulate Matter (DPM) Emissions

- Quarterly - Tier 1: For construction projects lasting more than one quarter, exceedance of the 0.13 tons per quarter threshold requires Standard Mitigation Measures, BACT for construction equipment; and,
- Quarterly - Tier 2: For construction projects lasting more than one quarter, exceedance of the 0.32 ton per quarter threshold requires Standard Mitigation Measures, BACT, implementation of a CAMP, and off-site mitigation.

Fugitive Particulate Matter (PM_{10}), Dust Emissions

- Quarterly: Exceedance of the 2.5 tons per quarter threshold requires Fugitive PM_{10} Mitigation Measures and may require the implementation of a CAMP.

Operational Emissions Thresholds. SLOAPCD's long-term operational emission thresholds are summarized in Table 2.1-1.

Table 2.1-1. SLOAPCD Operational Emissions Significance Thresholds

Pollutant	Threshold	
	Daily	Annual
ROG + NO_X (combined)[1]	25 lbs/day	25 tons/year
Diesel Particulate Matter (DPM)[1]	1.25 lbs/day	---
Fugitive Particulate Matter (PM_{10}), Dust	25 lbs/day	25 tons/year
CO	550 lbs/day	---

Source: SLOAPCD 2012

1. SLOAPCD specifies that CalEEMod winter emission outputs should be compared to operational thresholds for these pollutants (2012).

b. Project Impacts and Mitigation Measures. This section focuses only on those portions of the impact discussion and related mitigation measures that may have been modified from the certified Final EIR. Unless otherwise described here, the analysis of this issue as well as related conclusions, level of significance, and mitigation measures remain unchanged from the certified Final EIR. Please refer to that document for a full discussion of project-related impacts.

Impact AQ-2 Construction of the project would generate temporary increases in localized air pollutant emissions. Construction emissions of ROG, NO_X, and DPM would exceed SLOAPCD construction thresholds. Impacts would be Class II, *less than significant with mitigation incorporated*.

Construction of the project would generate temporary emissions of air pollutants. Ozone precursors, NO_X and ROG, as well as DPM (exhaust $PM_{2.5}$ and PM_{10}) would be emitted by the operation of construction equipment, while fugitive dust (PM_{10}) would be emitted by activities that disturb the soil, such as grading and excavation, road construction, and building construction.

Emissions Estimates

The revised construction timing used in Scenario 1 and Scenario 2 does not include any changes to the final buildout of the San Luis Ranch Specific Plan. Therefore, total project emissions, including operational emissions of criteria pollutants and GHGs, would remain unchanged. The primary purpose of the updated criteria pollutant emissions estimates is to evaluate whether annual emissions during Specific Plan construction would change as a result of the revised construction timing, and to assess whether the mitigation measures for project construction emissions included in the FEIR would remain adequate to reduce temporary construction emissions to a less than significant level.

The maximum quarterly unmitigated construction emissions are shown in Table 2.1-2 (Scenario 1) and Table 2.1-3 (Scenario 2). These tables are an update of Table 4.3-6 from the certified FEIR.

Table 2.1-2. Scenario 1: Unmitigated Maximum Quarterly Construction Emissions

Construction Year	Maximum Quarter Per Year (tons/quarter)[1]		
	$ROG + NO_X$	Diesel Particulate Matter	Dust
2019	4.30	0.14	0.38
2020	3.52	0.10	0.45
2021	1.59	0.07	0.28
2022	1.50	0.06	0.27
2023	3.03	0.05	0.29
2024	2.96	0.05	0.32
2025	2.90	0.04	0.32
2026	2.46	0.02	0.07
Maximum tons/quarter	**4.30**	**0.14**	**0.45**
SLOAPCD Quarterly Tier 1 Thresholds (tons/quarter)	2.5	0.13	2.5
Threshold Exceeded?	**Yes**	**Yes**	**No**
SLOAPCD Quarterly Tier 2 Thresholds (tons/quarter)	6.3	0.32	2.5
Threshold Exceeded?	**No**	**No**	**No**

Notes: All calculations were made using CalEEMod. See attachment for model results. Diesel Particulate Matter (DPM) is equal to combined exhaust PM_{10} and $PM_{2.5}$, and dust is equal to fugitive PM_{10} from CalEEMod.

1. CalEEMod calculates quarterly emissions of $ROG+NO_X$, but does not generate quarterly emissions for DPM and dust; therefore, maximum annual construction emissions of DPM and dust were divided by the number of quarters undergoing construction in a year to estimate maximum quarterly emissions.

As shown in Table 2.1-2, the maximum quarterly combined ROG and NO_X emissions under Scenario 1 would exceed SLOAPCD’s Quarterly Tier 1 threshold, but would not exceed the Tier 2 threshold. The project’s diesel particulate matter (DPM) emissions under Scenario 1 would exceed the Tier 1 threshold, but would not exceed the Tier 2 threshold. The project’s dust emissions under Scenario 1 would not exceed Tier 1 or 2 thresholds. These results are generally consistent with, but slightly reduced, in comparison to the results shown in Table 4.3-6 from the certified FEIR, which identified combined ROG and NO_X emissions above the Tier 2 threshold. The reduction in quarterly emissions is due to the later start of project construction (year 2019, versus year 2017 in the FEIR), which results in lower default equipment emission rates due to the increasing use of newer, cleaner construction equipment.

Table 2.1-3. Scenario 2: Unmitigated Maximum Quarterly Construction Emissions

Construction Year	Maximum Quarter Per Year (tons/quarter)[1]		
	$ROG + NO_X$	Diesel Particulate Matter	Dust
2019	15.21	0.73	0.35
Maximum tons/quarter	**15.21**	**0.73**	**0.35**
SLOAPCD Quarterly Tier 1 Thresholds (tons/quarter)	2.5	0.13	2.5
Threshold Exceeded?	**Yes**	**Yes**	**No**
SLOAPCD Quarterly Tier 2 Thresholds (tons/quarter)	6.3	0.32	2.5
Threshold Exceeded?	**Yes**	**Yes**	**No**

Notes: All calculations were made using CalEEMod. See attachment for model results. DPM is equal to combined exhaust PM_{10} and $PM_{2.5}$, and dust is equal to fugitive PM_{10} from CalEEMod.

1. CalEEMod calculates quarterly emissions of $ROG+NO_X$, but does not generate quarterly emissions for DPM and dust; therefore, maximum annual construction emissions of DPM and dust were divided by the number of quarters undergoing construction in a year to estimate maximum quarterly emissions.

As shown in Table 2.1-3, the project's maximum quarterly combined ROG and NO_X emissions under Scenario 2 would exceed SLOAPCD's Quarterly Tier 1 and Tier 2 thresholds. The project's DPM emissions under Scenario 2 would exceed Tier 1 and 2 thresholds. The project's dust emissions under Scenario 2 would not exceed Tier 1 or 2 thresholds. These results are higher than the results shown in Table 4.3-6 from the FEIR, which identified combined ROG and NO_X emissions slightly above the Tier 2 threshold, and DPM emissions below the Tier 2 threshold. The increase in quarterly emissions is due to the compression of all anticipated construction activity within a shorter overall schedule (one year, versus five years in the FEIR).

For either scenario, impacts are considered **Class II**, significant but mitigable.

Mitigation Measures. Consistent with the findings of the certified FEIR, Mitigation Measures AQ-2(a) through AQ-2(e) are required for the worst-case scenario (Scenario 2, where all development occurs in a single year) to reduce construction emissions of ROG, NO_X, and DPM:

- **AQ-2(a) Fugitive Dust Control Measures**
- **AQ-2(b) Standard Control Measures for Construction Equipment**
- **AQ-2(c) Best Available Control Technology (BACT) for Construction Equipment**
- **AQ-2(d) Architectural Coating**
- **AQ-2(e) Construction Activity Management Plan**

The revised project's maximum quarterly emissions with implementation of Tier 3 off-road engine compliance and level 2 diesel particulate filters required by Mitigation Measure AQ-2(c), as well as low VOC-emission paint required by Mitigation Measure AQ-2(d) are shown in Table 2.1-2 (Scenario 1) and Table 2.1-3 (Scenario 2). These tables are an update of Table 4.3-7 from the FEIR.

For clarity, all relevant mitigation measures for this impact from the certified Final EIR are included in their entirety below.

AQ-2(a) **Fugitive Dust Control Measures.** Construction projects shall implement the following dust control measures so as to reduce PM_{10} emissions in accordance with SLOAPCD requirements.

- Reduce the amount of the disturbed area where possible;
- Water trucks or sprinkler systems shall be used during construction in sufficient quantities to prevent airborne dust from leaving the site. Increased watering frequency shall be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water or a SLOAPCD-approved dust suppressant shall be used whenever possible, to reduce the amount of potable water used for dust control. <u>Please note that since water use is a concern due to drought conditions, the contractor or builder shall consider the use of an APCD-approved dust suppressant where feasible to reduce the amount of water used for dust control</u>;
- All dirt stock pile areas shall be sprayed daily as needed;
- Permanent dust control measures identified in the approved project revegetation and landscape plans shall be implemented as soon as possible following completion of any soil disturbing activities;
- Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading shall be sown with a fast germinating, non-invasive grass seed and watered until vegetation is established;
- All disturbed soil areas not subject to revegetation shall be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the SLOAPCD;
- All roadways, driveways, sidewalks, etc. to be paved shall be completed as soon as possible after grading unless seeding or soil binders are used;
- Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site;
- All trucks hauling dirt, sand, soil, or other loose materials are to be covered or shall maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with California Vehicle Code Section 23114;

- Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site;
- Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water shall be used where feasible;
- All of these fugitive dust mitigation measures shall be shown on grading and building plans; and
- The contractor or builder shall designate a person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize dust complaints, reduce visible emissions below 20 percent opacity, and to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the SLOAPCD Compliance Division prior to the start of any grading, earthwork or demolition.

AQ-2(b) **Standard Control Measures for Construction Equipment**. The following standard air quality mitigation measures shall be implemented during construction activities at the project site:

- Maintain all construction equipment in proper tune according to manufacturer's specifications;
- Fuel all off-road and portable diesel powered equipment with ARB certified motor vehicle diesel fuel (non-taxed version suitable for use off-road);
- Use diesel construction equipment meeting ARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines, and comply with the State Off-Road Regulation;
- Use on-road heavy-duty trucks that meet the ARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation;
- Construction or trucking companies with fleets that do not have engines in their fleet that meet the engine standards identified in the above two measures (e.g. captive or NO_X exempt area fleets) may be eligible by proving alternative compliance;
- On-road diesel vehicles shall comply with Section 2485 of Title 13 of the California Code of Regulations. This regulation limits idling from diesel-fueled commercial motor vehicles with gross vehicular weight ratings of more than 10,000 pounds and licensed for operation on highways. It applies to California and non-California based vehicles. In general, the regulation specifies that drivers of said vehicles:
  1. Shall not idle the vehicle's primary diesel engine for greater than 5-minutes at any location, except as noted in Subsection (d) of the regulation; and,

  2. Shall not operate a diesel-fueled auxiliary power system (APS) to power a heater, air conditioner, or any ancillary equipment on that vehicle during sleeping or resting in a sleeper berth for greater than 5.0 minutes at any location when within 1,000 feet of a restricted area, except as noted in Subsection (d) of the regulation.
- Off-road diesel equipment shall comply with the 5-minute idling restriction identified in Section 2449(d)(2) of the California Air Resources Board's In-Use Off-Road Diesel regulation.
- Signs shall be posted in the designated queuing areas and or job sites to remind drivers and operators of the 5 minute idling limit;
- In addition to the state required diesel idling requirements, the project applicant shall comply with these more restrictive requirements to minimize impacts to nearby sensitive receptors:
  1. Signs that specify the no idling areas shall be posted and enforced at the site.
  2. Diesel idling within 1,000 feet of sensitive receptors is not permitted;
  3. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors;
  4. Use of alternative fueled equipment is recommended;
- Electrify equipment when feasible;
- Substitute gasoline-powered in place of diesel-powered equipment, where feasible; and
- Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel.

AQ-2(c) **Best Available Control Technology (BACT) for Construction Equipment**. The following BACT for diesel-fueled construction equipment shall be implemented during construction activities at the project site, where feasible:

- Further reducing emissions by expanding use of Tier 3 and Tier 4 off-road and 2010 on-road compliant engines where feasible;
- Repowering equipment with the cleanest engines available; and
- Installing California Verified Diesel Emission Control Strategies, such as level 2 diesel particulate filters. These strategies are listed at: http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm

AQ-2(d) **Architectural Coating.** To reduce ROG and NO_X levels during the architectural coating phase, low or no VOC-emission paint shall be used with levels of 50 g/L or less.

AQ-2(e) **Construction Activity Management Plan.** Emissions reduction measures and construction practices required to comply with Mitigation Measures AQ-2(a) through AQ-2(d) shall be documented in a Construction Activity Management Plan (CAMP) and submitted to SLOAPCD for review and approval at least three months before the start of construction. The CAMP shall include a Dust Control Management Plan, tabulation of on and off-road construction equipment (age, horse-power and miles and/or hours of operation), construction truck trip schedule, construction work-day period, and construction phasing. If implementation of the Standard Mitigation and Best Available Control Technology measures cannot bring the project below the Tier 1 threshold (2.5 tons of NO_X+ROG per quarter), off-site mitigation shall be implemented in coordination with SLOAPCD to reduce NO_X and ROG emissions to below the Tier 1 threshold.

Significance After Mitigation. According to the SLOAPCD *CEQA Air Quality Handbook,* if estimated construction emissions are expected to exceed either of the SLOAPCD Quarterly Tier 2 thresholds of significance after the standard and BACT measures are factored into the estimation, then an SLOAPCD approved Construction Activity Management Plan (CAMP) and offsite mitigation need to be implemented in order to reduce potential air quality impacts to a less than significant level. If construction emissions do not exceed Tier 2 thresholds with implementation of standard and BACT measures, SLOAPCD considers emissions less than significant, even if Tier 1 thresholds continue to be exceeded.

Tables 2.1-4 and 2.1-5 show the post-mitigation construction emissions associated with each development phasing scenario.

Table 2.1-4. Scenario 1: Mitigated Maximum Quarterly Construction Emissions

Construction Year	Maximum Quarter Per Year (tons/quarter)[1]		
	ROG + NO_X	Diesel Particulate Matter	Dust
2019	3.40	0.04	0.21
2020	2.87	0.05	0.35
2021	1.48	0.04	0.28
2022	1.42	0.04	0.27
2023	1.69	0.04	0.29
2024	1.66	0.04	0.32
2025	1.63	0.04	0.32
2026	1.24	0.02	0.07
Total	**3.40**	**0.05**	**0.35**

SLOAPCD Quarterly Tier 1 Thresholds (tons/quarter)	2.5	0.13	2.5
Threshold Exceeded?	**Yes**	**No**	**No**
SLOAPCD Quarterly Tier 2 Thresholds (tons/quarter)	6.3	0.32	2.5
Threshold Exceeded?	**No**	**No**	**No**

Notes: All calculations were made using CalEEMod. See attachment for model results. DPM is equal to combined exhaust PM_{10} and $PM_{2.5}$, and dust is equal to fugitive PM_{10} from CalEEMod.

1. CalEEMod calculates quarterly emissions of ROG+NO_X, but does not generate quarterly emissions for DPM and dust; therefore, maximum annual construction emissions of DPM and dust were divided by the number of quarters undergoing construction in a year to estimate maximum quarterly emissions.

As shown in Table 2.1-4, with implementation of Mitigation Measures AQ-2(c) and AQ-2(d), construction emissions under Scenario 1 would not exceed any of the SLOAPCD Quarterly Tier 2 thresholds of significance. Therefore, consistent with the findings of the FEIR, implementation of a Construction Activity Management Plan (CAMP) and offsite mitigation would not be required under this scenario, and impacts would be less than significant with mitigation.

Table 2.1-5. Scenario 2: Mitigated Maximum Quarterly Construction Emissions

Construction Year	Maximum Quarter Per Year (tons/quarter)[1]		
	ROG + NO_X	Diesel Particulate Matter	Dust
2019	10.63	0.27	0.32
Total	**10.63**	**0.27**	**0.32**
SLOAPCD Quarterly Tier 1 Thresholds (tons/quarter)	2.5	0.13	2.5
Threshold Exceeded?	**Yes**	**Yes**	**No**
SLOAPCD Quarterly Tier 2 Thresholds (tons/quarter)	6.3	0.32	2.5
Threshold Exceeded?	**Yes**	**No**	**No**

Notes: All calculations were made using CalEEMod. See attachment for model results. DPM is equal to combined exhaust PM_{10} and $PM_{2.5}$, and dust is equal to fugitive PM_{10} from CalEEMod.

1. CalEEMod calculates quarterly emissions of ROG+NO_X, but does not generate quarterly emissions for DPM and dust; therefore, maximum annual construction emissions of DPM and dust were divided by the number of quarters undergoing construction in a year to estimate maximum quarterly emissions.

As shown in Table 2.1-5, with implementation of Mitigation Measures AQ-2(c) and AQ-2(d), construction emissions under Scenario 2 would not exceed the SLOAPCD Quarterly Tier 2 thresholds of significance for DPM or dust. However, emissions of ROG + NO_X would exceed the Tier 2 threshold of 6.3 tons/quarter. Therefore, implementation of a CAMP pursuant to Mitigation Measure AQ-2(e) would be required, and offsite mitigation may be necessary to reduce impacts to a less than significant level. Off-site mitigation, if required, must be consistent with SLOAPCD guidelines (refer to Section 2.3.3 of the *CEQA Air Quality Handbook*). Consistent with these guidelines, the project applicant and/or developers of individual projects within the Specific Plan area would be required to:

- coordinate with SLOAPCD to provide funding for off-site emission reduction measures to reduce emissions to below daily threshold levels;
- coordinate with SLOAPCD to provide funding for off-site emissions reduction measures prior to issuance of grading permits; and
- submit proof that emissions have been reduced to below daily threshold levels to the Community Development Department.

For the purpose of this SEIR analysis, the more restrictive conclusions and mitigation requirements of Scenario 2 are assumed to apply. However, if actual development occurs more consistent with what is presented in Scenario 1, mitigation requirements would be potentially reduced and modified accordingly.

Other Final Environmental Impact Report Air Quality Impacts

As described above, the revised construction timing does not include any changes to the overall buildout of the San Luis Ranch Specific Plan. Nonetheless, SLOAPCD requires any project with grading areas greater than 4.0 acres or that are within 1,000 feet of any sensitive receptor to implement standard fugitive dust mitigation measures. Therefore, the FEIR conclusions with regard to Impacts AQ-1, AQ-3, AQ-4, and potential cumulative air quality would not change as a result of the revised Specific Plan construction timing. These potential air quality impacts are discussed briefly below.

- **Impact AQ-1: Clean Air Plan consistency**. As described in the FEIR, the Specific Plan would be inconsistent with the SLOAPCD 2001 Clean Air Plan because it would result in an increase in vehicle miles traveled (VMT) that would exceed the rate of population growth. Mitigation Measure AQ-1, *Encourage Telecommuting*, as well as Mitigation Measure AQ-3(a) and AQ-3(b) described below, would reduce regional air pollutant emissions and ensure that the project would be consistent with the Clean Air Plan transportation control measures and land use strategies. However, mitigation is not available that would reduce projected VMT such that the project's vehicle trip rate increase would not exceed population growth in the region. Therefore, impacts related to consistency with the 2001 Clean Air Plan would remain significant and unavoidable (**Class I**), consistent with the findings of the FEIR.
- **Impact AQ-3: Long-term operational emissions**. Total project emissions, including operational emissions of criteria pollutants, would remain unchanged. Mitigation Measures AQ-3(a), *Standard Operational Mitigation Measures*, and AQ-3(b), *Offsite Mitigation*, would reduce impacts to regional air quality below SLOAPCD's annual operational thresholds. Therefore, long-term operational air quality impacts would be less than significant with mitigation (**Class II**), consistent with the findings of the FEIR.
- **Impact AQ-4: Exposure of sensitive receptors to substantial pollutant concentrations**. The FEIR did not identify impacts to sensitive receptors associated with construction activity, and as discussed above, short-term construction emissions would be generally consistent with, and somewhat lower than, those identified in the FEIR. The primary sources of toxic air contaminant emissions identified in the FEIR were vehicle trips on area roadways and industrial uses. The revised construction timing would not increase exposure of sensitive receptors to either of these sources. Therefore, potential impacts

from exposure of sensitive receptors to substantial pollutant concentrations would remain less than significant (**Class III**), consistent with the findings of the FEIR.

- **Cumulative Air Quality Impacts**. As described in the FEIR, a project that exceeds applicable SLOAPCD significance thresholds or is found to be inconsistent with the Clean Air Plan would result in significant cumulative impacts. As discussed under Impacts AQ-1 through and AQ-3, the project is inconsistent with the 2001 Clean Air Plan and would exceed SLOAPCD construction and operational thresholds. The revised construction timing would not reduce these identified impacts. Therefore, cumulative impacts on air quality would remain significant and unavoidable (**Class I**), consistent with the findings of the FEIR.

2.2 GREENHOUSE GAS EMISSIONS

2.2.1 Setting

Setting information with respect to this issue remains unchanged from the certified Final EIR. Please refer to Section 4.6.1 of the Final EIR for a full description of the setting related to Greenhouse Gas Emissions.

2.2.2 Impact Analysis

a. Methodology and Significance Thresholds. The significance thresholds are the same as those used in the certified Final EIR, but are repeated in this document for clarity. Based on Appendix G of the *State CEQA Guidelines*, impacts related to GHG emissions from the project would be significant if the project would:

1. *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or*
2. *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.*

The vast majority of individual projects do not generate sufficient GHG emissions to directly influence climate change. However, physical changes caused by a project can contribute incrementally to cumulative effects that are significant, even if individual changes resulting from a project are limited. The issue of climate change typically involves an analysis of whether a project's contribution towards an impact would be cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (*State CEQA Guidelines*, Section 15355).

City of San Luis Obispo Climate Action Plan. For future projects, the significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds, or consistency with a regional GHG reduction plan, such as the City's Climate Action Plan. The Climate Action Plan, adopted in 2012, serves as the City's qualified GHG reduction plan because it contains the following required plan elements:

- Community-wide GHG emissions inventory and "business-as-usual" forecast of 2020 community-wide GHG emissions;
- GHG reduction targets consistent with AB 32 (i.e. a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable);
- Analysis of local and state policies and actions that may impact GHG emissions within the jurisdiction;
- Quantification of GHG reduction measures demonstrating that, if implemented, the GHG reduction targets will be met;
- Implementation and monitoring strategy and timeline; and
- Adequate environmental review of the Climate Action Plan.

Incorporation of these plan elements allows the Climate Action Plan to be used in the cumulative impacts analysis of later projects. As described in the Climate Action Plan, to analyze a project's consistency with the Climate Action Plan, "the environmental document for each project must identify those requirements specified in the Climate Action Plan that apply to the project, and if those requirements are not otherwise binding or enforceable, should be incorporated as mitigation measures applicable to the project" (*State CEQA Guidelines*, Section 15183.5b). The City is in the process of developing a mitigation matrix for projects that exceed specified GHG thresholds. The matrix will include quantifiable Climate Action Plan reduction measures consistent with SB 97 direction. For this analysis, the project's consistency with the Climate Action Plan is analyzed qualitatively against the applicable implementation strategies contained in the Climate Action Plan.

SLOAPCD CEQA Thresholds. The City of San Luis Obispo has not adopted GHG emissions thresholds for use in CEQA documents. In March 2012, the SLOAPCD adopted CEQA thresholds for GHG emissions. Based on the adopted SLOAPCD guidance, the following three quantitative thresholds may be used to evaluate the level of significance of GHG emissions impacts for residential and commercial projects:

1. *Qualified GHG Reductions Strategies. A project would have a significant impact if it is not consistent with a qualified GHG reduction strategy that meets the requirements of the State CEQA Guidelines. If a project is consistent with a qualified GHG reduction strategy, it would not have a significant impact; OR,*
2. *Bright-Line Threshold. A project would have a significant impact if it exceeds the "bright-line threshold" of 1,150 metric tons CO_2E/year; OR,*
3. *Efficiency Threshold. A project would have a significant impact if the efficiency threshold exceeds 4.9 metric tons of CO_2E/service population/year. The service population is defined as the number of residents plus employees for a given project.*

The efficiency threshold is specifically intended to avoid penalizing large-scale plans or projects that incorporate emissions-reducing features and/or that are located in a manner that results in relatively low vehicle miles traveled. The City of San Luis Obispo Climate Action Plan, adopted in 2012, serves as the City's qualified GHG reduction plan. Therefore, the project's contribution to cumulative GHG impacts would be cumulatively considerable if it is inconsistent with the Climate Action Plan. For informational purposes, the project's GHG emissions per service population are also quantified.

Methodology. Calculations of CO_2, CH_4, and N_2O emissions are provided to identify the magnitude of potential project effects. The analysis focuses on CO_2, CH_4, and N_2O because these make up 98.9 percent of all GHG emissions by volume (IPCC, 2007) and are the GHG emissions that the project would emit in the largest quantities. Fluorinated gases, such as HFCs, PFCs, CFCs, and SF_6, which are primarily associated with industrial processes, were also considered for the analysis. However, because the project is a residential/commercial development, the quantity of fluorinated gases would not be significant. Emissions of all GHGs are converted into their equivalent GWP (Global Warming Potential) in terms of CO_2 (CO_2e). Calculations are based on the methodologies discussed in the California Air Pollution Control Officers Association (CAPCOA) *CEQA and Climate Change* white paper (January 2008) and included the use of the California Climate Action Registry (CCAR) General Reporting Protocol (January 2009).

GHG emissions associated with the project were calculated using the California Emissions Estimator Model (CalEEMod) version 2016.3.1[1] (see Appendix A for calculations).

Operational Emissions. CalEEMod provides operational emissions of CO_2, N_2O, and CH_4. Emissions from energy use include electricity and natural gas use. The emissions factors for natural gas combustion are based on EPA's AP-42 (*Compilation of Air Pollutant Emissions Factors*) and CCAR. Electricity emissions are calculated by multiplying the energy use times the carbon intensity of the utility district per kilowatt hour (CalEEMod User Guide, 2016). The default electricity consumption values in CalEEMod include the California Energy Commission (CEC)-sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies.

Emissions associated with area sources, including consumer products, landscape maintenance, and architectural coating were calculated in CalEEMod and utilize standard emission rates from the California Air Resources Board, U.S. EPA, and emission factor values provided by the local air district (CalEEMod User Guide, 2016).

Emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste (CalEEMod User Guide, 2016). Waste disposal rates by land use and overall composition of municipal solid waste in California was primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle).

Emissions from water and wastewater usage calculated in CalEEMod were based on the default electricity intensity from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Northern and Southern California.

For mobile sources, CO_2 and CH_4 emissions were quantified in CalEEMod. Because CalEEMod does not calculate N_2O emissions from mobile sources, N_2O emissions were quantified using the California Climate Action Registry General Reporting Protocol (January 2009) direct emissions factors for mobile combustion (see **Appendix A** for calculations). Estimates of vehicle trips associated with the proposed development are based on peak hour trip generation rates from the project Traffic Impact Study (refer to Section 4.12 of the certified Final EIR as updated in Section 2.4 of this SEIR, *Transportation/Traffic* and Appendix B of the SEIR). The trip generation rates in the TIS are based on the Institute of Transportation Engineers 9th Edition *Trip Generation Manual*, and also account for reductions expected from the mixed use and pedestrian-oriented characteristics of the project, including internal capture and pass-by trips. The estimate of total daily trips associated with the proposed project was based on the standard Institute of Transportation Engineers (ITE) vehicle trip rates and was calculated and extrapolated to derive total annual mileage in CalEEMod. Emission rates for N_2O emissions were based on the vehicle mix output generated by CalEEMod and the emission factors found in the California Climate Action Registry General Reporting Protocol.

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[1] The current version of CalEEMod is 2016.3.2. This analysis uses the previous version 2016.3.1 for consistency with the emissions estimates provided in the certified FEIR. Version 2016.3.2 does not include substantial methodological changes from version 2016.3.1, including emissions factors. Therefore, the results from version 2016.3.1 reflect appropriate and up-to-date methodologies and emissions factors, and results from this version of CalEEMod are appropriate for analyzing project emissions.

Construction Emissions. Although construction activity is addressed in this analysis, CAPCOA does not discuss whether any of the suggested threshold approaches adequately address impacts from temporary construction activity. As stated in the *CEQA and Climate Change* white paper, "more study is needed to make this assessment or to develop separate thresholds for construction activity" (CAPCOA, 2008). Nevertheless, air districts such as the SLOAPCD (2012) have recommended amortizing construction-related emissions over the life of the project; SLOAPCD suggests the life of a project is typically 50 years for residential projects and 25 years for commercial projects. The project includes both commercial and residential uses; therefore, to provide a conservative estimate of construction emissions, emissions were amortized over the shorter lifetime duration of 25 years.

Construction of the project would generate temporary GHG emissions primarily as a result of operation of construction equipment on-site, as well as from vehicles transporting construction workers to and from the project site and heavy trucks to export earth materials offsite. Site preparation and grading typically generate the greatest amount of emissions due to the use of grading equipment and soil hauling. Re-grading of the project site would require approximately 248,000 cubic yards (cy) of import. Off-site hauling of import materials was included in the emissions modeling. This analysis assumes that soil would be imported to the site during each phase and, as exact import volumes per phase are unknown, total import was divided between phases proportionally by phase acreage. CalEEMod provides an estimate of emissions associated with the construction period, based on parameters such as the duration of construction activity, area of disturbance, and anticipated equipment used during construction.

Service Population. The service population is defined as the number of residents plus employees for a given project. Development of the project would add an estimated 1,293 residents to the City (546 new single family and multi-family dwelling units x 2.29 people/unit and 34 new affordable units x 1.25 people/unit).[2] In addition, based on employment generation rates for retail, hotel, and office uses from the SLOAPCD's *CEQA Air Quality Handbook* (SLOAPCD 2012), the project would result in a net increase of approximately 842 new employees.[3] Therefore, the total service population would be 2,135 persons.

b. Project Impacts and Mitigation Measures. As described above, the revised construction timing does not include any changes to the overall buildout of the San Luis Ranch Specific Plan. Annualized project GHG emissions, which are based on full buildout of the Specific Plan, would remain unchanged. Therefore, impacts related to GHG emissions (**Impact GHG-1** in the Final EIR) would be less than significant (**Class III**), consistent with the findings of the FEIR. **Appendix A** includes updated modeling related to greenhouse gas emissions.

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[2] Persons per household from City's Land Use and Circulation Element Appendix I Water Supply Assessment (page 9), as referred to in SB610 Water Supply Assessment – San Luis Ranch prepared by Cannon (2016; Appendix M).
[3] Based on the following rates: 0.64 employees per 1,000 square feet for proposed 200 room hotel (290,400 square feet from CalEEMod results, see Appendix A); 2.52 employees per 1,000 square feet for proposed 150,000 square feet of office space; and 1.39 employees per 1,000 square feet for proposed 200,000 square feet regional retail (SLOAPCD 2012).

2.3 LAND USE/POLICY CONSISTENCY

2.3.1 Setting

Setting information with respect to this issue remains generally unchanged from the certified Final EIR. Please refer to Section 4.9.1 of the Final EIR for a full description of the land use and policy setting related to the project.

However, the Final EIR did not examine the effect of compressed project phasing with respect to the City's growth management policies. For that reason, the relevant growth management policies from the City's General Plan and Zoning Regulations are described below.

General Plan Land Use Element

The rate of residential growth in the City is managed through the City's General Plan and Zoning Ordinance. General Plan Land Use Element Chapter 1 addresses Growth Management, and includes the following relevant policies and provisions with respect to the modified phasing provisions of the revised project:

1.11. Growth Rates & Phasing

1.11.1. Overall Intent

The City shall manage the city's growth rate to provide for the balanced evolution of the community and the gradual assimilation of new residents. Growth must be consistent with the City's ability to provide resources and services and with State and City requirements for protecting the environment, the economy, and open space.

1.11.2. Residential Growth Rate

The City shall manage the growth of the city's housing supply so that it does not exceed one percent per year, on average, based on thresholds established by Land Use Element Table 3, excluding dwellings affordable to residents with extremely low, very low or low incomes as defined by the Housing Element. This rate of growth may continue so long as the City's basic service capacity is assured. Table 3 shows the approximate number of dwellings and residents which would result from the one percent maximum average annual growth rate over the planning period. Approved specific plan areas may develop in accordance with the phasing schedule adopted by each specific plan provided thresholds established by Table 3 are not exceeded. The City Council shall review the rate of growth on an annual basis in conjunction with the General Plan annual report to ensure consistency with the City's gradual assimilation policy.

LUE Table 3. One Percent City Population Growth Projection

Year	***Approximate Maximum Number of Dwellings ****	***Anticipated Number of People***
2013	*20,697*	*45,541*
2015	*21,113*	*46,456*
2020	*22,190*	*48,826*
2025	*23,322*	*51,317*

2030	*24,512*	*53,934*
2035	*25,762*	*56,686*
Estimated Urban Reserve Capacity		*57,200*

** 2013 population based on CA Department of Finance data and projected based on 1% annual growth*

1.11.3. Phasing Residential Expansions

Before a residential expansion area is developed, the City must have adopted a specific plan or a development plan for it. Such plans for residential expansion projects will provide for phased development, consistent with the population growth outlined in Table 3, and taking into account expected infill residential development.

1.11.4. Nonresidential Growth Rate

Each year, the City Council shall evaluate the actual increase in nonresidential floor area over the preceding five years. The Council shall consider establishing limits for the rate of nonresidential development if the increase in nonresidential floor area for any five-year period exceeds five percent. Any limits so established shall not apply to:

A. Changed operations or employment levels, or relocation or ownership change, of any business existing within the City at the time the limit is set;
B. Additional nonresidential floor area within the Downtown core (Figure 4);
C. Public agencies; and
D. Manufacturing, light industrial, research businesses, or companies providing a significant number of head of household jobs.

Zoning Regulations

Chapter 17.88 of the City's Zoning Regulations addresses residential growth management regulations. In general, this implements and expands on the policies set forth in the City's General Plan.

Chapter 17.88: Residential Growth Management Regulations

Sections:

17.88.010 Purpose and justification.
17.88.020 Allocations.
17.88.030 Periodic city council review and consideration of revisions.

17.88.010 Purpose and justification.

A. The regulations codified in this chapter are intended to assure that the rate of population growth will not exceed the city's ability to assimilate new residents and to provide municipal services, consistent with the maximum growth rates established in the general plan. Also, these regulations are to assure that those projects which best meet the city's objectives for affordable housing, infill development, open space protection, and provision of public facilities will be allowed to proceed with minimum delay.

B. *San Luis Obispo is a charter city, empowered to make and enforce all laws concerning municipal affairs, subject only to the limitations of the city charter and the constitution and laws of the state. Regulation of the rate of residential development is a reasonable extension of municipal authority to plan overall development, in furtherance of the public health, safety and general welfare.*

C. *According to the general plan land use element, the city should achieve a maximum annual average population growth rate of one percent. The reserve of developable land within the city and the capacity of proposed annexations could sustain growth rates which would exceed the objectives of the general plan.*

D. *The growth rate policies of the general plan reflect the city's responsibility to accommodate a reasonable share of expected state and regional growth.*

E. *To avoid further imbalance between the availability of jobs and of housing within the city, the general plan also manages expansion of growth-inducing activities. The burdens of growth management are not being placed solely on the residential sector, since it largely responds to demands caused by other sectors.*

F. *Considering the likely levels of housing demand and construction throughout the housing market area, nearly coinciding with San Luis Obispo County, these regulations are not expected to affect the overall balance between housing supply and demand in the market area. These regulations will not impede and may help meet the needs of very low-, low- and moderate-income households. (Ord. 1459 § 3 (part), 2004: Ord. 1359 § 3 (part), 1999)*

17.88.020 Allocations.

A. *Each Specific Plan shall adopt a phasing schedule that allocates timing of potential residential construction, including phasing of required improvements, consistent with the general plan and with these regulations.*

B. *The limitations on residential development established by these regulations apply to new residential construction within certain areas that have been annexed to the city or that will be annexed to the city. Development in such areas is subject to development plans or specific plans, which shall contain provisions consistent with these regulations.*

C. *Allocations shall be implemented by the timing of issuance of building permits.*

D. *Dwellings affordable and enforceably restricted to residents with extremely low, very low, low or moderate incomes, as defined in the city's general plan housing element, and new dwellings in the downtown core (C-D zone as shown in the most official zoning map) shall be exempt from these regulations. Enforceably restricted shall mean dwellings that are subject to deed restrictions, development agreements, or other legal mechanisms acceptable to the city to ensure long-term affordability, consistent with city affordable housing standards. In expansion areas, the overall number of units built must conform to the city-approved phasing plan.*

E. *It shall not be necessary to have dwellings allocated for a particular time interval or location to process and approve applications for general plan amendment, zone change or other zoning approval, subdivision, or architectural review. (Ord. 1459 § 3 (part), 2004: Ord. 1359 § 3 (part), 1999)*

17.88.030 Periodic city council review and consideration of revisions.

A. *The Community Development Department shall provide status updates to the city council concerning implementation of these regulations, coordinated with the annual report on the general* *plan. The status update will describe actual construction levels and suggest if revisions are necessary to maintain the City's one percent growth rate.*

2.3.2 Impact Analysis

a. Methodology and Significance Thresholds. The following criteria are based on Appendix G of the *State CEQA Guidelines*. An impact is considered significant if the project would result in one or more of the following conditions:

1. *Physically divide an established community;*
2. *Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to the general plan, specific plan, local coastal program, clean air plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect;*
3. *Conflict with any applicable habitat conservation plan or natural community conservation plan.*

The Initial Study for the certified Final EIR determined that development under the project would be designed to fit among existing surrounding urban development and would not physically divide an established community or conflict with any applicable habitat conservation plan or natural community conservation plans. Therefore, Thresholds 1 and 3 are not discussed further in this section.

b. Impacts and Mitigation Measures. The analysis of Impacts LU-1 through LU-4 as described in the certified Final EIR remain unchanged. However, the following impact related to the project's consistency with the City's growth management policies was not analyzed in the Final EIR. It is addressed here because the revised project envisioned a compressed phasing schedule.

Impact LU-5 The project would be consistent with adopted City policies in the General Plan and Zoning Regulations related to growth management. This would be a Class III, *less than significant* impact.

In nearly all respects, the revised project would be the same as what was approved by the City in July 2017. The revised project envisions no change to the land use plan or development potential compared to what was previously approved by the City.

In addition, the revised project includes an amendment to the Specific Plan to permit the Community Development Director to authorize the developer, in any given year, to also construct 50% of the units allocated to the project in the following year if the Director determines that doing so is necessary to facilitate construction of beneficial public facilities and infrastructure. The purpose of this authorization is to realize the public benefits associated with the project, mitigate known potential impacts resulting from the project, and implement development requirements, including infrastructure requirements, which the City has found to be consistent with, and not a waiver of, the requirements of the City's Growth Management Ordinance.

These changes would be reflected in the Specific Plan and Development Agreement. No other approved entitlements would be affected.

However, for the purpose of analyzing a "worst-case scenario" to provide a conservative evaluation of potential environmental impacts, this SEIR assumes that all residential and non-residential growth could occur in the first year following approval of the revised project. This concept was applied to the analysis of Air Quality, Greenhouse Gas Emissions, and Transportation (Sections 2.1, 2.2 and 2.4 of this SEIR). However, the growth management limitations built into Specific Plan and Development Agreement would actually preclude this from happening. Table 2.3-1 summarizes the difference between the residential growth anticipated in the adopted Specific Plan compared to what could occur in the revised project.

Table 2.3-1. Residential Growth Comparison

Year	Adopted Specific Plan *	SEIR "Worst-Case" Assumption **
1	196	580
2	86	-
3	175	-
4	123	-
Total	**580**	**580**

** Table 7-11 of the adopted Specific Plan, on which this table is based, incorrectly showed 86 units in year 1, and 196 units in year 2. This table corrects that error. Figure 7-7 of the Specific Plan accurately showed intended phasing, which showed single family residential in Phase 1, and medium density residential in Phase 2. Table 2-3 of the adopted Specific Plan accurately shows up to 200 single family residential units in Phase 1, and 100 medium density residential units in Phase 2, which formed the basis of the analysis used in the certified Final EIR analysis. The above correction reflects that intent, and does not affect the analysis in this SEIR, nor would it introduce new impacts or mitigation measures as a result.*
*** Full buildout in first year used as a "worst-case" basis for analysis in this SEIR. The actual pace of development will depend on market factors.*

The following analysis relates to the revised project components described above.

Based on the City's Growth Management provisions, Table 2.3-2 projects the number of potential residential units that could be built in the City while remaining within the 1% annual growth cap set forth in Land Use Element Policy 1.11.2.

Table 2.3-2. Citywide Residential Capacity Based on City Growth Management Regulations *

Year ***	Approximate Maximum Number of Dwellings		Actual Number of Dwellings in City		Remaining Development Capacity (dwelling units) **
	*Potential 1% Increase **	*Total*	*Units Built in the previous Year*	*Total*	
2013 (baseline)	-	20,697	-	20,697	0
2014	207	20,904	82	20,779	125
2015	209	21,113	108	20,887	226
2016	211	21,324	64	20,951	373
2017	213	21,537	189	21,140	397

Table 2.3-2. Citywide Residential Capacity Based on City Growth Management Regulations *

Year ***	Approximate Maximum Number of Dwellings		Actual Number of Dwellings in City		Remaining Development Capacity (dwelling units) **
2018	215	21,753	TBD	TBD	613
2019	218	21,970	TBD	TBD	830
2020	220	22,190	TBD	TBD	1,050
2021	222	22,412	TBD	TBD	1,272
2022	224	22,636	TBD	TBD	1,496
2023	226	22,862	TBD	TBD	1,722
2024	229	23,091	TBD	TBD	1,951
2025	231	23,322	TBD	TBD	2,182

** Based on Land Use Element Table 3, as shown above.*

*** Shows the difference between maximum number and actual number of dwellings. For future years (2018 onward), the number shown is the total number of residential units that could be built above the number in the City as of January 1, 2017. As future development occurs, this number of units built in any given year would be subtracted from the theoretical remaining residential capacity shown in this table.*

**** Based on January 1 of any given year, consistent with how dwelling unit counts are reported by the State Department of Finance.*

Table 2.3-2 shows that the remaining development capacity is an ongoing balance between the maximum number of dwellings allowed citywide, and the number of new dwellings built in a given year. For example, between 2013 and 2014, there was an increased capacity for 207 new dwellings that year, but only 82 dwellings were built. Thus, there was a remaining capacity of 125 units that could have been built in 2014 but were not. During successive years, the City has never built more homes than would have been allowed under the Growth Management regulations. In other words, since 2013, the increased residential development capacity has outpaced the actual rate of development in the City; i.e., actual annual growth has been less than 1% since then. For this reason, the remaining development capacity has slowly increased, until it was 397 dwellings in 2017. If there was no new residential development in 2018, there would be a total remaining capacity of 613 dwellings in that year. So if 500 homes were built in 2018, there would still be a remaining capacity of 113 units for that year.

This same principle would apply to future years and is at the heart of the growth management provisions proposed under the revised project. This principle also explains why it would be potentially possible to build most if not all of the 580 units allowed under the project within a single year. The actual ability to achieve this would depend on whether or not the City issues building permits for other residential projects during the same year, which would compete for the remaining residential development capacity within a given year. In reality, there is little to no chance that the developer could construct, or that the market could absorb, this number of units in a single year. However, this "worst-case scenario" is being evaluated for the purposes providing the appropriate CEQA analysis of the proposed specific plan changes.

The San Luis Obispo General Plan and Zoning Regulations are the principal tools the City uses when evaluating land use proposals with respect to growth management. This discussion focuses on those goals and policies in the City's General Plan that relate to avoiding or mitigating environmental impacts, and an assessment of whether any potential inconsistency with these standards would create a significant physical impact on the environment. Only policies relevant and applicable to the project are included.

It should be noted that this discussion is intended to guide policy interpretation but is not intended to replace the City decision-making process. The final determination of consistency will be made by City Council when they act on the revised project. The General Plan consistency determination is based on the project's overall consistency with the General Plan rather than strict adherence to every single principle and policy of each General Plan element.

Table 2.3-3 describes the project's consistency with applicable growth management policies of the General Plan and Zoning Regulations related to avoiding or mitigating environmental effects.

Table 2.3-3. Growth Management Policy Consistency Analysis

Policy	Analysis	Consistency
General Plan Land Use Element		
1.11.1. Overall Intent. The City shall manage the city's growth rate to provide for the balanced evolution of the community and the gradual assimilation of new residents. Growth must be consistent with the City's ability to provide resources and services and with State and City requirements for protecting the environment, the economy, and open space.	The proposed phasing concept would allow for managed growth pursuant to the San Luis Ranch Specific Plan. In addition, the overall buildout capacity of the Specific Plan is consistent with General Plan growth limitations pursuant to Land Use Element Policy 8.1.4, which directs future development within the San Luis Ranch area.	**Consistent**
1.11.2. Residential Growth Rate. The City shall manage the growth of the city's housing supply so that it does not exceed one percent per year, on average, based on thresholds established by Land Use Element Table 3, excluding dwellings affordable to residents with extremely low, very low or low incomes as defined by the Housing Element. This rate of growth may continue so long as the City's basic service capacity is assured. Table 3 shows the approximate number of dwellings and residents which would result from the one percent maximum average annual growth rate over the planning period. Approved specific plan areas may develop in accordance with the phasing schedule adopted by each specific plan provided thresholds established by Table 3 are not exceeded. The City Council shall review the rate of growth on an annual basis in conjunction with the General Plan annual report to ensure consistency	The proposed phasing concept would allow for managed growth pursuant to the San Luis Ranch Specific Plan. In addition, the overall buildout capacity of the Specific Plan is consistent with General Plan growth limitations pursuant to Land Use Element Policy 8.1.4, which directs future development within the San Luis Ranch area. In addition, the proposed phasing concept would be considered in the context of remaining Citywide capacity to develop housing within the limits established in Land Use Element Table 3. Based on a 1% growth rate from the baseline of 2013, when there were 20,697 dwellings in the City, there were a maximum of 21,537 dwellings allowed in 2017. The actual number of residential units in January 2017 was 21,140, so there was a remaining capacity of 397 dwellings that year. As shown in Table 2.3-2, in 2018, the 1% growth rate would allow for a maximum of 21,753 units, or 613 more than there were in the City as of January 2017 (State Department of Finance Report E-5). Therefore, the 580-unit project could potentially build out in 2018 and still fall within the limits of the growth cap	**Consistent**

Table 2.3-3. Growth Management Policy Consistency Analysis		
Policy	**Analysis**	**Consistency**
with the City's gradual assimilation policy.	as set forth in the Land Use Element. There would potentially be even more capacity to accommodate full buildout in subsequent years. While it is recognized that other projects within the City could potentially compete for this remaining capacity, practical limitations related to market factors and absorption rates would likely keep growth within these limits, as the project (and others) would likely take additional time to build out. The actual ability to achieve project buildout quickly would depend on whether or not other projects in the City would pull building permits during the same year, which would compete for the remaining residential development capacity within a given year. Please refer to additional discussion of this issue in the main body of the analysis on page 2.3-6, including Table 2.3-2. In addition, it should also be noted that any roadway infrastructure improvements that may be required as mitigation that might allow for additional capacity in advance of actual residential development anticipated under the project are not considered to be growth-inducing. This is because the project site is surrounded by the City, which is already fully planned and mostly built, and that growth in the City, including needed transportation improvements, was already anticipated in the Land Use and Circulation Elements Update in 2014. The project is consistent with the General Plan, would not introduce roadway infrastructure or related public improvements into unplanned areas, and is therefore not considered growth-inducing.	
1.11.3. Phasing Residential Expansions. Before a residential expansion area is developed, the City must have adopted a specific plan or a development plan for it. Such plans for residential expansion projects will provide for phased development, consistent with the population growth outlined in Table 3 [of the Land Use Element], and taking into account expected infill residential development.	Future residential growth under the revised project will be in accordance with the San Luis Ranch Specific Plan, which was prepared pursuant to this policy, as well as Land Use Element Policy 8.1.4.	**Consistent**
1.11.4. Nonresidential Growth Rate. Each year, the City Council shall	Future non-residential growth under the revised project will be in accordance with the San Luis Ranch	**Consistent**

Table 2.3-3. Growth Management Policy Consistency Analysis		
Policy	**Analysis**	**Consistency**
evaluate the actual increase in nonresidential floor area over the preceding five years. The Council shall consider establishing limits for the rate of nonresidential development if the increase in nonresidential floor area for any five-year period exceeds five percent. Any limits so established shall not apply to: A. Changed operations or employment levels, or relocation or ownership change, of any business existing within the City at the time the limit is set; B. Additional nonresidential floor area within the Downtown core (Figure 4); C. Public agencies; and D. Manufacturing, light industrial, research businesses, or companies providing a significant number of head of household jobs.	Specific Plan, which was prepared pursuant to Land Use Element Policy 8.1.4. The rate of commercial development within this area will be considered in the context of overall non-residential growth in the City when the City Council considers whether or not to establish rates for non-residential growth.	
Zoning Growth Management Regulations (Chapter 17.88)		
17.88.020.A. Each Specific Plan shall adopt a phasing schedule that allocates timing of potential residential construction, including phasing of required improvements, consistent with the general plan and with these regulations.	The San Luis Ranch Specific Plan includes a phasing schedule consistent with General Plan and zoning requirements.	**Consistent**
17.88.020.B. The limitations on residential development established by these regulations apply to new residential construction within certain areas that have been annexed to the city or that will be annexed to the city. Development in such areas is subject to development plans or specific plans, which shall contain provisions consistent with these regulations.	The San Luis Ranch Specific Plan is subject to annexation, so this regulation applies to new development in this area. The Specific Plan includes a phasing schedule consistent with General Plan and zoning requirements. As noted above, the phasing plan is consistent with General Plan requirements.	**Consistent**
17.88.020.D. Dwellings affordable and enforceably restricted to residents with extremely low, very low, low or moderate incomes, as defined in the	The Specific Plan includes a phasing schedule consistent with General Plan and zoning requirements. As noted above, the phasing plan is consistent with General Plan requirements.	**Consistent**

Table 2.3-3. Growth Management Policy Consistency Analysis		
Policy	**Analysis**	**Consistency**
city's general plan housing element, and new dwellings in the downtown core (C-D zone as shown in the most official zoning map) shall be exempt from these regulations. Enforceably restricted shall mean dwellings that are subject to deed restrictions, development agreements, or other legal mechanisms acceptable to the city to ensure long-term affordability, consistent with city affordable housing standards. In expansion areas, the overall number of units built must conform to the city-approved phasing plan.	The project includes an affordable housing component in accordance with City requirements. The San Luis Ranch Specific Plan proposes 34 deed-restricted affordable units on site for very low, low, and moderate income households, including 26 very low income units. These units would not count against growth management limitations. In addition, there will be 14 deed-restricted workforce housing units, which will contribute to meeting the City's affordable housing provisions.	

As shown in Table 2.3-3, the project would be consistent with City policies related to growth management.

Mitigation Measures. No mitigation measures are required.

Residual Impacts. Impacts would be less than significant without mitigation.

2.4 TRANSPORTATION

This section is based on the *Multimodal Transportation Impact Study* (TIS; 2016) prepared by Omni-Means, Ltd. (as updated in April 2018) and the supplemental Transportation Impact Analysis Memorandum prepared by Central Coast Transportation Consulting (CCTC) dated April 12, 2018. The supplemental Transportation Impact Analysis Memorandum considers what differences in the level of impact and required mitigation would arise from the elimination of fixed sequential phasing and potential development stops associated with the timing of the Prado Road Interchange as envisioned under the revised project. The Revised TIS is included as **Appendix B** to the SEIR. The CCTC memorandum of April 2018 forms the basis of the SEIR analysis that follows, and it is included in its entirety in **Appendix C** of this SEIR.

2.4.1 Setting

The setting with respect to transportation issues remains unchanged from that included in the certified Final EIR. Please refer to that document for setting information related to analyzing project impacts.

2.4.2 Impact Analysis

This discussion summarizes the Omni-Means Traffic Impact Study of near term (2025) impacts and mitigation measures for the San Luis Ranch project as included in the Transportation section of the May 2017 certified Final EIR and CCTC's supplemental Traffic Impact Analysis memorandum specific to the proposed revised project description.

The applicant proposes to adjust the phasing plan such that phases can develop in any order and can be developed concurrently, and to revise the mitigation monitoring program to allow occupancy of any phase irrespective of the timing of the Prado Road overpass and northbound ramps construction. The purpose of this supplemental analysis is to determine what impacts would occur if the development project is able to buildout prior to completion of the Prado Overpass & NB Ramps and to establish mitigation measures, if any, that would adequately mitigate those impacts. This analysis focuses on eleven intersections, seven roadway segments, eleven Highway 101 locations and where transportation operations could be impacted by the proposed new project description.

a. Methodology and Significance Thresholds.

<u>Methodology.</u> The analysis prepared by CCTC uses the Synchro analysis files provided by Omni-Means, who prepared the *San Luis Ranch Specific Plan Multimodal Transportation Impact Analysis Report* (TIA). No changes were made to the traffic volumes or the land use assumptions used to develop the volumes. Intersection level of service (LOS) was determined using Synchro 10 and queue lengths were determined using the companion SimTraffic microsimulation software by taking the average of five runs. Note that the TIA used the Synchro 9 software package, which has now been replaced by the Synchro 10 package. The TIA evaluated segment impacts using an in-house spreadsheet that was not available for use.

Freeway impacts had been previously evaluated using analysis results from HCS 2010. For weaving segments, the Leisch Method had additionally been used to evaluate impacts. In this document, only weaving segment results using the Leisch Method are presented, since its LOS results were generally worse compared to HCS 2010.

Thresholds of Significance. The thresholds of significance remain unchanged from what were used in the certified Final EIR. Please refer to that document for all thresholds of significance. In summary, these are based on Appendix G of the *State CEQA Guidelines*. Impacts related to transportation and circulation from the proposed project would be significant if the project would:

1. *Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;*
2. *Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;*
3. *Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;*
4. *Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment);*
5. *Result in inadequate emergency access; and/or*
6. *Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.*

b. Project Impacts and Mitigation Measures. This section describes impacts and mitigation measures of the revised project. However, to provide context for this analysis, it is first useful to summarize the impacts that related to the approved project, as described in the July 2017 certified Final EIR. In summary, the certified Final EIR described ten impacts (T-1 through T-10), six of which were Class I, significant and unavoidable. These are listed below as follows:

Impact T-1	*Under Existing and Near-Term Plus Project conditions nine study area intersections would operate at unacceptable automobile, bicycle, or pedestrian LOS based on adopted multimodal level of service standards during AM and PM peak hours. Mitigation would reduce impacts at seven of these intersections to an acceptable level. However, impacts at the Madonna Road & Dalidio Drive and Los Osos Valley Road & Froom Ranch Way intersections would be Class I, significant and unavoidable.*
Impact T-2	*Under Existing and Near-Term Plus Project conditions the volume of traffic at 19 study area intersections would exceed lane capacities. Mitigation would reduce impacts at 18 of these intersections to an acceptable level. However, impacts at the Los Osos Valley Road & Froom Ranch Way intersection would be Class I, significant and unavoidable.*
Impact T-3	*Under Existing and Near-Term conditions four study area segment groups would operate at unacceptable automobile, bicycle, pedestrian, and transit LOS based on adopted multimodal level of service standards during AM and*

PM peak hours. Mitigation would reduce impacts at three of these segment groups to an acceptable level. However, impacts at Higuera Street roadway segment would be Class I, significant and unavoidable.

Impact T-4 — *Project construction activities would create traffic impacts due to construction vehicles causing congestion and deteriorating pavement conditions. Mitigation would reduce these impacts to an acceptable level. This impact would be Class II, less than significant with mitigation.*

Impact T-5 — *Construction of the proposed Froom Ranch Way bridge during phase 3 of the Specific Plan buildout would result in significant level of service and queuing impacts at study area intersections and roadway segments. Mitigation would reduce these impacts to an acceptable level. This impact would be Class II, less than significant with mitigation.*

Impact T-6 — *The project site plan would result in and contribute to increased access conflicts. Proposed access controls are not consistent with General Plan policy. Mitigation would reduce these impacts to an acceptable level. This impact would be Class II, less than significant with mitigation.*

Impact T-7 — *The project site plan would result in on-site traffic volumes and speeds that may exceed General Plan policy thresholds, resulting potential traffic hazards within the project site. Mitigation would reduce these impacts to an acceptable level. This impact would be Class II, less than significant with mitigation.*

Impact T-8 — *Under Cumulative Plus Project conditions nine study area intersections would operate at unacceptable automobile, bicycle, or pedestrian LOS based on adopted multimodal level of service standards during AM and PM peak hours. Mitigation would reduce impacts at seven of these intersections to an acceptable level. However, impacts at the Madonna Road & Dalidio Drive and Los Osos Valley Road & Froom Ranch Way intersections would be Class I, significant and unavoidable.*

Impact T-9 — *Under Cumulative Plus Project conditions, the volume of traffic at 18 study area intersections would exceed lane capacities. Mitigation would reduce impacts at 18 of these intersections to an acceptable level. Mitigation would reduce impacts at 17 of these intersections to an acceptable level. However, impacts at the Madonna Road & Dalidio Drive and Los Osos Valley Road & Froom Ranch Way intersections would be Class I, significant and unavoidable.*

Impact T-10 — *Under Cumulative Plus Project conditions five study area segment groups, as well as mainline segments of U.S. 101, would operate at unacceptable automobile, bicycle, pedestrian, and transit LOS based on adopted multimodal level of service standards during AM and PM peak hours. Mitigation would reduce impacts at each of the five study area segment groups to an acceptable level. However, impacts at the mainline segments of U.S. 101 at Los Osos Valley Road and Madonna Road would be Class I, significant and unavoidable.*

Because buildout and long-term cumulative impacts under the revised project are identical to what was anticipated under the certified Final EIR, impacts with respect to transportation issues remain generally unchanged from those included in the certified Final EIR, except as noted in the analysis that follows.

The following analysis focuses on the need for and timing of mitigation measures required under the certified Final EIR, based on the revised project, which assumes that phasing is compressed in such a way that all development could occur within the first year of project approval without the Prado Road Overpass & Northbound Ramps prior to construction of such improvements in approximately 2021.

Intersection Analysis. Table 2.4-1 summarizes intersection LOS under the near term, near term plus project, and mitigated near term plus project scenarios. Mitigation measures are identified for each intersection where project impacts to LOS are expected. Queue impacts are discussed in the next section. Some locations have queue impacts but not LOS impacts; in these cases, the queue mitigation is also shown in Table 2.4-1 for consistency with Table 2.4-2. Synchro output sheets are provided in Appendix C of this SEIR.

Table 2.4-2 summarizes queue lengths under each scenario. Mitigation measures are identified for each intersection where project impacts to queue lengths are expected. Some locations have LOS impacts but not queue impacts; in these cases the LOS mitigation is also shown in Table 2.4-2 for consistency with Table 2.4-1. SimTraffic output sheets are provided in Appendix C of this SEIR. Note that due to the stochastic (random) nature of microsimulation each run produces different results.

Roadway and Freeway Segment Analysis. Table 2.4-3 below summarizes roadway segment impacts.

The TIA consultant used a proprietary in-house spreadsheet to calculate roadway segment service levels. Because all of the auto and transit segment impacts were related to roadway speeds, it would be necessary to increase capacity by adding travel lanes or by improving corridor signal timing. Adding travel lanes is considered infeasible and potentially against current General Plan policies along these segments of Madonna Road and Los Osos Valley Road. Adjusting corridor signal timings would reduce the severity of, but not entirely eliminate, the impact. The transit impacts could also be mitigated by reducing service headways by five minutes or increasing on-time performance by at least one percent.

Constructing parallel Class I multiuse paths would reduce the severity of, but may not eliminate, the pedestrian and bicycle impacts. Note that portions of the paths would cross Caltrans right-of-way, and would require Caltrans review and approval. It is unknown if Caltrans would approve the intersection configuration changes necessary to accommodate the paths, so the feasibility of this improvement is also uncertain.

Table 2.4-1. Intersection Level of Service Analysis

ID	Intersection	Peak Hour	Near Term V/C[1]	Near Term Delay[2]	Near Term LOS	Near Term+Project V/C[1]	Near Term+Project Delay[2]	Near Term+Project LOS	Mitigated Near Term+Project V/C[1]	Mitigated Near Term+Project Delay[2]	Mitigated Near Term+Project LOS	Mitigation
1	Madonna/LOVR	AM		25.9	C		27.9	C		27.9	C	Adjust corridor signal timing as needed for optimum operations. This will reduce but may not eliminate the impact.
		PM		51.8	D	**1.05**	**56.3**	**E**	**1.05**	**56.3**	**E**	
2	Madonna/Oceanaire	AM		21.1	C		21.3	C		21.3	C	Extend WBR turn pocket to 200'. This would require widening the bridge structure which is not a currently programmed project and may result in secondary environmental impacts. Therefore this improvement is considered infeasible now.
		PM		17.7	B		19.0	B		19.0	B	
3	Madonna/Dalidio	AM		9.7	A		47.0	D		19.1	B	Install second WBL turn pocket and extend both to 310'; Remove third WBT lane and third receiving lane on west leg; Install 100' EBR turn pocket; Provide split phase for NB and SB; Provide NBR overlap phase. This eliminates the impact but may be infeasible due to right-of-way needs.
		PM		42.0	D	**2.78**	**153.7**	**F**		31.5	C	
5	Madonna/US 101 SB Ramps	AM	**1.22**	**44.0**	**D**	**1.26**	**44.0**	**D**	**1.26**	**43.6**	**D**	Install 100' EBR turn pocket; Extend EBL turn pocket to 150'. Installing the EBR would require review and evaluation by Caltrans. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
		PM		25.0	C		24.9	C		23.9	C	
6	Madonna/US 101 NB Ramps	AM		18.3	B		19.4	B		19.5	B	Extend NBL turn pocket to 275'. This would require review and evaluation by Caltrans. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
		PM		21.0	C		22.2	C		22.8	C	
7	Madonna/Higuera	AM		32.7	C		33.3	C		35.7	D	Convert one NB through lane to left turn "trap" lane; Extend EBR turn pocket to 275'. Extending the EBR would require expansion into the Caltrans maintenance headquarters right-of-way. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
		PM		38.5	D		43.6	D		44.1	D	
10	LOVR/Auto Park	AM		0.6 (19.9)	- (C)		0.6 (20.8)	- (C)		3.1	A	Signalize intersection.
		PM	**0.57**	**1.6 (59.2)**	**- (F)**	**0.60**	**1.8 (65.6)**	**- (F)**		3.7	A	
11	LOVR/Calle Joaquin	AM		14.9	B		15.2	B		15.2	B	Extend SBR turn pocket to 200'. This is considered infeasible due to likely secondary impacts to sensitive wetland areas.
		PM		12.2	B		12.5	B		12.5	B	
13	LOVR/US 101 NB Ramps	AM		23.8	C		25.1	C		25.1	C	Extend SBR turn pocket to 325'. This would require bridge widening over US 101. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
		PM		24.2	C		23.6	C		23.6	C	
15	Higuera/Suburban	AM		8.3	A		8.4	A		8.0	A	Convert WBR turn pocket to shared WBL/R. This improvement was required as part of the Avila Ranch EIR.
		PM		19.9	B		20.2	C		15.0	B	
16	Higuera/Tank Farm	AM		37.5	D		37.8	D		37.8	D	Extend NBR turn pocket to 200'; Extend SBL turn pocket to 250'. Extending the NBR may be infeasible due to right-of-way needs.
		PM		24.7	C		25.0	C		25.0	C	

1. Volume to capacity ratio reported for worst movement, for unacceptable LOS only.
2. HCM 2010 average control delay in seconds per vehicle (HCM 2000 used for Intersections 2 and 13). For side-street-stop controlled intersections the worst approach's delay is reported in parentheses next to the overall intersection delay.
Note: Unacceptable operations shown in bold text.

Table 2.4-2. Queue Analysis

ID	Intersection	Movement	Storage Length (ft)	Peak Hour	95th Percentile Queues (ft)[1] Near Term	Near Term +Project	Mitigated Near Term +Project	Mitigation
1	Madonna/LOVR	NBR	175	AM	105	106	124	Adjust corridor signal timing as needed for optimum operations. This will reduce but may not eliminate the impact.
				PM	**246**	**264**	**269**	
2	Madonna/Oceanaire	WBR	100	AM	45	62	45	Extend WBR turn pocket to 200'. This would require widening the bridge structure which is not a currently programmed project and may result in secondary environmental impacts. Therefore this improvement is considered infeasible now.
				PM	**163**	**122**	163	
3	Madonna/Dalidio	WBL	275	AM	51	177	110	Install second WBL turn pocket and extend both to 310'; Remove third WBT lane and third receiving lane on west leg; Install 100' EBR turn pocket; Provide split phase for NB and SB; Provide NBR overlap phase. This eliminates the impact but may be infeasible due to right-of-way needs.
				PM	127	**335**	213	
		WBT/R	570	AM	74	132	126	
				PM	309	**602**	317	
5	Madonna/US 101 SB Ramps	EBL	100	AM	80	84	120	Install 100' EBR turn pocket; Extend EBL turn pocket to 150'. Installing the EBR would require review and evaluation by Caltrans. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
				PM	96	**123**	120	
		WBL	260	AM	164	173	176	
				PM	**389**	**546**	232	
6	Madonna/US 101 NB Ramps	NBL	185	AM	147	150	158	Extend NBL turn pocket to 275'. This would require review and evaluation by Caltrans. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
				PM	164	**265**	174	
7	Madonna/Higuera	EBR	150	AM	**221**	**247**	158	Convert one NB through lane to left turn "trap" lane; Extend EBR turn pocket to 275'. Extending the EBR would require expansion into the Caltrans maintenance headquarters right-of-way. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
				PM	**186**	**265**	246	
		NBL	160	AM	155	**167**	98	
				PM	**349**	**372**	192	
		SBT/L	250	AM	163	162	159	
				PM	221	**414**	**262**	
		SBR	340	AM	-	-	-	
				PM	46	**585**	114	
10	LOVR/Auto Park	WBR	175	AM	25	26	23	Signalize intersection.
				PM	42	45	50	
11	LOVR/Calle Joaquin	SBR	115	AM	39	89	91	Extend SBR turn pocket to 200'. This is considered infeasible due to likely secondary impacts to sensitive wetland areas.
				PM	**134**	**133**	183	
13	LOVR/US 101 NB Ramps	SBR	135	AM	**181**	**204**	317	Extend SBR turn pocket to 325'. This would require bridge widening over US 101. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
				PM	**179**	**173**	142	
15	Higuera/Suburban	WBR	170	AM	68	83	134	Convert WBR turn pocket to shared WBL/R. This improvement was required as part of the Avila Ranch EIR.
				PM	**274**	**286**	**244**	
		SBL	200	AM	141	**229**	158	
				PM	**288**	**261**	**262**	
16	Higuera/Tank Farm	NBR	100	AM	**192**	**186**	**215**	Extend NBR turn pocket to 200'; Extend SBL turn pocket to 250'. Extending the NBR may be infeasible due to right-of-way needs.
				PM	**173**	**155**	160	
		SBL	165	AM	**197**	**201**	223	
				PM	**231**	**224**	**264**	

1. Queue length that would not be exceeded 95 percent of the time.
Note: Bold indicates queue length longer than storage length.

Table 2.4-3. Roadway Segment Analysis

			Near Term								Near Term + Project								
			AM Peak				PM Peak				AM Peak				PM Peak				
ID	Segment	Direction	Travel Speed (mph)	BFFS (mph)	Travel Speed/ BFFS	LOS	Travel Speed (mph)	BFFS (mph)	Travel Speed/ BFFS	LOS	Travel Speed (mph)	BFFS (mph)	Travel Speed/ BFFS	LOS	Travel Speed (mph)	BFFS (mph)	Travel Speed/ BFFS	LOS	Mitigation
	Auto																		
1	Madonna Road - Oceanaire to Los Osos Valley	WB	22.1	42.1	52%	C	**11.8**	**42.1**	**28%**	**F**	21.7	42.1	51%	C	**10.2**	**42.1**	**24%**	**F**	Adjust corridor signal timing as needed for optimum operations. This will reduce but may not eliminate the impact.
13	Los Osos Valley - Madonna to Froom Ranch	SB	24.0	41.9	57%	C	**16.9**	**41.8**	**41%**	**D**	22.7	41.9	54%	C	**15.2**	**41.8**	**36%**	**E**	
17	Los Osos Valley - US 101 NB Ramps to S. Higuera	EB	**17.5**	**39.4**	**45%**	**D**	**15.8**	**39.4**	**40%**	**D**	**16.9**	**39.4**	**43%**	**D**	**15.6**	**39.4**	**39%**	E	
			Score			LOS	Score			LOS	Score			LOS	Score			LOS	
	Transit																		
13	Los Osos Valley - Madonna to Froom Ranch (Route 4)	SB	**4.51**			**E**	**4.56**			**E**	**4.53**			**E**	**4.56**			**E**	
13	Los Osos Valley - Madonna to Froom Ranch (Route 5)	SB	**4.60**			**E**	**4.38**			**E**	**4.61**			**E**	**4.38**			**E**	
			Score			LOS	Score			LOS	Score			LOS	Score			LOS	
	Pedestrian																		
4	Madonna Road - US 101 SB Ramps to El Mercado	WB	**3.62**			**D**	**3.79**			**D**	**3.68**			**D**	**3.87**			**D**	Construct parallel Class I multiuse paths. This will reduce but may not eliminate the impact. Path construction may occur within Caltrans right-of-way and is subject to Caltrans approval and permitting, which is uncertain at this time.
		EB	**3.70**			**D**	**3.77**			**D**	**3.77**			**D**	**3.87**			**D**	
13	Los Osos Valley - Madonna to Froom Ranch	SB	**3.86**			**D**	**3.99**			**D**	**3.86**			**D**	**3.99**			**D**	
		NB	**3.74**			**F**	**4.19**			**F**	**3.75**			**F**	**4.19**			**F**	
14	Los Osos Valley - Froom Ranch to Calle Joaquin	SB	**3.84**			**D**	**4.05**			**D**	**3.87**			**D**	**4.08**			**D**	
		NB	**3.75**			**D**	**4.09**			**D**	**3.75**			**D**	**4.11**			**D**	
15	Los Osos Valley - Calle Joaquin to US 101 SB Ramps	SB	**3.69**			**D**	**3.70**			**D**	**3.71**			**D**	**3.72**			**D**	
		NB	**3.66**			**D**	**4.01**			**D**	**3.68**			**D**	**4.03**			**D**	
16	Los Osos Valley - US 101 SB Ramps to US 101 NB Ramps	SB	**3.93**			**D**	**3.91**			**D**	**3.94**			**D**	**3.92**			**D**	
		NB	**3.82**			**D**	3.27			C	**3.83**			**D**	3.29			C	
17	Los Osos Valley - US 101 NB Ramps to S. Higuera	EB	**3.94**			**D**	**3.78**			**D**	**3.95**			**D**	**3.79**			**D**	
		WB	**3.88**			**D**	**4.27**			**E**	**3.89**			**D**	**4.29**			**E**	
			Score			LOS	Score			LOS	Score			LOS	Score			LOS	
	Bicycle																		
4	Madonna Road - US 101 SB Ramps to El Mercado	WB	3.96			D	**4.35**			**E**	3.98			D	**4.38**			**E**	
		EB	3.61			D	3.62			D	3.64			D	3.65			D	

Note: Unacceptable operations shown in bold text.

Table 2.4-4. Freeway Analysis

Direction	Location	Segment Type	Peak Hour	Near Term+Project with Overcrossing: No. of Lanes	Volume	Density (pc/mi/ln)	LOS	Near Term+Project without Overcrossing: No. of Lanes	Volume	Density (pc/mi/ln)	LOS	Finding
Freeway, Merge, and Diverge Segments[1]												
US 101 NB	South of LOVR	Freeway	AM	2	**3,186**	**29.1**	**D**	2	**3,186**	**29.1**	**D**	The Overcrossing does not change the unacceptable density.
			PM		2,538	22.3	C		2,538	22.3	C	
	LOVR Off Ramp	Diverge	AM	1	**629**	**33.5**	**D**	1	**643**	**33.5**	**D**	The Overcrossing does not change the unacceptable density.
			PM		630	27.1	C		620	27.1	C	
	Prado Off Ramp	Diverge	AM	1	**371**	**29.6**	**D**	1	**311**	**29.9**	**D**	Eliminating the Overcrossing would worsen unacceptable operations.
			PM		191	26.3	C		145	26.4	C	
US 101 SB	Madonna On Ramp	Merge	AM	1	232	16.5	B	1	232	16.5	B	The Overcrossing does not change the unacceptable density.
			PM		**409**	**28.6**	**D**		**409**	**28.6**	**D**	
	South of Madonna	Freeway	AM	2	1,881	16.5	B	2	1,881	16.5	B	The Overcrossing does not change the unacceptable density.
			PM		**3,261**	**30.0**	**D**		**3,261**	**30.0**	**D**	
	LOVR Off Ramp	Diverge	AM	1	655	17.9	B	1	676	17.9	B	The Overcrossing does not change the unacceptable density.
			PM		**573**	**31.5**	**D**		**573**	**31.5**	**D**	
	LOVR On Ramp	Merge	AM	1	413	17.3	B	1	413	17.1	B	The Overcrossing does not change the unacceptable density.
			PM		**829**	**33.8**	**D**		**829**	**33.8**	**D**	
	South of LOVR	Freeway	AM	2	1,639	14.4	B	2	1,618	14.2	B	The Overcrossing does not change the unacceptable density.
			PM		**3,517**	**33.6**	**D**		**3,517**	**33.6**	**D**	
				No. of Lanes	Length (ft)	Total Volume	LOS	No. of Lanes	Length (ft)	Total Volume	LOS	
Weave Segments[2]												
US 101 NB	North of Prado	Weave	AM	3	940	3,317	C	2	**2,140**	**3,112**	**E**	Eliminating the Overcrossing would result in unacceptable operations.
			PM		940	3,137	C		**2,140**	**2,146**	**E**	
	North of Madonna	Weave	AM	3	1,330	3,421	C/D	3	**1,330**	**3,523**	**D**	Eliminating the Overcrossing would result in unacceptable operations.
			PM		**1,330**	**3,795**	**D**		**1,330**	**3,754**	**D**	
US 101 SB	South of Marsh	Weave	AM	3	2,065	2,804	C	3	2,065	2,804	C	The Overcrossing does not change the unacceptable operations.
			PM		**2,065**	**4,184**	**E**		**2,065**	**4,184**	**E**	

1. HCS 2010 Analysis
2. Leisch Method Analysis
Note: Unacceptable operations shown in bold text.

Impacts of the Revised Project. As a result of this updated analysis, the original impact discussion in the certified Final EIR has been updated to reflect the new project description and operations analysis. The original 10 impact statements from the certified Final EIR would still apply, although the discussion of Impacts T-1, T-2, T-3 (which reflect near-term plus project conditions) and T-5 are modified. A new impact (T-11) has been identified. The remaining impacts (Impacts T-4, T-6, T-7, T-8, T-9, and T-10) remain unchanged from the certified Final EIR. Seven of the 11 impacts (T-1, T-2, T-3, T-8, T-9, T-10, and T-11) are Class I, significant and unavoidable. The remaining 4 impacts (T-4, T-5, T-6 and T-7) are Class II, significant but mitigable.

Note that all impacts previously identified in the certified Final EIR would still be observed with the revised project, as would the classification of such impacts. That is, all impacts previously identified as Class I would still be Class I, and all impacts identified a Class II would still be Class II. Impact T-11 is a new impact not previously identified, and is considered Class I.

These impact statements that have been added or modified are summarized as follows:

Impact T-1 *Under Existing and Near-Term Plus Project conditions 9 study area intersections would operate at unacceptable automobile, bicycle, or pedestrian LOS based on adopted multimodal level of service standards during AM and PM peak hours. Of these 9 intersections, impacts to Madonna Road & U.S. 101 SB, Los Osos Valley Road & Auto Park Way, and Higuera & Tank Farm would be temporary until the Prado Road Overpass & NB Ramps are constructed. Although temporary, the impact at these three locations would be Class I, significant and unavoidable.*

Impact T-2 *Under Existing and Near-Term Plus Project conditions the volume of traffic at 19 study area intersections would exceed lane capacities. Of these 19 intersections, impacts to Madonna & Los Osos Valley Road, Madonna & Oceanaire, Madonna & U.S. 101 NB, Madonna & Higuera, and Los Osos Valley Road & U.S. 101 NB would be temporary until the Prado Road Overpass & NB Ramps are constructed. Although temporary, the impact at these five locations would be Class I, significant and unavoidable.*

Impact T-3 *Under Existing and Near-Term Plus Project conditions 4 study area segment groups would operate at unacceptable automobile, bicycle, pedestrian, and/or transit LOS based on adopted multimodal level of service standards during AM and PM peak hours. Of these 4 segment groups, impacts to Madonna (Los Osos Valley Road to Higuera) and Los Osos Valley Road (Madonna to Higuera) would be temporary until the Prado Road Overpass & NB Ramps are constructed. Although temporary, the impact along these two segment groups would be Class I, significant and unavoidable.*

Impact T-5 *The proposed timing of the Froom Ranch Way Bridge would result in significant level of service and queuing impacts at study area intersections and roadway segments. This is considered a Class II, significant but mitigable impact.*

Impact T-11 *Under Existing and Near-term Plus Project conditions buildout of the project prior to construction of the Prado Road Overpass & NB ramps would result in portions of Highway 101 from Marsh Street to Los Osos Valley Road* *operating below Caltrans level of service standards. This is a Class I, significant and unavoidable impact.*

Mitigation Measures. The Traffic Impact Analysis identified nine potential improvements that could mitigate the temporary impacts associated without having the Prado Road Overpass & NB Ramps constructed prior to buildout of the project under Existing and Near-Term conditions. In general, these would be limited improvements to several existing roadways, including the extension or addition of turn lanes at various intersections or freeway off-ramps in the project vicinity, either along Madonna Road, Los Osos Valley Road, or Higuera Street. (These are more fully described in Table 2.4-1 above, and also within the TIA in Appendix C.) However, due to right-of-way and structure conflicts, the feasibility of these mitigation measures is uncertain.

In addition, the full Prado Road Interchange would still be needed to mitigate cumulative impacts such that they would not be necessary so their effectiveness is limited in the context of providing necessary mitigation for a potentially short timeframe. Note that once the full interchange is built, these possible measures would ultimately result in excess capacity, which is potentially inconsistent with General Plan Circulation Element Policy 7.1.3, Growth Management & Roadway Expansion, which states:

> *"The City shall manage the expansion of roadways to keep pace with only the level of increased vehicular traffic associated with development planned for in the Land Use Element and under the City's growth management policies and regional transportation plans."*

For these reasons, the nine potential measures to address near-term impacts prior to a full interchange being built are not recommended and not included in this SEIR.

The following mitigation measures are required to address potential impacts. These measures identify improvements under Existing and Near-Term Plus Project conditions that are required to reduce potentially significant project-specific impacts to study area intersections or to mitigate Class I, significant and unavoidable, impacts to the maximum extent feasible without causing significant secondary impacts. The project's financial share of these project costs will be established and adopted in the San Luis Ranch Development Agreement. Note: the following mitigation measure numbering remains consistent with the existing certified Final EIR however, individual locations may have multiple mitigations identified in the various groupings analyzed in the TIA.

T-1(a) Intersection #1: Madonna Road & Los Osos Valley Road.

- City optimize signal timing to accommodate increased project volumes (ongoing by City)

T-1(b) Intersection #3: Madonna Road & Dalidio Drive/Prado Road.

- Extend existing westbound left turn lane on Madonna Road to Dalidio Drive/Prado Road to 310′ (Prior to Building Permits or Occupancy)
- Install 2nd westbound 310′ left turn lane on Madonna Road to Dalidio Drive/Prado Road (Prior to Building Permits or Occupancy)
- Install eastbound 250′ right turn pocket on Madonna Road to Dalidio Drive/Prado Road (Prior to Building Permits or Occupancy)

- Install 2nd northbound left shared with through-lane on Prado Road/Dalidio Drive to Madonna Road (Prior to Building Permits or Occupancy)
- Prohibit westbound U-turns on Madonna Road (Prior to Building Permits or Occupancy)
- Provide split phase operations & optimize signal timing (Prior to Building Permits or Occupancy)

T-1(c) Intersection #5: Madonna Road & U.S. 101 Southbound Ramps.

- Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement).

- Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)

T-1(d) Intersection #8: Higuera Street & South Street.

- Optimize Signal Timing (ongoing by City)

T-1(e) Intersection #9: Los Osos Valley Road & Froom Ranch Way.

- Install dedicated 230′ right turn lane on northbound Froom Ranch Way approach to Los Osos Valley Road (with Froom Ranch Way bridge construction)
- Extend right turn lane on southbound Froom Ranch Way approach to Los Osos Valley Road to 110′ (with Froom Ranch Way bridge construction)
- Install 2nd southbound left turn lane on Froom Ranch Way approach to eastbound Los Osos Valley Road (with Froom Ranch Way bridge construction)

T-1(f) Intersection #10: Los Osos Valley Road & Auto Park Way.

- Pay Fair Share Impact fees for Signalization (Prior to Building Permits or Occupancy)
- Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement).
- Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)

T-1(g) Intersection #16: S. Higuera Street & Tank Farm Road.

- Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement).

- Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)
- Extend northbound right turn pocket to 230' and channelize movement (Prior to Building Permits or Occupancy)

T-1(h) Intersection #21: Prado Road/Dalidio Drive & Froom Ranch Way.

- Install multilane roundabout control (when connection is constructed)

T-1(i) Intersection #25: Prado Road/Dalidio Drive & SC Project Driveway.

- Install multilane roundabout control or restricted access (when connection is constructed)

<u>Plan Requirements and Timing</u>. Final design of mitigation measures to be constructed by applicant shall be approved by City, right of way dedicated to the City by applicant, constructed by applicant, and accepted by the City in accordance with the timing established above and to be executed in the San Luis Ranch Development Agreement. Payment of traffic mitigation fees shall be paid by applicant upon acceptance by the City of final design plans and in accordance with the above provisions to be executed in the San Luis Ranch Development Agreement. The travel demand management plan shall be accepted by the City in accordance with the timing established above.

<u>Monitoring</u>. City Public Works staff shall confirm payment of applicable fees. City Public Works staff shall also ensure implementation of these improvements following approval of the final design plans for the Specific Plan Area. The applicant shall fund and the City shall manage monitoring of travel demand in accordance with the final approved travel demand management plan.

Residual Impacts. Implementation of the identified mitigation measures would improve LOS at six impacted intersections to acceptable levels, so impacts on these facilities would be less than significant after mitigation. However, impacts associated with multimodal level of service standards at three impacted intersections (Madonna & U.S. 101 SB Ramp, Los Osos Valley Road & AutoPark Way, and Higuera & Tank Farm) would remain significant and unavoidable.

T-2(a) Intersection #1: Madonna Road & Los Osos Valley Road.

- Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)

T-2(b) Intersection #2: Madonna Road & Oceanaire Drive.

- Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair

Share Payments as established in San Luis Ranch Development Agreement). Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)

T-2(c) Intersection #5: Madonna Road & U.S. 101 S.B Ramps.

- Extend northbound Madonna Road left turn lane to 150′ (Prior to Building Permits or Occupancy)

T-2(d) Intersection #6: Madonna Road & U.S. 101 Northbound Ramps.

- Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)

T-2(e) Intersection #7: Madonna Road & Higuera Street.

- Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)

T-2(f) Intersection #9: Los Osos Valley Road & Froom Ranch Way.

- Install dedicated 230′ right turn lane on Los Osos Valley Road approach to northbound Froom Ranch Way (with Froom Ranch Way bridge construction)
- Extend right turn lane on Los Osos Valley Road approach to southbound Froom Ranch Way to 110′ (with Froom Ranch Way Bridge construction)
- Install 2nd southbound left turn lane on Froom Ranch Way approach to eastbound Los Osos Valley Road (with Froom Ranch Way bridge construction)

T-2(g) Intersection #12: Los Osos Valley Road & U.S. 101 Southbound Ramps.

- Extend off-ramp left turn pocket to 320′ (Prior to Building Permits or Occupancy)

T-2(h) Intersection #13: Los Osos Valley Road & U.S. 101 Northbound Ramps.

- Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)

T-2(i) Intersection #14: Los Osos Valley Road & Higuera Street.

- Extend eastbound right turn lane to 180′ or as far a practical (Prior to Building Permits or Occupancy)

T-2(j) Intersection #18: Prado Road & Higuera Street.

- Install 2nd U.S. 101 northbound left turn lane (Prior to Building Permits or Occupancy)
- Extend westbound right turn pocket to 400′ (Prior to Building Permits or Occupancy)

Plan Requirements and Timing. Final design of mitigation measures to be constructed by applicant shall be approved by City, right of way dedicated to the City by applicant, constructed by applicant, and accepted by the City in accordance with the timing established above and to be executed in the San Luis Ranch Development Agreement. Payment of traffic mitigation fees shall be paid by applicant upon acceptance by the City of final design plans and in accordance with the above provisions to be executed in the San Luis Ranch Development Agreement. The travel demand management plan shall be accepted by the City in accordance with the timing established above.

Monitoring. City Public Works staff shall confirm payment of applicable fees. City Public Works staff shall also ensure implementation of these improvements following approval of the final design plans for the Specific Plan Area. The applicant shall fund and the City shall manage monitoring of travel demand in accordance with the final approved travel demand management plan.

Residual Impacts. Implementation of the identified mitigation measures would improve capacity at five impacted intersections to acceptable levels, so impacts on these facilities would be less than significant after mitigation. However, impacts associated with capacity at six other intersections (Madonna & Los Osos Valley Road, Madonna & Oceanaire, Madonna & U.S. 101 NB Ramps, Madonna & U.S. 101 SB Ramps, Madonna & Higuera, and Los Osos Valley Road & U.S. 101 NB Ramps) would remain significant and unavoidable.

T-3(a) Segments #1 - #6: Madonna Road (Los Osos Valley Road to Higuera Street)

- Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement).
- Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)
- As part of the TDMP, ~~consider~~ fund operations and financial assessment/assistance of decreasing transit headways to 25 minutes (Prior to Building Permits or Occupancy)
- Construct parallel Class I multiuse path on Madonna between Hwy 101 and Oceanaire) and Class III Sharrows on Madonna Frontage

Road Between Oceanaire and Los Osos Valley Road (Prior to Building Permits or Occupancy)

T-3(b) Segments #7 - #8: Higuera Street (Madonna Road to Prado Road)

- Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)
- Pay Fair Share Costs for Construction of Class I Path Parallel to Higuera as identified in City's Bicycle Transportation Plan (Prior to Building Permits or Occupancy)

T-3(c) Segments #13 - #17: Los Osos Valley Road (Madonna Road to Higuera Street)

- Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)
- Pay Fair Share Costs for Construction of Class I Path Parallel to Los Osos Valley Road as identified in City's Bicycle Transportation Plan (Prior to Building Permits or Occupancy)

T-3(d) Segments #18 - #20: Dalidio Drive/Prado Road (Froom Ranch Way to Higuera Street)

- Construct parallel Class I multiuse paths (Concurrent with Construction/Widening of Prado Road along project frontages)

Plan Requirements and Timing. Final design of mitigation measures to be constructed by applicant shall be approved by City, right of way dedicated to the City by applicant, constructed by applicant, and accepted by the City in accordance with the timing established above and to be executed in the San Luis Ranch Development Agreement. Payment of traffic impact fees shall be paid by applicant upon acceptance by the City of final design plans and in accordance with the above provisions to be executed in the San Luis Ranch Development Agreement. The travel demand management plan shall be accepted by the City in accordance with the timing established above.

Monitoring. City Public Works staff shall confirm payment of applicable fees. City Public Works staff shall also ensure implementation of these improvements following approval of the final design plans for the Specific Plan Area. The applicant shall fund and the City shall manage monitoring of travel demand in accordance with the final approved travel demand management plan.

Residual Impacts. Implementation of the identified mitigation measures would improve multimodal level of service at one impacted segment to acceptable levels, so impacts on this facility would be less than significant after mitigation. However, impacts associated with multimodal segment level of service at three other segments (Madonna Road (Los Osos Valley Road to Higuera Street), Higuera Street (Madonna Road to Prado Road), Los Osos Valley Road (Madonna Road to Higuera Street) would remain significant and unavoidable.

T-5 Froom Ranch Way Bridge Timing

- The Froom Ranch Way bridge connection shall be completed prior to any residential or non-residential building permits or occupancy permits.

Plan Requirements and Timing. Final design of mitigation measures to be constructed by applicant shall be approved by City, right of way dedicated to the City by applicant, constructed by applicant, and accepted by the City in accordance with the timing established above and to be executed in the San Luis Ranch Development Agreement.

Monitoring. City Public Works staff shall also ensure implementation of these improvements following approval of the final design plans for the Specific Plan Area.

Residual Impacts. Implementation of the identified mitigation measures would reduce multimodal level of service and capacity impacts to a less than significant level.

T-11(a) Northbound U.S. 101 Prado Road Off Ramp

- Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement).
- Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)

T-11(b) Northbound U.S. 101 North of Prado Road

- Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement).
- Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)

T-11(c) Northbound U.S. 101 North of Madonna Road

- Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement).

- Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)

Plan Requirements and Timing. Payment of traffic impact fees shall be paid by applicant upon acceptance by the City of final design plans and in accordance with above provisions to be executed in the San Luis Ranch Development Agreement. The travel demand management plan shall be accepted by the City in accordance with the timing established above.

Monitoring. City Public Works staff shall confirm payment of applicable fees. The applicant shall fund and the City shall manage monitoring of travel demand in accordance with the final approved travel demand management plan.

Residual Impacts. Implementation of the identified mitigation measures would lessen project volumes on the Highway 101 mainline and mitigate interim impacts to the maximum extent feasible. However, impacts associated with mainline Highway 101 operations would remain significant and unavoidable.

Mitigation Measures for Impacts T-4, T-6, T-7, T-8, T-9 and T-10 remain unchanged for the revised project from those included in the July 2017 certified Final EIR.

2.4.3 Travel Demand Management Plan

Under existing and near-term conditions buildout of the project prior to construction of the Prado Road Interchange would result in several temporary Class I significant and unavoidable impacts. Mitigation requiring fixed sequential phasing dependent on the Prado Road interchange, which is outside the control of the applicant, would make the development project infeasible due the associated financing constraints. Therefore, considering the interim nature of the impacts, mitigation to the maximum extent feasible, and as described previously, shall include development & implementation of a robust Travel Demand Management plan to reduce vehicular trips and minimize impacts until the Prado Road Overpass is completed. The key components of a Travel Demand Management Plan would include the following.

Non-Residential Trip Reduction Program

Non- Residential trip reduction programs shall be targeted primarily at employees since their travel behavior is easier to influence than customers. A separate customized trip reduction should be developed for each non-residential use to maximize effectiveness and include but not be limited to the following.

- A travel demand coordinator that will implement and monitor the program. The travel demand coordinator will be responsible for preparing quarterly reports to the City and working with employees to minimize automobile travel.
- Participation in SLO Regional Rideshare’s Commute Survey and Trip Reduction Plan program. This program is provided at no cost to the employer and results in a Trip Reduction Plan prepared by Rideshare staff.

- Create an on-site bike share program open to employees and residents of the project. Monitor usage and supply bicycles as needed to accommodate demand.
- Provide close-in parking reserved for carpools and vanpools.
- Provide transit pass subsidies to employees.
- Provide on-site bike lockers and showers, on-site bicycle repair station, and secured bicycle parking.
- Work with Fun Ride and/or Zip Car to provide permanent car sharing parking spot(s) on site.

Residential Trip Reduction Program

- Consider unbundled parking spaces from multi-family residential units. This enables households that do not use parking spaces to save on housing costs. Offer reserved parking spaces for lease or sale to households who need them. Monitor and adjust the program as needed to ensure there is no parking spillover into nearby areas.
- Create a bus pass subsidy program and/or shuttle bus to reduce vehicle trips.
- Consider operations and financial assessment/assistance of decreasing transit headways to 25 minutes.
- Provide bicycles as part of the home purchase.

Implementing these TDM measures would reduce, but not eliminate, previously identified project transportation impacts. The level of impacts as identified in the certified Final EIR remain unchanged.

2.5 OTHER ISSUES

This section addresses other portions of the certified Final EIR that are in some way modified as a result of the revised Project Description included in this Supplemental EIR. In all cases, these changes are minor, not substantive, and in no way affect the analysis, conclusions or mitigation measures described in the certified Final EIR. In general, these changes are descriptive, and intended to clarify information provided in the original document that now more accurately reflects the revised project phasing. Modifications from the certified FEIR are indicated either through strikeout or underlined text.

2.5.1 Aesthetics

The discussion under Impact AES-1 on page 4.1-12 of the certified Final EIR related to views from Madonna Road is clarified as follows:

> *Views from Madonna Road*. Views of the site from Madonna Road are dominated by stands of eucalyptus trees. In the short term, portions of the proposed residences constructed under Phase 1 (near the center of the site) would continue to be shielded from views from Madonna Road and the residences to the southwest by the eucalyptus trees, the existing structures on-site, and the post office. <u>As the project is developed,</u> ~~In Phase 3 of development of the project site,~~ the eucalyptus trees and existing on-site structures would be removed to accommodate high density multi-family residences adjacent to Madonna Road.

2.5.2 Agriculture

The discussion under Impact AG-3 on page 4.2-19 of the certified Final EIR related to short-term conflicts with agricultural uses is clarified as follows:

> <u>Short-Term Conflicts with Agricultural Uses</u>. As described in Section 2.0, Project Description, <u>project components could be constructed in any order, subject to growth management limitations set forth in the Specific Plan and the Development Agreement for the project.</u> ~~the project would be constructed in six phases, resulting in a construction period that may last for up to six years.~~ Each phase of construction would require extensive earthwork, which would result in fugitive dust that could impact on-site and off-site crops and other agricultural activities…

2.5.3 Hydrology and Water Quality

The discussion under Impact HWQ-1 on page 4.8-22 of the certified Final EIR related the timing of project construction is clarified as follows:

> …Project construction would <u>occur over time subject to limitations set forth in the Specific Plan and the Development Agreement.</u> ~~be phased over an approximately 7-year period.~~ In total, earthwork for buildout of the project site is estimated to require 817,200 cubic yards (CY) of cut, and 569,200 CY of fill, resulting in a need for approximately 248,000 CY of soil import. …

2.5.4 Noise

The discussion under Impact N-1 on page 4.10-15 of the certified Final EIR related to noise generated from construction activity is clarified as follows:

> Construction of the project would occur consistent with the growth management limitations set forth in the Specific Plan and the Development Agreement. ~~in six phases between 2017 and 2023. Phases 1, 2, and 3 – which include the proposed residential build out – would be constructed between 2017 and 2020. Phases 4 and 5 – which include office and hotel build out – would be constructed between 2018 and 2023. Phase 6 – which includes commercial build out – would be constructed between 2017 and 2020.~~

3.0 REFERENCES AND SEIR PREPARERS

3.1 REFERENCES

The following references are in addition to those included in the certified Final EIR for the San Luis Ranch Project. Certain references from the Final EIR are included to indicate those most relevant to the analysis in the Supplemental EIR.

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Intergovernmental Panel on Climate Change [IPCC], 2013: Summary for Policymakers. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S. K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Intergovernmental Panel on Climate Change [IPCC], 2014: Summary for Policymakers. In: *Climate Change 2014, Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

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Transportation Research Board. 2010. Highway Capacity Manual, Fifth Edition. Available at: http://hcm.trb.org/?qr=1.

3.2 SUPPLEMENTAL EIR PREPARERS

The City of San Luis Obispo prepared this Supplemental EIR based in part on technical reports prepared with respect to the issues of air quality, greenhouse gas emissions, and transportation. City staff and consultants involved in the preparation of the EIR are listed below.

John Rickenbach, AICP, Project Manager and Contract City Planner
Michael Codron, Community Development Director
Tyler Corey, Principal Planner
Jake Hudson, Transportation Engineer
Jon Ansolabehere, Assistant City Attorney

Rincon Consultants (Air Quality and GHG technical studies)

Richard Daulton, Principal
Chris Bersbach, Technical Services Project Manager
Mattie Cardenaz, Associate Environmental Planner

Central Coast Transportation Consulting (Transportation technical study)

Joe Fernandez, P.E., AICP, Principal
Travis Low, Project Engineer

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4.0 RESPONSES TO COMMENTS ON THE DRAFT SEIR

4.1 INTRODUCTION

In accordance with Section 15088 of the State California Environmental Quality Act (CEQA) Guidelines, the City of San Luis Obispo, as the lead agency, has reviewed the comments received on the Draft Supplemental Environmental Impact Report (Draft SEIR) for the San Luis Ranch Project and has prepared responses to all comments received.

The Draft SEIR was circulated for a 45-day public review period that began April 30, 2018 and concluded on June 13, 2018. The City received comment letters through June 13, 2018 which are included herein. The City held a public Planning Commission hearing on May 23, 2018, to receive public testimony in the form of verbal comments on the Draft SEIR.

Each written and verbal comment that the City received is included in this Responses to Comments section. Responses to these comments have been prepared to address the environmental concerns raised by the commenters and to indicate where and how the Draft SEIR addresses pertinent environmental issues.

The focus of the responses to comments is the disposition of environmental issues that are raised in the comments, as specified by Section 15088(c) of the State CEQA Guidelines. Detailed responses are not provided to comments on the merits of the proposed project. In addition, Section 15131 of the *State CEQA Guidelines* states that "economic or social effects of a project shall not be treated as significant effects on the environment." When a comment is not directed to an environmental issue, the response indicates that the comment will be forwarded to the appropriate decision-makers for review and consideration as part of the public record.

The Draft SEIR and responses to comments collectively comprise the Final SEIR for the project. Any changes made to the text of the Draft SEIR to correct information, data, or intent, other than minor typographical corrections or minor working changes, are noted in the Final SEIR as changes from the Draft SEIR. Where a comment results in a change to the Draft SEIR text, a notation is made in the response indicating that the text is revised. Changes in the Draft SEIR text are signified by strikeouts (~~strikeouts~~) where text is removed and by underline font (<u>underline font</u>) where text is added. If text is added where the font is already bold or underlined, additions are noted using underlined bold font (<u>**underlined bold font**</u>).

4.2 COMPARISON OF FEIR AND SEIR MITIGATION MEASURES

With one minor exception related to air quality, there were no changes to the Draft SEIR that resulted from public testimony and letters, including from Planning Commissioners discussing the Draft SEIR at a CEQA public hearing for the project held on May 23, 2018.

In response to Planning Commissioner Mike Wulkan, Table 4-1 clarifies the differences in mitigation measures from the certified Final EIR and the SEIR. Except where noted in the table, the mitigation measures from the certified Final SEIR also apply to the revised project. With two minor exceptions related to air quality and transportation, no mitigation measures were changed from the Draft SEIR. These minor changes from the Draft SEIR are shown in the table. In the case of the change to Mitigation Measure T-3(a), the change is to ensure consistency with the intent of the originally adopted mitigation measure, which was to provide funding.

Table 4-1. Comparison of Mitigation Measures from Certified FEIR to SEIR
(modified or new measures only)

Certified Final EIR Mitigation	SEIR Mitigation
T-1(a). Intersection #1: Madonna Road & Los Osos Valley Road. • City optimize signal timing to accommodate increased project volumes (ongoing)	**T-1(a). Intersection #1: Madonna Road & Los Osos Valley Road.** • City optimize signal timing to accommodate increased project volumes (ongoing by City)
T-1(b). Intersection #3: Madonna Road & Dalidio Drive/Prado Road. • Extend existing westbound left turn lane on Madonna Road to Dalidio Drive/Prado Road to 310’ (Phase 1) • Install 2nd westbound 310’ left turn lane on Madonna Road to Dalidio Drive/Prado Road (Phase 1) • Install eastbound 250’ right turn pocket on Madonna Road to Dalidio Drive/Prado Road (Phase 1) • Install 2nd northbound left shared with through-lane on Prado Road/Dalidio Drive to Madonna Road (Phase 1) • Prohibit westbound U-turns on Madonna Road (Phase 1) • Provide split phase operations & optimize signal timing (Phase 1)	**T-1(b). Intersection #3: Madonna Road & Dalidio Drive/Prado Road.** • Extend existing westbound left turn lane on Madonna Road to Dalidio Drive/Prado Road to 310’ (Prior to Building Permits or Occupancy) • Install 2nd westbound 310’ left turn lane on Madonna Road to Dalidio Drive/Prado Road (Prior to Building Permits or Occupancy) • Install eastbound 250’ right turn pocket on Madonna Road to Dalidio Drive/Prado Road (Prior to Building Permits or Occupancy) • Install 2nd northbound left shared with through-lane on Prado Road/Dalidio Drive to Madonna Road (Prior to Building Permits or Occupancy) • Prohibit westbound U-turns on Madonna Road (Prior to Building Permits or Occupancy) • Provide split phase operations & optimize signal timing (Prior to Building Permits or Occupancy)
T-1(c). Intersection #5: Madonna Road & U.S. 101 Southbound Ramps. • Construct Prado Road Overpass (Overpass-Only, Phase 2)	**T-1(c). Intersection #5: Madonna Road & U.S. 101 Southbound Ramps.** • Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). • Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)
T-1(d). Intersection #8: Higuera Street & South Street. • Optimize Signal Timing	**T-1(d). Intersection #8: Higuera Street & South Street.** • Optimize Signal Timing (ongoing by City)

Table 4-1. Comparison of Mitigation Measures from Certified FEIR to SEIR

(modified or new measures only)

Certified Final EIR Mitigation	SEIR Mitigation
T-1(e). Intersection #9: Los Osos Valley Road & Froom Ranch Way. • Install dedicated 230' right turn lane on northbound Froom Ranch Way approach to Los Osos Valley Road (with Froom Ranch Way bridge construction) • Extend right turn lane on southbound Froom Ranch Way approach to Los Osos Valley Road to 110' (with Froom Ranch Way bridge construction) • Install 2nd southbound left turn lane on Froom Ranch Way approach to eastbound Los Osos Valley Road (with Froom Ranch Way bridge construction)	**T-1(e). Intersection #9: Los Osos Valley Road & Froom Ranch Way.** • Install dedicated 230' right turn lane on northbound Froom Ranch Way approach to Los Osos Valley Road (with Froom Ranch Way bridge construction) • Extend right turn lane on southbound Froom Ranch Way approach to Los Osos Valley Road to 110' (with Froom Ranch Way bridge construction) • Install 2nd southbound left turn lane on Froom Ranch Way approach to eastbound Los Osos Valley Road (with Froom Ranch Way bridge construction)
T-1(f). Intersection #10: Los Osos Valley Road & Auto Park Way. • Signalization (Phase 1) • Construct Prado Road Overpass (Overpass Only, Phase 2)	**T-1(f). Intersection #10: Los Osos Valley Road & Auto Park Way.** • Pay Fair Share Impact fees for Signalization (Prior to Building Permits or Occupancy) • Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). • Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)
T-1(g). Intersection #16: S. Higuera Street & Tank Farm Road. • Construct Prado Road Overpass (Overpass Only Phase 2) • Extend northbound right turn pocket to 230' and channelize movement (Phase 1)	**T-1(g). Intersection #16: S. Higuera Street & Tank Farm Road.** • Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). • Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy) • Extend northbound right turn pocket to 230' and channelize movement (Prior to Building Permits or Occupancy)

Table 4-1. Comparison of Mitigation Measures from Certified FEIR to SEIR
(modified or new measures only)

Certified Final EIR Mitigation	SEIR Mitigation
T-1(h). Intersection #21: Prado Road/Dalidio Drive & Froom Ranch Way. • Install multilane roundabout control (when connection is constructed)	**T-1(h). Intersection #21: Prado Road/Dalidio Drive & Froom Ranch Way.** • Install multilane roundabout control (when connection is constructed)
T-1(i). Intersection #25: Prado Road/Dalidio Drive & SC Project Driveway. • Install multilane roundabout control or restricted access (when connection is constructed)	**T-1(i). Intersection #25: Prado Road/Dalidio Drive & SC Project Driveway**. • Install multilane roundabout control or restricted access (when connection is constructed)
T-2(a). Intersection #1: Madonna Road & Los Osos Valley Road. • Construct Prado Road Overpass (Overpass Only, Phase 2)	**T-2(a). Intersection #1: Madonna Road & Los Osos Valley Road.** • Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)
T-2(b). Intersection #2: Madonna Road & Oceanaire Drive. • Construct Prado Road Overpass (Overpass Only, Phase 2)	**T-2(b). Intersection #2: Madonna Road & Oceanaire Drive.** • Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)
T-2(c). Intersection #5: Madonna Road & U.S. 101 S.B Ramps. • Extend northbound Madonna Road left turn lane to 150' (Phase 1)	**T-2(c). Intersection #5: Madonna Road & U.S. 101 S.B Ramps.** • Extend northbound Madonna Road left turn lane to 150' (Prior to Building Permits or Occupancy)
T-2(d). Intersection #6: Madonna Road & U.S. 101 Northbound Ramps. • Construct Prado Road Overpass (Overpass Only, Phase 2)	**T-2(d). Intersection #6: Madonna Road & U.S. 101 Northbound Ramps.** • Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development

Table 4-1. Comparison of Mitigation Measures from Certified FEIR to SEIR
(modified or new measures only)

Certified Final EIR Mitigation	SEIR Mitigation
	Agreement). Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)
T-2(e). Intersection #7: Madonna Road & Higuera Street. • Construct Prado Road Overpass (Overpass Plus U.S. 101 northbound ramps, Phase 2)	**T-2(e). Intersection #7: Madonna Road & Higuera Street.** • Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)
T-2(f). Intersection #9: Los Osos Valley Road & Froom Ranch Way. • Install dedicated 230' right turn lane on Los Osos Valley Road approach to northbound Froom Ranch Way (with Froom Ranch Way bridge construction) • Extend right turn lane on Los Osos Valley Road approach to southbound Froom Ranch Way to 110' (with Froom Ranch Way Bridge construction) • Install 2nd southbound left turn lane on Froom Ranch Way approach to eastbound Los Osos Valley Road (with Froom Ranch Way bridge construction)	**T-2(f). Intersection #9: Los Osos Valley Road & Froom Ranch Way.** • Install dedicated 230' right turn lane on Los Osos Valley Road approach to northbound Froom Ranch Way (with Froom Ranch Way bridge construction) • Extend right turn lane on Los Osos Valley Road approach to southbound Froom Ranch Way to 110' (with Froom Ranch Way Bridge construction) • Install 2nd southbound left turn lane on Froom Ranch Way approach to eastbound Los Osos Valley Road (with Froom Ranch Way bridge construction)
T-2(g). Intersection #12: Los Osos Valley Road & U.S. 101 Southbound Ramps. • Extend off-ramp left turn pocket to 320' (Phase 1)	**T-2(g). Intersection #12: Los Osos Valley Road & U.S. 101 Southbound Ramps.** • Extend off-ramp left turn pocket to 320' (Prior to Building Permits or Occupancy)
T-2(h). Intersection #13: Los Osos Valley Road & U.S. 101 Northbound Ramps. • Construct Prado Road Overpass (Overpass Only, Phase 2)	**T-2(h). Intersection #13: Los Osos Valley Road & U.S. 101 Northbound Ramps.** • Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). Develop a Travel

Table 4-1. Comparison of Mitigation Measures from Certified FEIR to SEIR

(modified or new measures only)

Certified Final EIR Mitigation	SEIR Mitigation
	Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)
T-2(i). Intersection #14: Los Osos Valley Road & Higuera Street. • Extend eastbound right turn lane to 180' (Phase 1)	**T-2(i). Intersection #14: Los Osos Valley Road & Higuera Street.** • Extend eastbound right turn lane to 180' or as far a practical (Prior to Building Permits or Occupancy)
T-2(j). Intersection #18: Prado Road & Higuera Street. • Install 2nd U.S. 101 northbound left turn lane (Phase 1) • Extend westbound right turn pocket to 400' (Phase 1)	**T-2(j). Intersection #18: Prado Road & Higuera Street.** • Install 2nd U.S. 101 northbound left turn lane (Prior to Building Permits or Occupancy) • Extend westbound right turn pocket to 400' (Prior to Building Permits or Occupancy)
T-3(a). Segments #1 - #6: Madonna Road (Los Osos Valley Road to Higuera Street) • Construct Prado Road Overpass (Overpass Only, Phase 2) • Fund assessment of decreasing transit headways to 25 min • Construct parallel Class I multiuse paths or bike boulevard (Phase 1)	**T-3(a). Segments #1 - #6: Madonna Road (Los Osos Valley Road to Higuera Street)** • Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). • Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy) • As part of the TDMP, ~~consider~~ <u>fund</u> operations and financial assessment/assistance of decreasing transit headways to 25 minutes (Prior to Building Permits or Occupancy) • Construct parallel Class I multiuse path on Madonna between Hwy 101 and Oceanaire) and Class III Sharrows on Madonna Frontage Road Between Oceanaire and Los Osos Valley Road (Prior to Building Permits or Occupancy)
T-3(b). Segments #7 - #8: Higuera Street (Madonna Road to Prado Road) • Construct Prado Road Overpass (Overpass and U.S. 101 northbound ramps, Phase 2) • Construct parallel Class I multiuse paths or bike boulevard (Phase 1)	**T-3(b). Segments #7 - #8: Higuera Street (Madonna Road to Prado Road)** • Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in

Table 4-1. Comparison of Mitigation Measures from Certified FEIR to SEIR
(modified or new measures only)

Certified Final EIR Mitigation	SEIR Mitigation
	San Luis Ranch Development Agreement). Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy) • Pay Fair Share Costs for Construction of Class I Path Parallel to Higuera as identified in City's Bicycle Transportation Plan (Prior to Building Permits or Occupancy)
T-3(c). Segments #13 - #17: Los Osos Valley Road (Madonna Road to Higuera Street) • Construct Prado Road Overpass (Overpass and U.S. 101 northbound ramps, Phase 2) • Construct parallel Class I multiuse paths or bike boulevard (Phase 3)	**T-3(c). Segments #13 - #17: Los Osos Valley Road (Madonna Road to Higuera Street)** • Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy) • Pay Fair Share Costs for Construction of Class I Path Parallel to Los Osos Valley Road as identified in City's Bicycle Transportation Plan (Prior to Building Permits or Occupancy)
T-3(d). Segments #18 - #20: Dalidio Drive/Prado Road (Froom Ranch Way to Higuera Street) • Construct parallel Class I multiuse paths or bike boulevard (when Prado Road is constructed/improved)	**T-3(d). Segments #18 - #20: Dalidio Drive/Prado Road (Froom Ranch Way to Higuera Street)** • Construct parallel Class I multiuse paths (Concurrent with Construction/Widening of Prado Road along project frontages)
T-5. Froom Ranch Way Bridge Phasing. • The Froom Ranch Way bridge connection shall be completed prior to occupancy of Phase 1 of the Specific Plan buildout.	**T-5. Froom Ranch Way Bridge Timing** • The Froom Ranch Way bridge connection shall be completed prior to any residential or non-residential building permits or occupancy permits.
No mitigation T-11(a)	**T-11(a). Northbound U.S. 101 Prado Road Off Ramp** • Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB

Table 4-1. Comparison of Mitigation Measures from Certified FEIR to SEIR
(modified or new measures only)

Certified Final EIR Mitigation	SEIR Mitigation
	(Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). • Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)
No mitigation T-11(b)	**T-11(b). Northbound U.S. 101 North of Prado Road** • Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement). • Develop a Travel Demand Management Plan consistent with section 2.4.3 and to the satisfaction of the Public Works Director (Prior to Building Permits or Occupancy)
No mitigation T-11(c)	**T-11(c). Northbound U.S. 101 North of Madonna Road** • Pay Fair share costs and dedicate necessary ROW for construction of the Prado Road Overpass & NB Ramps (Timing & Amount of Fair Share Payments as established in San Luis Ranch Development Agreement).
AQ-2(a). Fugitive Dust Control Measures. Construction projects shall implement the following dust control measures so as to reduce PM_{10} emissions in accordance with SLOAPCD requirements. • Reduce the amount of the disturbed area where possible; • Water trucks or sprinkler systems shall be used during construction in sufficient quantities to prevent airborne dust from leaving the site. Increased watering frequency shall be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water or a SLOAPCD-approved dust suppressant shall be used whenever possible, to reduce the amount of potable water used for dust control; • *[…remainder not shown for brevity…]*	**AQ-2(a). Fugitive Dust Control Measures.** Construction projects shall implement the following dust control measures so as to reduce PM_{10} emissions in accordance with SLOAPCD requirements. • Reduce the amount of the disturbed area where possible; • Water trucks or sprinkler systems shall be used during construction in sufficient quantities to prevent airborne dust from leaving the site. Increased watering frequency shall be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water or a SLOAPCD-approved dust suppressant shall be used whenever possible, to reduce the amount of potable water used for dust control. <u>Please note that since water use is a concern due to drought</u>

Table 4-1. Comparison of Mitigation Measures from Certified FEIR to SEIR
(modified or new measures only)

Certified Final EIR Mitigation	SEIR Mitigation
	conditions, the contractor or builder shall consider the use of an APCD-approved dust suppressant where feasible to reduce the amount of water used for dust control; • *[…remainder not shown for brevity, as it remains unchanged from certified Final EIR…]*

Note: Underlined text indicates change from Draft SEIR to Final SEIR.

4.3 RESPONSES TO PUBLIC TESTIMONY

On May 23, 2018, the Planning Commission conducted a public hearing regarding the Draft SEIR for the San Luis Ranch Project. The hearing provided an opportunity for members of the public to receive a summary presentation of the project as well as the major findings of the Draft SEIR. The primary purpose of the public comment portion of the hearing was to receive input from interested parties regarding the adequacy of the Draft SEIR. In addition to the Planning Commission, there were eight speakers during the May 23 hearing. Table 4-2 summarizes the topics of comments made by each speaker. The City's response to each comment follows Table 4-2.

Table 4-2. Public Hearing Comment Summary

Num.	Speaker/Affiliation	Topics Presented in Comments
May 23, 2018 Planning Commission Hearing		
Public Comments		
1	Carolyn Smith, Private Citizen	Traffic; insufficiency of proposed mitigation; bike safety
2	Brian Tietje, Private Citizen	General support; GHG will be reduced by shorter commutes
3	Debbie Tietje, Private Citizen	General support
4	Lea Brooks, Private Citizen	Traffic; bike safety; timing of required traffic mitigation
5	Theodora Jones, Private Citizen	Air quality impacts from diesel and dust
6	Kevin Hauber, Private Citizen	General support; traffic will be reduced by shorter commutes
7	Brett Cross, Private Citizen	Project phasing effect on jobs-housing balance; how to ensure Prado overpass is built; growth management
8	Andrew Hackleman, Private Citizen	General support; need for housing and infrastructure outweighs traffic impacts
Planning Commissioner Comments		
1	Nicholas Osterbur, Planning Commission	Prado Road interchange timing concerns
2	Mike Wulkan, Planning Commission	Clarify timing of traffic mitigation and differences from FEIR
3	John McKenzie, Planning Commission	Suggests modifications to required Travel Demand Management Plan
4	Robert Jorgensen, Planning Commission	Supports Draft SEIR as written
5	John Fowler, Planning Commission Chair	Requests clarification of timing of infrastructure requirements

May 23, 2018 Planning Commission Hearing, Public Comments

1. Carolyn Smith, Private Citizen. The commenter expressed concern about project traffic in the context of revised project phasing, and how long interim impacts might last until the Prado Road interchange is built. She believes that the SEIR traffic mitigation is insufficient. Bike safety is also an issue of concern. City engineering staff responded that the duration of interim is uncertain, and that there may be none at all or potentially several years depending on the current schedule of completing the Prado Road interchange and the pace of the development project, but based on the best information currently its anticipated the duration could be in the neighborhood of two years. Please refer to the responses to Letter 14 for a discussion of bike safety issues.
2. Brian Tietje, Private Citizen. The commenter expressed support for the concept of the proposed project and suggested that the project could reduce greenhouse gas emissions by reducing commute lengths. No response is necessary.
3. Debbie Tietje, Private Citizen. The commenter expressed support for the concept of the proposed project. No response is necessary.
4. Lea Brooks, Private Citizen. The commenter expressed concern about project traffic in the context of revised project phasing, and how long interim impacts might last until the Prado Road interchange is built. Bike safety was an additional concern, and the desire to have a safe multi-modal crossing of Highway 101 to reduce impacts. Please refer to the response to Carolyn Smith above regarding the duration of interim impacts related to Prado Road, and to Letter 14 for bike safety issues.
5. Theodora Jones, Private Citizen. The commenter expressed concern about air quality impacts related to diesel trucks during construction and stockpiled dirt that could result in dust. She suggests the need to keep trees in place to reduce potential impacts, and to have the city or developer coordinate more bus transportation for students. Mitigation measures set forth in the certified Final EIR require compliance with APCD requirements that relate to these issues, including a variety of measures to control dust and to reduce emissions associated with construction equipment and vehicles. These are carried forward on pages 2.1-7 through 2.1-10 of the Draft SEIR and applied to the updated project.
6. Kevin Hauber, Private Citizen. The commenter expressed support for the concept of the proposed project and suggested that the project could reduce traffic impacts by reducing commute lengths. No response is necessary.
7. Brett Cross, Private Citizen. The commenter expressed concern about the balance of housing and jobs that would result from the project. Project buildout would be the same as the project approved in July 2017, and consistent with City General Plan policies related to growth and housing, including jobs housing balance. Additional housing would reduce the existing imbalance related to the City's function as a regional job center, and general lack of available housing for sale or rent to support these jobs. The commercial component of the project, while it could occur before all housing is built, would only be built in response to market conditions, which account for issues such as the balance of housing and jobs. In addition, there is already an approved Tentative Map for nearly 200 units of housing under the project, whereas there are no development plans in place at this time for the commercial component of the Specific Plan. With respect to growth control issues, please refer to Section 2.3, Impact LU-5, for a full discussion and analysis of this issue.
8. Andrew Hackleman, Private Citizen. The commenter expressed support for the concept of the proposed project and suggested that the housing and infrastructure provided by the project outweigh any potential traffic impacts. No response is necessary.

May 23, 2018 Planning Commission Hearing, Planning Commissioner Comments

1. Nicholas Osterbur, Planning Commission. The commenter expressed concern that the Prado Road interchange be built to minimize the duration of potential traffic impacts that could result from development that might occur prior to this improvement being made. Please refer to the response to Carolyn Smith above.
2. Mike Wulkan, Planning Commission. The commenter asked a variety of technical questions and requested clarification regarding the differences in traffic mitigation required under the certified Final EIR and under the SEIR. City staff provided requested clarification, but further clarification is provided in Table 4-1 above, which will not change that analysis or the required mitigation.
3. John McKenzie, Planning Commission. The commenter suggested augmenting the required Travel Demand Management Plan with flexible employee scheduling. This concept can be considered as such a program is developed. The commenter also requested clarification of how the City's growth management program works in a cumulative sense, and City staff responded. This issue did not directly address an issue examined within the SEIR, but was focused on implementation of City growth management policy that did not directly address impacts associated with the project.
4. Robert Jorgensen, Planning Commission. The commenter expressed agreement with the analysis as included in the Draft SEIR. No response is necessary.
5. John Fowler, Planning Commission Chair. The commenter requested clarification regarding the duration of possible interim impacts associated with the project prior to completion of the Prado Road interchange. The commenter also asked whether multimodal impacts were considered in the Draft SEIR. City staff responded in the affirmative, that traffic modeling and analysis were based on this concept. Please refer to Section 2.4 of the Draft SEIR for the full analysis of this issue.

4.4 RESPONSES TO WRITTEN COMMENTS

Each written comment on the Draft SEIR that the City of San Luis Obispo received is listed in Table 4-3. The comment letters included herein were submitted by public agencies and private citizens. Each comment letter has been numbered sequentially and each separate issue raised by the commenter, if more than one, has also been assigned a number. Each comment letter is reproduced in its entirety with the issues of concern numbered in the right margin. Responses to these comments have been prepared to address the environmental concerns raised by the commenters and to indicate where and how the Draft SEIR addresses pertinent environmental issues. The responses to each comment identify first the number of the comment letter, and then the number assigned to each issue (Response 2.1, for example, indicates that the response is for the first comment raised in Letter 2).

Table 4-3. Comments Received on the Draft SEIR

Letter No.	Commenter and Affiliation	Date Received
Comments Received During the Draft SEIR Circulation Period – April 30, 2018 through June 13, 2018		
1	Allan Cooper, Private Citizen	May 19, 2018
2	James Lopes, Private Citizen	May 20, 2018
3	Lea Brooks, Private Citizen	May 23, 2018
4	Zoya Dixon, Private Citizen	May 23, 2018
5	C.R. Flores, Private Citizen	May 14, 2018
6	Kevin Hauber, Private Citizen	May 23, 2018
7	James Lopes, Private Citizen	May 23, 2018
8	H. William Sievers, Private Citizen	May 23, 2018
9	Robert Theis, Private Citizen	May 23, 2018
10	Dennis Vavrek, Private Citizen	May 23, 2018
11	John Olejnik, California Department of Transportation, District 5	June 13, 2018
12	Melissa Guise, San Luis Obispo County Air Pollution Control District	June 13, 2018
13	Mila Vujovich-LaBarre, Private Citizen	June 13, 2018
14	Lea Brooks, Private Citizen	June 13, 2018

Letter 1

To: SLO Planning Commission and Tyler Corey
Re: San Luis Ranch Draft Supplemental Environmental Impact Report
From: Allan Cooper, San Luis Obispo
Date: May 19, 2018

Honorable Chair Stevenson and Commissioners -
I concurred with the findings in the San Luis Ranch Development EIR which states that air quality, cultural resources (historic resources and cumulative historic resources), land use/ policy consistency (General Plan policy consistency), noise (construction noise), and transportation (existing and near-term intersection operations, existing and near-term lane capacities, existing and near-term segment operations, cumulative intersection operations, cumulative lane capacities, and cumulative segment operations) created by this project will be significant and unavoidable. This project at the time of buildout will also place unavoidable adverse impacts on the City's current sewer, water, school, law enforcement and fire protection capacities.

Of course all of these significant and unavoidable impacts were accepted by Council on July 18, 2017 due to the following "over-riding considerations":

Findings of Fact and Statement of Overriding Considerations
For the reasons specified below, the City finds that the following considerations outweigh the proposed project's unavoidable environmental risks:

1. Provision of new Residential and Commercial Uses 1.1
2. Provision of a Variety of Housing Types for all Income Levels
3. Open Space and Agricultural Protection
4. Provision of Park and Recreational Facilities
5. Well-Planned Neighborhood Would Reduce Per-Capita Vehicle Trips
6. Provision of New Jobs
7. Transient Occupancy Tax
8. National Flood Insurance Program and the Community Rating System Rating Improvement
9. Implementation of the General Plan

What I find unsettling here is the following: The project applicant now proposes to adjust the phasing plan description such that each of the project phases could overlap, be out of sequence, or be concurrent, **depending on market conditions** and to adjust project conditions and/or mitigation measures to implement such adjusted phasing plan.

Does this therefore mean that the commercial development (including the hotel) provided in Phases 4,5, and 6 may never be provided?

Could this therefore invalidate overriding considerations 1, 5, 6, and 7? Without commercial nearby this would cease to be a "well-planned neighborhood", without commercial this would no longer provide permanent jobs and without a hotel there would be no transient occupancy tax revenue.

Currently Phase 1 is low-moderate density residential, Phase 2 is Medium Density Residential 1.2
and Phase 3 is High Density Residential. Never getting to phase 2 or 3 would suggest that there would be little so-called "affordable" housing which would invalidate overriding considerations 2 and 9.

Invalidating 6 of the 9 overriding considerations would suggest that this project alternative would become inferior to the other project alternatives.

Finally, revising the mitigation measure monitoring program such that construction of the Prado Road Overpass & Northbound Ramp is not a requirement prior to occupancy of Phase 2 or **any other project Phase** would further exacerbate transportation (existing and near-term intersection operations, existing and near-term lane capacities, existing and near-term segment operations, cumulative intersection operations, cumulative lane capacities, and cumulative segment operations) created by this project. Thank you! 1.3

Response to Letter 1

COMMENTER: Allan Cooper, Private Citizen

DATE: May 19, 2018

Response 1.1
After expressing concurrence with the conclusions of the certified FEIR, the commenter is concerned that the revised phasing would invalidate several Overriding Considerations that were part of the CEQA Findings used as the basis of approving the project in July 2017, specifically those regarding the project's provision of new residential and commercial uses, a variety of housing types for various income levels, new jobs, and transient occupancy tax. In response, the revised phasing does not change the development parameters associated with the previously-approved project, including the provision of housing, commercial, and hotel uses that would support those issues raised by the commenter. Without the revised phasing, in fact, it may be more difficult to achieve certain aspects of the project, including the commercial and hotel uses, which would otherwise depend on the timing of construction of the Prado Road Interchange. The existing Overriding Considerations remain valid and applicable to the revised project.

Response 1.2
The commenter is concerned that the revised phasing would invalidate several Overriding Considerations that were part of the CEQA Findings used as the basis of approving the project in July 2017, specifically those regarding the project's provision of a variety of housing types, and that it implements the General Plan. In response, the revised phasing does not change the development parameters associated with the previously-approved project, including the provision of a variety of housing, and it remains consistent with the General Plan, as described in Section 2.3 of the Draft SEIR.

Response 1.3
The commenter expresses concern that the revised project no longer being tied to the timing of the Prado Road interchange would exacerbate potential traffic impacts. Such impacts, and updated mitigation measures to address them, are described in detail in Section 2.4 of the Draft SEIR. The SEIR concludes that the revised project description, as it relates to the timing of the Prado Road interchange, would create temporary Class I, significant and unavoidable impacts until the Prado Road Overpass & NB ramps are completed.

Tonikian, Victoria

Letter 2

From: James Lopes [redacted]
Sent: Sunday, May 20, 2018 2:47 PM
To: Allan Cooper; Corey, Tyler; Advisory Bodies; CityClerk
Subject: San Luis Ranch Draft Supplemental Environmental Impact Report
Attachments: 905_19_18...lettertopc_cooper.pdf

Meeting Date: 05-23-2018
Received: 05-21-2018
Item Number: 2

Planning Commission

City of San Luis Obispo

RE: San Luis Ranch Draft Supplemental Environmental Impact Report

Dear Chairperson Stevenson and Commissioners:

I concur and support, and I hope that you will also, Mr. Cooper's brilliant letter of May 19, 2018. Allowances for variations or lapses in phasing would increase environmental impacts over the current inadequately mitigated project. Since the project is already approved without full mitigations, it appears that such variations will exceed the levels of impacts already described in the project Final EIR. I agree with Mr. Cooper that these exceedances will threaten or negate the stated benefits in the Overriding Considerations, by providing only a partial residential area, little or no affordable housing, and/or little or no commercial development. The analysis by Mr. Cooper indicates that the request should be denied. Thank you.

James Lopes

On 5/19/2018 3:37 PM, Allan Cooper wrote:

2.1

> Dear Tyler -
> Would you kindly forward the letter attached below to the Planning Commission before their May 23, 2018 meeting? Thanks!
> - Allan

To: SLO Planning Commission and Tyler Corey
Re: San Luis Ranch Draft Supplemental Environmental Impact Report
From: Allan Cooper, San Luis Obispo
Date: May 19, 2018

Honorable Chair Stevenson and Commissioners -
I concurred with the findings in the San Luis Ranch Development EIR which states that air quality, cultural resources (historic resources and cumulative historic resources), land use/ policy consistency (General Plan policy consistency), noise (construction noise), and transportation (existing and near-term intersection operations, existing and near-term lane capacities, existing and near-term segment operations, cumulative intersection operations, cumulative lane capacities, and cumulative segment operations) created by this project will be significant and unavoidable. This project at the time of buildout will also place unavoidable adverse impacts on the City's current sewer, water, school, law enforcement and fire protection capacities.

Of course all of these significant and unavoidable impacts were accepted by Council on July 18, 2017 due to the following "over-riding considerations":

Findings of Fact and Statement of Overriding Considerations
For the reasons specified below, the City finds that the following considerations outweigh the proposed project's unavoidable environmental risks:

1. Provision of new Residential and Commercial Uses
2. Provision of a Variety of Housing Types for all Income Levels
3. Open Space and Agricultural Protection
4. Provision of Park and Recreational Facilities
5. Well-Planned Neighborhood Would Reduce Per-Capita Vehicle Trips
6. Provision of New Jobs
7. Transient Occupancy Tax
8. National Flood Insurance Program and the Community Rating System Rating Improvement
9. Implementation of the General Plan

What I find unsettling here is the following: The project applicant now proposes to adjust the phasing plan description such that each of the project phases could overlap, be out of sequence, or be concurrent, **depending on market conditions** and to adjust project conditions and/or mitigation measures to implement such adjusted phasing plan.

Does this therefore mean that the commercial development (including the hotel) provided in Phases 4,5, and 6 may never be provided?

Could this therefore invalidate overriding considerations 1, 5, 6, and 7? Without commercial nearby this would cease to be a "well-planned neighborhood", without commercial this would no longer provide permanent jobs and without a hotel there would be no transient occupancy tax revenue.

Currently Phase 1 is low-moderate density residential, Phase 2 is Medium Density Residential and Phase 3 is High Density Residential. Never getting to phase 2 or 3 would suggest that there would be little so-called "affordable" housing which would invalidate overriding considerations 2 and 9.

Invalidating 6 of the 9 overriding considerations would suggest that this project alternative would become inferior to the other project alternatives.

Finally, revising the mitigation measure monitoring program such that construction of the Prado Road Overpass & Northbound Ramp is not a requirement prior to occupancy of Phase 2 or **any other project Phase** would further exacerbate transportation (existing and near-term intersection operations, existing and near-term lane capacities, existing and near-term segment operations, cumulative intersection operations, cumulative lane capacities, and cumulative segment operations) created by this project. Thank you!

Response to Letter 2

COMMENTER: James Lopes, Private Citizen

DATE: May 20, 2018

Response 2.1
The commenter agrees with the analysis included in Allan Cooper's letter of May 19, 2018, included in this SEIR as Letter 1. Please refer to the responses to Letter 1.

Letter 3

From: Lea Brooks <leabrooks332@gmail.com>
Sent: Wednesday, May 23, 2018 10:14 PM
To: Fukushima, Adam <AFukushima@slocity.org>
Subject: Re: tomorrow

Adam:

This is my argument for a special ATC meeting. Please correct me if I don't have the facts accurate.

Approval of the Supplemental EIR would allow the applicant to construct San Luis Ranch prior to building the Prado Road overpass which includes Class II bike lanes and a Class I multi-use path. That means existing traffic and traffic from San Luis Ranch would use Madonna Road and Los Osos Valley Road to cross or access Highway 101 until Prado Road is built.

Staff estimated the delay for building the Prado Road project is approximately 2.5 years, although the delay could be much longer. Without Prado Road, traffic congestion could increase to the worst-case scenario described in the San Luis Ranch Final EIR.

The proposed mitigation for building San Luis Ranch prior to construction of the Prado Road overpass is development of a Travel Demand Management Plan, including incentives for people to ride bikes.

This mitigation is inadequate for people who ride or want to ride bikes to destinations east of Highway 101 because the existing pinch points – the Madonna Road/Higuera/South Street intersection and the Los Osos Valley Road/Higuera intersection – would become even more congested from additional traffic from San Luis Ranch. Access to the Madonna bike path is so sketchy at both ends that many experienced bicyclists avoid it, and few Laguna Middle School students and their parents consider it as a viable option for travel to school. 3.1

I think it's appropriate for the ATC to consider what improvements could be made to these pinch points as mitigation for approval of the Supplemental EIR. Staff could also present improvements planned for the impacted intersections identified in the Final EIR as problematic for bikes/peds, including Oceanaire/Madonna, and updates on the multiuse path on the north side of Madonna Road between Oceanaire and the Madonna Inn entrance. The issues are safety and transportation choice. Who is going to ride a bike if the route is perceived unsafe?

Thanks.

Lea

Response to Letter 3

COMMENTER: Lea Brooks, Private Citizen

DATE: May 23, 2018

Response 3.1
The commenter argues that an Active Transportation Committee should be held to address project impacts, especially as they relate to bicycle transportation, based on the opinion that proposed mitigation measures included in the SEIR (including a Travel Demand Management Plan that addresses multi-modal issues) are inadequate to fully address bicycle-related impacts. The City Council will consider this opinion as it considers the revised project. The SEIR concludes that the revised project description, as it relates to the timing of the Prado Road interchange, would result in temporary Class I, significant and unavoidable impacts until the Prado Road Overpass & NB Ramps are completed, which include bicycle and pedestrian facilities.

Tonikian, Victoria

Letter 4

From: Zoya Dixon [redacted]
Sent: Wednesday, May 23, 2018 2:38 PM
To: Advisory Bodies
Cc: Davidson, Doug; Fowler, Xzandrea
Subject: Comments for San Luis Ranch at Planning Commission This Evening

Meeting Date: 05-23-2018
Received: 05-23-2018
Item #: 2

Good afternoon Planning Commission,

I am writing to assert my support of the modifications to the SEIR for the slated San Luis Ranch Project being considered at tonight's Planning Commission Meeting.

Approval of the SEIR allows for a wider range of product to be built right away/near term in alignment with SLO City Council 2017-2019 Major Goals #1 - Housing Production with a goal statement to "facilitate increased production of all housing types designed to be accessible to the area work force and low and very low-income residents, through increased density and proximity to transportation corridors in alignment with the Climate Action Plan." 4.1

This is of high importance to our community: both our commitment to the Climate Action Plan by increasing density housing, and also the availability of housing units, particularly those to low income residents.

I encourage the Commission to approve the slated changes to the plan and move forward with the San Luis Ranch proposal.

With appreciation,

Zoya Dixon, resident of Laguna Lake

Zoya Dixon
Downtown SLO // Brunch by the Lake // PCC
(310) 633-4563

Response to Letter 4

COMMENTER: Zoya Dixon, Private Citizen

DATE: May 23, 2018

Response 4.1
The commenter expresses support for the revised project. This comment will be forwarded to the Planning Commission and City Council for review and consideration.

SPEC/ANNX/ER 1502-2015 SANTA BARBARA CA 931

Please travel to the outskirts of San Luis Obispo, and take in the layer of smog that, now, hangs over the city - Highway One from CMC. This layer of smog was not there in my younger days.

Please stop the destruction of Dalidio Ranch. Stop the destruction of historically fertile farmland. Destroying this farmland, pushs America to the unsafe position, of having to rely on other countries to feed us.

The destruction of Dalidio Ranch to create the San Luis Ranch project. Will result in, adding to San Luis Obispo's traffic jam mess. This traffic jam, adding to the smog layer and San Luis Obispo's diminishing air quality. I was under the impression the purposeful destruction of the enviroment was fineble and jailable offense. Will Mr. Grossman go to jail, or San Luis Obispo City officials?

Thank you for your time,

Letter 5

City of San Luis Obispo
Planning Commission

San Luis Obispo City Hall
990 Palm Street
San Luis Obispo
California

93401

RECEIVED

MAY 14 2018

SLO CITY CLERK

5.1

Meeting Date: 05-23-2018
Item #: 2

CITY OF SAN LUIS OBISPO

NOTIFICATION OF AVAILABILITY OF DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT FOR THE SAN LUIS RANCH PROJECT

NOTICE IS HEREBY GIVEN that the City of San Luis Obispo's Community Development Department has published a Supplemental Environmental Impact Report (SEIR) for the following project in accordance with the California Environmental Quality Act.

Project Number: SPEC/ANNX/ER 1502-2015
Project Applicant: Coastal Community Builders

Project Location: The 131-acre San Luis Ranch project site is located in unincorporated San Luis Obispo County, surrounded by the City of San Luis Obispo, bounded by residential uses and Madonna Road to the west, commercial uses and Dalidio Drive to the north, U.S. Highway 101 to the east, and the San Luis Obispo City Farm to the south. Prefumo Creek is located south of the site. The site is identified by assessor's parcel number (APN) 067-121-022.

Project Description: The San Luis Ranch Project includes up to 580 residential units, 150,000 square feet of commercial development, 100,000 square feet of office development, and a 200-room hotel, with a portion of the site preserved for agriculture and open space uses. The Final EIR was certified and the project was approved (General Plan Amendment/Prezoning, Specific Plan, and Tentative Tract Map) by the City of San Luis Obispo on July 18, 2017. The project applicant now proposes to adjust the phasing plan description such that each of the project phases could overlap, be out of sequence, or be concurrent, depending on market conditions and to adjust project conditions and/or mitigation measures to implement such adjusted phasing plan. In addition, the Community Development Director may authorize the developer to construct up to 50% more than the number of residential units allocated for development in any calendar year if the Director determines that doing so is appropriate to facilitate construction of any necessary and beneficial public facilities and infrastructure. The purpose of this authorization is to realize the public benefits associated with the Project, mitigate known potential impacts resulting from the Project, and implement development requirements, including infrastructure requirements, which the City has found to be consistent with, and not a waiver of, the requirements of the City's Growth Management Ordinance.

These changes would be reflected in the Specific Plan and Development Agreement. No other approved entitlements would be affected. The proposed revision envisions no change to the land use plan or development potential compared to what was approved by the City on July 18, 2017.

Response to Letter 5

COMMENTER: C. R. Flores, Private Citizen

DATE: May 14, 2018

Response 5.1

The commenter lists concerns related to the project, which include farmland destruction, traffic and air quality. Agricultural issues were addressed in the certified Final EIR. Traffic and air quality issues were addressed in both the certified Final EIR and in the SEIR. The concerns raised by the commenter will be forwarded to the Planning Commission and City Council for review and consideration.

Tonikian, Victoria

Letter 6

From: Kevin Hauber [redacted]
Sent: Wednesday, May 23, 2018 10:50 AM
To: Advisory Bodies
Subject: San Luis Ranch EIR

Meeting Date: 05-23-2018
Received: 05-23-2018
Item #: 2

Dear Commissioners;

The phasing for San Luis Ranch may have shifted because of financial burdens, but the need for as much sustainably built workforce housing as possible in San Luis Obispo is still a huge need in the community. The plan that has been worked out allows for addressing the housing need while accommodating higher than expected infrastructure costs. That is an all-around win.

6.1

I have a young couple as clients who live and work in San Luis Obispo and made an offer on a property in Los Osos this week because of the lack of inventory at affordable prices in San Luis Obispo. They would prefer to be in San Luis Obispo save the inventory issue. We are confronted by this all the time. Let's get this moving.

Thank you,

Kevin Hauber

Kevin Hauber
SENIOR LOAN OFFICER | GREEN DIVISION
THE MORTGAGE HOUSE, INC.
1131 Monterey Street San Luis Obispo CA 93401
C 805-459-8844 | W 805-782-6999
www.themortgagehouse.com NMLS#266334

Response to Letter 6

COMMENTER: Kevin Hauber, Private Citizen

DATE: May 23, 2018

Response 6.1
The commenter expresses support for the revised project. This comment will be forwarded to the Planning Commission and City Council for review and consideration.

Tonikian, Victoria

Letter 7

From: James Lopes [redacted]
Sent: Wednesday, May 23, 2018 2:43 PM
To: Advisory Bodies; Davidson, Doug; Corey, Tyler
Subject: Planning Commission session: San Luis Ranch - May 23, 2018

Meeting Date: 05-23-2018
Received: 05-23-2018
Item #: 2

PLanning Commission

City of San Luis Obispo

RE: Review of the Supplemental EIR for San Luis Ranch

Dear Chair Stevenson and Commissioners:

I'm asking you to continue this item to a future date and request staff the time to prepare a project proposal in legislative draft form. The proposal should show the changes to the original documents which are described in the staff report and the Supplemental EIR. A project proposal is needed on which to base a CEQA analysis and findings. There is no such document attached to this item in the public record for tonight's hearing.

It seems presumptuous to ask your Commission to review and comment on a supplemental EIR when the project is not completely identified. All I learned is that the phases are proposed to be eliminated, so that a mix of development types might be in some other phase, perhaps. Or that more than one of the approved phases can be constructed without meeting the infrastructure requirements for those phases or a portion of one. It throws into question what will activate an infrastructure requirement that was identified in the Final EIR for San Luis Ranch. 7.1

Finally, some proposal is also made that the Director may allow 50 percent of the (total?) development potential to be built at one phase. I assume that this means that 290 residential units (half of the approved 580) could be built first; or half of the commercial area first. This is just confusing, without seeing the language of the proposals. And, it would help to have a staff analysis of the proposals and their detailed effect. Thank you.

James Lopes

ph. 805-602-1365

Response to Letter 7

COMMENTER: James Lopes, Private Citizen

DATE: May 23, 2018

Response 7.1
The commenter requested a continuance of the Planning Commission's May 23, 2018, public hearing to consider comments on the Draft SEIR, because he felt there were no project documents attached to the staff report for that meeting. That public meeting was intended to narrowly focus on soliciting public comments on the Draft SEIR, and was held as a courtesy, not a requirement, of the California Environmental Quality Act (CEQA).

All documents associated with the revised project itself will be available when the Planning Commission and City Council consider the revised project.

TO: PLANNING COMMISSION 5.23.18

FROM: H. WILLIAM SIEVERS 46.48.50.52 PRADO RD Letter 8

RE: SAN LUIS RANCH DEVELOPMENT PROJECT, REROUTING ELKS LN

HELLO, COMMISSIONERS, TYLER COREY & OTHERS CONCERNED

MY CONCERNS ARE W/ A SUFFICIENT PROTECTION/BUFFER ZONE ON EAST SIDE OF CAPSLO NEW 40 PRADO HOMELESS SERVICES CENTER. AS I UNDERSTAND W/ THE SAN LUIS RANCH DEVELOPMENT PROJECT, PRADO RD - US 101 OVERCROSSING MAY COME TO REALITY. WHEN THAT HAPPENS, ELKS LN WILL BE REROUTED BETWEEN PROPERTY WHERE I AM & 40 PRADO PROJECT ALMOST COMPLETED. I PREVIOUSLY BECAME AWARE 2017, ELKS LN REROUTING PROPOSAL PUTTING SIDEWALK·CURB·GUTTER·ROADWAY RIGHT NEXT TO "MY PROPERTY" LINE W/ NO BUFFER/PROTECTION ZONE. YET, ON OTHER SIDE FUTURE ELKS LN WOULD BE @ LEAST 20' FROM THAT STRUCTURE W/ ORNAMENTAL LANDSCAPING. I NEED PROTECTION FROM EFFECTS OF HAVING A ROAD RIGHT NEXT TO ME. I COMMUNICATED W/ SLO DEVELOPMENT DIRECTOR IN 2017 @ THIS ISSUE, REPOSITIONING FUTURE ELKS LN TO WEST SAY 7.5' SO THERE COULD BE TREES & VEGETATION PLANTED AS WELL AS A PROTECTIVE WALL TO MITIGATE SOME OF THE NEGATIVE EFFECTS HAVING A ROAD RIGHT NEXT TO ME, DECREASING NOISE, TRAFFIC POLLUTION, SECURITY ISSUES W/ FOOT TRAFFIC INFILTRATING "MY PROPERTY" & WIND PROTECTION. DURING CONSTRUCTION CAPSLO PROJECT, NUMEROUS TREES WERE RIPPED OUT THAT OFFERED SOME PROTECTION FROM ABOVE CONSIDERATIONS. IT IS A NECESSITY TO PROVIDE PROTECTION FROM THE FUTURE INTENSE USE. THE SUGGESTED 7.5' WAS CALCULATED TO BE ABOUT 1% OF "NEW PROJECTS" TO WEST OF ME TO CENTERLINE EXISTING ELKS LN. PLEASE INCORPORATE A PROTECTIVE ZONE TO THE EAST OF REROUTED ELKS LN. CITIES NEED MORE TREES/GREEN SPACE & LESS PAVEMENT TYPICALLY IN CITY PLANNING. 8.1

I REQUEST SLRDP HAVE @ LEAST 75% GREEN ENVIRONMENT PROTECTION AREA ALLOCATED FOR PROPOSED PROJECT AREA. WE SHOULD NOT PAVE PARADISE. BILL ROALMAN WOULD BE ADVOCATING FOR PRESERVATION OF OUR PRECIOUS GREEN OPEN SPACE. THANK YOU FOR YOUR CONSIDERATION.

SINCERELY,

H.W. Sievers

Meeting Date: 05-23-2018
Received: During meeting
Item #: 2

Response to Letter 8

COMMENTER: H. William Sievers, Private Citizen

DATE: May 23, 2018

Response 8.1

The commenter is concerned about the possible effect on the alignment of Elks Lane when the Prado Road Interchange is completed, and the extent to which it could affect his neighboring property. The design of Prado Road is not part of either the approved project nor the revised one currently under consideration, but fair-share funding would be a mitigation measure that would in part relieve potential traffic impacts, both from the project and more importantly from existing and future development in the City and region in general. The Prado Road interchange, which is anticipated by and consistent with the City's General Plan, is currently being analyzed and developed as a separate project jointly by the City and Caltrans, with its own separate environmental review under CEQA. The commenter is advised to pose this concern in the context of that project as part of the Draft EIR to be circulated for that project.

Tonikian, Victoria

Letter 9

From:	Robert Theis [redacted]
Sent:	Wednesday, May 23, 2018 12:34 PM
To:	Advisory Bodies
Subject:	San Luis Ranch

Meeting Date: 05-23-2018
Received: 05-23-2018
Item #: 2

SLO Planning Commission:

I am writing in support of potential changes that would allow the San Luis Ranch project create denser housing in earlier phases.

Denser housing makes the most sense because it is more environmentally friendly and allows more families to have places to live. 9.1

Given the current crushing housing shortage, I urge you to remove all roadblocks to the creation of more housing and denser housing as soon as possible.

Robert Theis
2178 Emily St. #104

Response to Letter 9

COMMENTER: Robert Theis, Private Citizen

DATE: May 23, 2018

Response 9.1
The commenter expresses support for the project. This comment will be forwarded to the Planning Commission and City Council for review and consideration.

Tonikian, Victoria

From: Dennis Vavrek [redacted]
Sent: Wednesday, May 23, 2018 2:18 PM
To: Advisory Bodies
Cc: [redacted]
Subject: Planning Commission ///San Luis Ranch

Letter 10

Meeting Date: 05-23-2018
Received: 05-23-2018
Item #: 2

RE: Planning Commission mtg. 5/23/18
SAN LUIS RANCH REVISIONS

Dear Commissioners ::

Please ,
permit developers to adjust their schedule for delivering
more-and-novel typologies of **ResidencyProducts**
@ tonight's SL Ranch application approval.

____

Something needs fixin',
if only "69 net-units/year for past 10 years have been added"
to SLO Town's stock of sheltering-boxes (The Tribune #'s).

Without rehashing the obvious gross failure to provide/permit,
there is one scalable impact
you are now in a position to initiate:
'Let the builder build what the *divergent* MARKET wants.'

Innovation is key;
Experimentation is critical; and mostly,
Obstructive & Archaic zoning statutes should be set aside. 10.1

Simply stated,
It's called product 'divergence' in the market-making biz;
It's called value 'creation' in every other industry except
'Housing Commodification'.

____

We , in the Archie days of the 1970's, used to call
the arduous planning process 'a walk thru the graveyard'.....
In the end,
you achieve an array of pleasant, uniform tombstones!

______

Your Planning Commissioner(s') task,
regardless of details, is to avoid *that* outcome for
the legend-plan/legacy-design/residency-inventions
to be included in this showcase 'Ranch'.

Act like ranchers,
allow the land (real estate) and the rodeo (built forms)
to set / instruct
the tone & the temperament of San Luis Ranch tract.

Challenge the developers/planners to
the stretch their talents & imaginations;
They will surprise you with results & rewards
beyond your current, statute-restrictive imaginations. 10.1 (cont'd)

Fun designs manifest / encourage fertile neighborhoods.
Be flexible; Take risks.
Nurture asset-values; Grow meaningful-relationships.

-Dennis Vavrek @ Dyabode®
'If you can license a mouse,
you can (surely) license a house.'©

Sent from my iPhone

Response to Letter 10

COMMENTER: Dennis Vavrek, Private Citizen

DATE: May 23, 2018

Response 10.1
The commenter expresses support for the project. This comment will be forwarded to the Planning Commission and City Council for review and consideration.

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY EDMUND G. BROWN Jr., Governor

DEPARTMENT OF TRANSPORTATION
50 HIGUERA STREET
SAN LUIS OBISPO, CA 93401-5415
PHONE (805) 549-3101
FAX (805) 549-3329
TTY 711
http://www.dot.ca.gov/dist05/

Letter 11

Making Conservation a California Way of Life.

June 13, 2018

SLO 101 PM 26.65
SCH#2015101083

Tyler Corey
Principal Planner
City of San Luis Obispo Community Development
919 Palm Street
San Luis Obispo, CA 93401

COMMENTS FOR THE DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT (DRAFT SEIR) FOR THE SAN LUIS RANCH SPECIFIC PLAN PROJECT

Dear Mr. Corey:

The California Department of Transportation (Caltrans) appreciates the opportunity to review the Draft SEIR for the San Luis Ranch Specific Plan Project. Caltrans has reviewed the above referenced project and offers the following comments.

Throughout the development of the San Luis Ranch Project, Caltrans has made comments and offered conceptual/general concurrence based on the understanding that construction of the Prado Overpass and associated ramps would be a requirement tied to a phase of the project. We do not concur with the statements made in section *1.3 Proposed Changes to the Approved Project* on Page 1-3 of the Draft SEIR. Specifically, the third proposed modification to the mitigation measure: "Revising the mitigation measure monitoring program such that construction of the Prado Overcrossing and Northbound Ramp is not a requirement prior to occupancy of Phase 2 or any other project Phase." Caltrans would like to see that construction of the Prado Overpass and ramps are tied to a phase of the project and not open-ended. Even the previous strategy in place by the City to allow some phases built prior to the Prado Overpass being completed was problematic because of the significant interim impacts to existing ramps and mainline operations. This current proposal, however, is one we do not agree with as it does not draw a clear line of mitigation that the development has to adhere to. 11.1

Caltrans is interested in mitigation measures, not only for this project, but others in the area. We ask that a clear picture of proposed mitigation measures/strategies, funding and timelines (which should include fair share contribution for each development) be made available for review. This will give an overall picture of how the City plans to fund project mitigations, including those on Prado Road, Madonna Road, and Los Osos Valley Road. Currently, it is not clear in this Draft SEIR how implementation and funding will accomplish the long-term objectives. We realize that 11.2

this is a supplement to the certified Final Environmental Impact Report and are trying to reconcile the two documents to make sure that all mitigations, timing, and funding is properly addressed. **11.2 (cont'd)**

If you have any questions, or need further clarification on items discussed above, please contact Jenna Schudson at (805) 549-3432 or Jenna.Schudson@dot.ca.gov.

Sincerely,

JOHN J. OLEJNIK
Senior Transportation Planner
Sustainability and Intergovernmental Review

cc: John DiNunzio (SLOCOG)

Response to Letter 11

COMMENTER: John Olejnik, California Department of Transportation, District 5

DATE: June 13, 2018

Response 11.1

The commenter expresses opposition to the revised project concept that allows it to be constructed independently of the Prado Road interchange. Section 2.4 of the Draft SEIR analyzes the impacts of the revised project phasing and its effects on Caltrans facilities, including Highway 101, notably as part of Impact T-11. The SEIR concludes that the revised project description, as it relates to the timing of the Prado Road interchange, creates temporary Class I, significant and unavoidable impacts on both City and State facilities until the Prado Road Overpass & NB Ramps are completed. The SEIR includes mitigation measures to the extent feasible that relate to the revised project's impact on Caltrans facilities, notably that it is required to pay its fair share of funding for the Prado Road interchange project (see Table 4.1 of this document). The timing and amount of required fair share mitigation payment remains unchanged, which is when impacts are anticipated to occur to City and Caltrans transportation facilities. Ultimately, the impacts of the project at buildout of the revised project are anticipated to be the same as what would occur under the previously-approved project based on the current schedule of the Prado Road Interchange Project.

However, the revised project description does provide more flexibility and ultimately more certainty in the applicant's ability to pay their fair share of the Prado Road interchange project at the time that funding is needed under the current Prado Road project schedule. A higher degree of certainty in the timely delivery of the interchange is beneficial to that critical infrastructure project.

Response 11.2

The commenter seeks to work with the City to develop a comprehensive timetable for the delivery of mitigation measures and fair share funding for various Caltrans facilities from impacts related to Citywide projects, not just the San Luis Ranch project. These details are specified in the San Luis Ranch Development Agreement, which is being concurrently processed with the revised project and SEIR. Please refer to that document.

SLO COUNTY apcd | Air Pollution Control District
San Luis Obispo County

Letter 12

June 13, 2018

Tyler Corey
City of San Luis Obispo
Community Development Department
919 Palm St.
San Luis Obispo, CA 93401

SUBJECT: APCD Comments Regarding the San Luis Ranch Project, Draft Supplemental Environmental Impact Report

Dear Mr. Corey:

Thank you for including the San Luis Obispo County Air Pollution Control District (APCD) in the environmental review process. We have completed our review of the proposed project located on Madonna Rd. in San Luis Obispo.

The San Luis Ranch Project consists of a Specific Plan, General Plan Amendment/Pre-Zoning, and Development Plan/Tentative Tract Map for the 131-acre project site, including annexation of the site into the City of San Luis Obispo. It also addresses a Development Agreement/Memorandum of Understating, which provides a mechanism for project implementation. The project includes construction of up to 580 residential units, 150,000 square feet of commercial development, 100,00 square feet of office development, and a 200-room hotel, with a portion of the site preserved for agriculture and open space uses. The Final EIR was certified and the project was approved by the City of San Luis Obispo on July 18, 2017. 12.1

The project applicant now proposes to adjust the phasing plan description such that each of the project phases could overlap, be out of sequence or be concurrent, depending on market conditions and to adjust project conditions and/or mitigation measures to implement such adjusted phasing plan. In addition, the Community Development Director may authorize the developer in any given year, to also construct 50% of the units allocated to the project in the following year if the Director determine that doing so is necessary to facility construction of beneficial public facilities and infrastructure.

The following are APCD comments that are pertinent to this project.

GENERAL COMMENTS

As a commenting agency in the California Environmental Quality Act (CEQA) review process for a project, the APCD assesses air pollution impacts from both the construction and operational phases of a project, with separate significant thresholds for each. **Please address the action items contained in this letter that are highlighted by bold and underlined text**.

CONSTRUCTION PHASE IMPACTS

Page 2.1-7
APCD staff recommend updating the second bullet item in AQ-2(a) to include the bold section below relating to drought conditions.

> Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site and from exceeding the APCD's limit of 20% opacity for greater than 3 minutes in any 60-minute period. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible. **Please note that since water use is a concern due to drought conditions, the contractor or builder shall consider the use of an APCD-approved dust suppressant where feasible to reduce the amount of water used for dust control**. Please refer to the following link for potential dust suppressants to select from to mitigate dust emissions:
> http://www.valleyair.org/busind/comply/PM10/Products%20Available%20for%20Controlling%20PM10%20Emissions.htm

12.2

Page 2.1-10
As indicated on page 2.1-10 of the SEIR

> *"…if estimated construction emissions exceed either of the SLOAPCD Quarterly Tier 2 thresholds of significance after the standard and BACT measures are factored into the estimation, then an SLOAPCD approved Construction Activity Management Plan (CAMP) and offsite mitigation need to be implemented in order to reduce potential air quality impacts to a less than significant level. If construction emissions do not exceed Tier 2 thresholds with implementation of standard and BACT measures, SLOAPCD considers emissions less than significant, even if Tier 1 thresholds continue to be exceeded."*

12.3

For clarification, as detailed in our letter dated Jan 30, 2017 (copy attached for reference) and in our CEQA Air Quality Handbook page 2-2 off site mitigation maybe required if any of the construction Tier 1 thresholds are exceeded. If any of the Tier 2 construction thresholds are exceeded offsite mitigation would be required.

Page 2.1-11
As indicated in the SEIR, page 2.1-11, the worst-case scenario 2 was assumed to apply for the construction phase emission calculations and a Construction Activity Management Plan will be required for the project. The calculations completed as part of the CAMP should include project specific equipment and phasing of the construction activities should approximate the construction schedule as closely as possible. Construction activities should be tracked once construction commences to determine if construction mitigation is adequate or needs to be modified. 12.4

Page 2.1-12
In addition, the following mitigation measures, were recommended in the SLOAPCD letter dated January 30, 2017 but do not appear to be included as mitigation in the FEIR. SLOAPCD recommend these measures be incorporated into the SEIR. 12.5

Truck Routing
Proposed truck routes should be evaluated and selected to ensure routing patterns have the least

impact to residential dwellings and other sensitive receptors, such as schools, parks, day care centers, nursing homes, and hospitals. If the project has significant truck trips where hauling/truck trips are routine activity and operate in close proximity to sensitive receptors, toxic risk needs to be evaluated.

Naturally Occurring Asbestos
Page 4.3-29 of the DEIR addresses naturally occurring asbestos (NOA). It should be noted **prior to any construction activities at the site, the project proponent shall submit all required documentation and reports to the APCD and exemption requests prior to the start of construction. APCD staff recommends the requirement to complete NOA notification and reporting to the APCD be included as a condition of approval for the project.**

Demolition/Asbestos
Demolition activities can have potential negative air quality impacts, including issues surrounding proper handling, abatement, and disposal of asbestos containing material (ACM). Asbestos containing materials could be encountered during the demolition or remodeling of existing structures or the disturbance, demolition, or relocation of above or below ground utility pipes/pipelines (e.g., transite pipes or insulation on pipes). **If this project will include any of these activities, then it may be subject to various regulatory jurisdictions, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M - asbestos NESHAP).** These requirements include but are not limited to: 1) written notification, within at least 10 business days of activities commencing, to the APCD, 2) asbestos survey conducted by a Certified Asbestos Consultant, and, 3) applicable removal and disposal requirements of identified ACM. Please contact the APCD Engineering & Compliance Division at (805) 781-5912 or go to slocleanair.org/rules-regulations/asbestos.php for further information. To obtain a Notification of Demolition and Renovation form go to the "Other Forms" section of slocleanair.org/library/download-forms.php. 12.5 (cont'd)

Developmental Burning
Effective February 25, 2000, **the APCD prohibited developmental burning of vegetative material within San Luis Obispo County.** If you have any questions regarding these requirements, contact the APCD Engineering & Compliance Division at (805) 781-5912.

Construction Permit Requirements
Based on the information provided, we are unsure of the types of equipment that may be present during the project's construction phase. Portable equipment, 50 horsepower (hp) or greater, used during construction activities may require California statewide portable equipment registration (issued by the California Air Resources Board) or an APCD permit. The following list is provided as a guide to equipment and operations that may have permitting requirements but should not be viewed as exclusive. For a more detailed listing, refer to the Technical Appendices, page 4-4, in the APCD's 2012 CEQA Handbook.

- Power screens, conveyors, diesel engines, and/or crushers;
- Portable generators and equipment with engines that are 50 hp or greater;
- Electrical generation plants or the use of standby generators;
- Internal combustion engines;
- Rock and pavement crushing;

- Unconfined abrasive blasting operations;
- Tub grinders;
- Trommel screens; and,
- Portable plants (e.g. aggregate plant, asphalt batch plant, concrete batch plant, etc).

To minimize potential delays, prior to the start of the project, please contact the APCD Engineering & Compliance Division at (805) 781-5912 for specific information regarding permitting requirements.

Lead During Demolition

Demolition of structures coated with lead-based paint is a concern for the APCD. Improper demolition can result in the release of lead-containing particles from the site. Sandblasting or removal of paint by heating with a heat gun can result in significant emissions of lead. Therefore, proper abatement of lead before demolition of these structures must be performed to prevent the release of lead from the site. **Depending on removal method, an APCD permit may be required. Contact the APCD Engineering & Compliance Division at (805) 781-5912 for more information. For additional information regarding lead abatement, contact the San Luis Obispo County Environmental Health Department at (805) 781-5544 or Cal-OSHA at (818) 901-5403. Additional information can also be found online at www.epa.gov/lead.**

12.5 (cont'd)

Again, thank you for the opportunity to comment on this proposal. If you have any questions or comments, feel free to contact me at (805) 781-4667.

Sincerely,

Melissa Guise
Air Quality Specialist

cc: Dora Drexler, Engineering and Compliance Supervisor, APCD
Tim Fuhs, Compliance Division, APCD

Attachment – SLO APCD letter dated January 30, 2017

H:\PLAN\CEQA\Project_Review\2000\2000\2036-11\2036-11_SEIR.docx

SLO COUNTY apcd

Air Pollution Control District
San Luis Obispo County

January 30, 2017

Brian Leveille
City of San Luis Obispo
919 Palm Street
San Luis Obispo CA 93401

SUBJECT: APCD Comments Regarding the San Luis Ranch Project formerly Dalidio Ranch Project

Dear Mr. Leveille:

Thank you for including the San Luis Obispo County Air Pollution Control District (APCD) in the environmental review process. We have completed our review of the proposed project located at Madonna Rd. in San Luis Obispo.

The San Luis Ranch Project consists of a Specific Plan, General Plan Amendment/Pre-Zoning and Development Plan/Tentative Tract Map for a 131- acre project site, including annexation of the site into the city of San Luis Obispo. The project includes construction of up to 580 residential units, 150,000 square feet of commercial development, 100,000 square feet of office development and a 200-room hotel with a portion of the site preserved for agriculture and open space use. The project is planned to be constructed in six phases, beginning in 2017.

The following are APCD comments that are pertinent to this project.

GENERAL COMMENTS

As a commenting agency in the California Environmental Quality Act (CEQA) review process for a project, the APCD assesses air pollution impacts from both the construction and operational phases of a project, with separate significant thresholds for each. **Please address the action items contained in this letter that are highlighted by bold and underlined text**.

Consistency with the Clean Air Plan

Page 4.3-9

Regarding consistency with the Clean Air Plan, since the population projections (and associated VMT) in the Clean Air Plan end in 2015, APCD feels it is more appropriate to focus on the consistency with the Transportation and Land Use strategies in the Clean Air Plan. This project is located within the urban reserve line; incorporates land use and transportation control measures and strategies (even though TCM T-8 was not included as noted on page 4.3-12) outlined in the Clean Air Plan; and incorporates a list of applicable mitigation measures for operational phase emissions. Therefore, with regards to the consistency analysis, the **APCD would consider the project impacts significant but** mitigable with the mitigation measures proposed in the DEIR.

Page 4.3-3
It should be noted the California Air Resources Board maintains two of the ten stations (not 10 as stated in the DEIR) in San Luis Obispo County and the APCD maintains the rest.

Construction
Page 4.3-14
Under the Fugitive Dust Control Measures (AQ-2(a)) bullet #2, APCD recommends adding the following language to the mitigation measure.
Since water use is a concern due to drought conditions, the contractor or builder shall consider the use of an APCD-approved dust suppressant, where feasible, to reduce the amount of water used for dust control.

Page 4.3-16
MM AQ-2d addresses architectural coating activities. **APCD recommends, in addition to using low VOC paints, that the project proponent consider extending coating applications by limiting the daily coating activities to reduce daily and quarterly emissions.**

Page 4.3-17
Due to the size of the grading project and the close proximity to numerous sensitive receptors, including Pacific Beach High School 750 feet west of the project, C.L. Smith Elementary School located approximately 1,500 feet north of the project site, and residents 75 feet to the west. **APCD recommends a Construction Activity Management Plan (CAMP) be prepared to ensure the project specific equipment used for the construction achieves the emission reduction estimates that were presented in the DEIR. The CAMP should be submitted to the APCD for review and approval at least 3 months before the start of construction.** As indicated in the CEQA Handbook, off site mitigation measures may be required for a project that exceeds the Tier 1 threshold.

Construction Phase Idling Limitations
As indicated above, this project is in close proximity to nearby sensitive receptors. Projects that will have diesel powered construction activity in close proximity to any sensitive receptor shall **implement the following mitigation measures to ensure that public health benefits are realized by reducing toxic risk from diesel emissions. APCD recommends these measures be added as mitigation for the construction phase of the project.**

To help reduce sensitive receptor emissions impact of diesel vehicles and equipment used to construct the project, the applicant shall implement the following idling control techniques:

1. California Diesel Idling Regulations
   a. ***On-road diesel vehicles*** shall comply with Section 2485 of Title 13 of the California Code of Regulations. This regulation limits idling from diesel-fueled commercial motor

vehicles with gross vehicular weight ratings of more than 10,000 pounds and licensed for operation on highways. It applies to California and non-California based vehicles. In general, the regulation specifies that drivers of said vehicles:

1. Shall not idle the vehicle's primary diesel engine for greater than 5-minutes at any location, except as noted in Subsection (d) of the regulation; and,
2. Shall not operate a diesel-fueled auxiliary power system (APS) to power a heater, air conditioner, or any ancillary equipment on that vehicle during sleeping or resting in a sleeper berth for greater than 5.0 minutes at any location when within 1,000 feet of a restricted area, except as noted in Subsection (d) of the regulation.

b. ***Off-road diesel equipment*** shall comply with the 5-minute idling restriction identified in Section 2449(d)(2) of the California Air Resources Board's In-Use Off-Road Diesel regulation.

c. Signs must be posted in the designated queuing areas and job sites to remind drivers and operators of the state's 5-minute idling limit.

d. The specific requirements and exceptions in the regulations can be reviewed at the following web sites: www.arb.ca.gov/msprog/truck-idling/factsheet.pdf and www.arb.ca.gov/regact/2007/ordiesl07/frooal.pdf.

AND

2. Diesel Idling Restrictions Near Sensitive Receptors

In addition to the state required diesel idling requirements, the project applicant shall comply with these more restrictive requirements to minimize impacts to nearby sensitive receptors:

a. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors;
b. Diesel idling within 1,000 feet of sensitive receptors shall not be permitted;
c. Use of alternative fueled equipment is recommended; and
d. Signs that specify the no idling areas must be posted and enforced at the site.

Truck Routing

Proposed truck routes should be evaluated and selected to ensure routing patterns have the least impact to residential dwellings and other sensitive receptors, such as schools, parks, day care centers, nursing homes, and hospitals. If the project has significant truck trips where hauling/truck trips are routine activity and operate in close proximity to sensitive receptors, toxic risk needs to be evaluated.

In addition to the mitigation measures outlined on pages 4.3-14 to 4.3-16 ,APCD recommends the following measure be included as mitigation for this project

1. Naturally Occurring Asbestos

Page 4.3-29 of the DEIR addresses naturally occurring asbestos (NOA). It should be noted **prior to any construction activities at the site, the project proponent shall submit all**

required documentation and reports to the APCD and exemption requests prior to the start of construction. APCD staff recommends the requirement to complete NOA notification and reporting to the APCD be included as a condition of approval for the project.

2. Demolition/Asbestos
Demolition activities can have potential negative air quality impacts, including issues surrounding proper handling, abatement, and disposal of asbestos containing material (ACM). Asbestos containing materials could be encountered during the demolition or remodeling of existing structures or the disturbance, demolition, or relocation of above or below ground utility pipes/pipelines (e.g., transite pipes or insulation on pipes). **If this project will include any of these activities, then it may be subject to various regulatory jurisdictions, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M - asbestos NESHAP).** These requirements include, but are not limited to: 1) written notification, within at least 10 business days of activities commencing, to the APCD, 2) asbestos survey conducted by a Certified Asbestos Consultant, and, 3) applicable removal and disposal requirements of identified ACM. Please contact the APCD Engineering & Compliance Division at (805) 781-5912 or go to slocleanair.org/rules-regulations/asbestos.php for further information. To obtain a Notification of Demolition and Renovation form go to the "Other Forms" section of slocleanair.org/library/download-forms.php.

3. Developmental Burning
Effective February 25, 2000, **the APCD prohibited developmental burning of vegetative material within San Luis Obispo County.** If you have any questions regarding these requirements, contact the APCD Engineering & Compliance Division at (805) 781-5912.

4. Construction Permit Requirements
Based on the information provided, we are unsure of the types of equipment that may be present during the project's construction phase. Portable equipment, 50 horsepower (hp) or greater, used during construction activities may require California statewide portable equipment registration (issued by the California Air Resources Board) or an APCD permit.

   The following list is provided as a guide to equipment and operations that may have permitting requirements, but should not be viewed as exclusive. For a more detailed listing, refer to the Technical Appendices, page 4-4, in the APCD's 2012 CEQA Handbook.
   - Power screens, conveyors, diesel engines, and/or crushers;
   - Portable generators and equipment with engines that are 50 hp or greater;
   - Electrical generation plants or the use of standby generators;
   - Internal combustion engines;
   - Rock and pavement crushing;
   - Unconfined abrasive blasting operations;
   - Tub grinders;
   - Trommel screens; and,
   - Portable plants (e.g. aggregate plant, asphalt batch plant, concrete batch plant, etc).

To minimize potential delays, prior to the start of the project, please contact the APCD Engineering & Compliance Division at (805) 781-5912 for specific information regarding permitting requirements.

5. Lead During Demolition
   Demolition of structures coated with lead-based paint is a concern for the APCD. Improper demolition can result in the release of lead-containing particles from the site. Sandblasting or removal of paint by heating with a heat gun can result in significant emissions of lead. Therefore, proper abatement of lead before demolition of these structures must be performed to prevent the release of lead from the site. **Depending on removal method, an APCD permit may be required. Contact the APCD Engineering & Compliance Division at (805) 781-5912 for more information. For additional information regarding lead abatement, contact the San Luis Obispo County Environmental Health Department at (805) 781-5544 or Cal-OSHA at (818) 901-5403. Additional information can also be found online at www.epa.gov/lead.**

Operational Phase Emissions

Page 4.3-19
Based on APCD calculations using CalEEMod 2016.3.1, at buildout the estimated annual unmitigated operational phase emissions would be over 25 tons/year for ROG+NOx not 19.9 tons/year as indicated in Table 4.3-9. However, APCD staff agree with the approach to provide onsite mitigation and offsite mitigation if needed to bring the overall operational phase emissions below 25 tons/year.

Page 4.3-21
It should be noted that the APCD has a rule which addresses requirements for wood burning devices. **APCD recommends this condition be added to the list of applicable mitigation measures for the operational phase of the project.**

Residential Wood Combustion
Under APCD Rule 504, **only APCD approved wood burning devices can be installed in new dwelling units.** These devices include:

- All EPA-Certified Phase II wood burning devices;
- Catalytic wood burning devices which emit less than or equal to 4.1 grams per hour of particulate matter which are not EPA-Certified but have been verified by a nationally-recognized testing lab;
- Non-catalytic wood burning devices which emit less than or equal to 7.5 grams per hour of particulate matter which are not EPA-Certified but have been verified by a nationally-recognized testing lab;
- Pellet-fueled woodheaters; and
- Dedicated gas-fired fireplaces.

If you have any questions about approved wood burning devices, please contact the APCD Engineering and Compliance Division at (805) 781-5912.

Page 4.3-25
In addition to the onsite mitigation measures proposed on page 4.3-25, **APCD recommends the following measure be added to the mitigation list.**

- For the hotel portion of the project, APCD recommends the San Luis Obispo Car Free Program. Vehicle emissions are often the largest source of emissions from the operational phase of development. This project has the potential to increase the amount of vehicle trips to the county and appropriate mitigation measures must be considered. San Luis Obispo (SLO) Car Free is a program to encourage car-free transportation to and around San Luis Obispo County. SLO Car Free provides tools to travelers on the pleasures and availability of traveling to the area without their cars, or by parking their cars once they arrive. By pledging to travel to, or around SLO County without a car, visitors receive special incentives from participating hotels, restaurants, transportation services, and attractions. In addition, businesses receive free advertisement on SLO Car Free's website which highlights their efforts of encouraging "green" tourism to San Luis Obispo County. Businesses are also promoted through other social media networks and at the numerous events that SLO Car Free participates in each year.

  The SLO Car Free website (SLOCarFree.org) is a hub for information and web-links on transportation, lodging, attractions, and other visitor needs. Visitors can use the website to find out what they can do in SLO County and how they can do it without a car. **<u>To mitigate the potential vehicle trips to the proposed (business/facility, etc.) the business must sign up to participate in the SLO Car Free Program, provide incentives to car-free travelers, and promote the program in their communication tools. To get signed up for SLO Car Free, please contact Meghan Field in the APCD Planning, Monitoring & Outreach Division at (805) 781-5912.</u>**

Greenhouse Gases
Pursuant to the CEQA Handbook, an environmental document that relies on a greenhouse gas reduction plan for an impact analysis, identify those requirements specified in the plan that apply to the project. If those requirements are not otherwise binding and enforceable, they should be incorporated as mitigation measures applicable to the project. It was not clear in the DEIR which measures would be binding and enforceable; therefore, **<u>APCD recommends measures that are not binding be called out specifically as mitigation measures.</u>**

Again, thank you for the opportunity to comment on this proposal. If you have any questions or comments, feel free to contact me at (805) 781-4667.

Sincerely,

Melissa Guise
Air Quality Specialist

MAG/ihs

Cc: John Rickenbach, City of San Luis Obispo

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Response to Letter 12

COMMENTER: Melissa Guise, Air Quality Specialist, San Luis Obispo County Air Pollution Control District

DATE: June 13, 2018

<u>Response 12.1</u>
The commenter provides introductory remarks related to her understanding of the project, and a preamble for more substantive comments. No response is necessary.

<u>Response 12.2</u>
The commenter recommends updating Mitigation Measure AQ-2(a) to address drought conditions. In response, this mitigation measure has been revised as follows (underline indicates new text):

AQ-2(a) **Fugitive Dust Control Measures.** Construction projects shall implement the following dust control measures so as to reduce PM_{10} emissions in accordance with SLOAPCD requirements.

- Reduce the amount of the disturbed area where possible;
- Water trucks or sprinkler systems shall be used during construction in sufficient quantities to prevent airborne dust from leaving the site. Increased watering frequency shall be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water or a SLOAPCD-approved dust suppressant shall be used whenever possible, to reduce the amount of potable water used for dust control. <u>Please note that since water use is a concern due to drought conditions, the contractor or builder shall consider the use of an APCD-approved dust suppressant where feasible to reduce the amount of water used for dust control;</u>

  […remainder of mitigation measure not shown because there are no further changes from the certified Final EIR…]

<u>Response 12.3</u>
The commenter clarifies offsite mitigation measures *may* be required if Tier 1 construction thresholds are exceeded, but *would* be required if Tier 2 thresholds are exceeded. This clarification is noted.

<u>Response 12.4</u>
The comment relates to the proper implementation of a Construction Activity Management Plan for the revised project, as appropriate. The City notes APCD direction that the calculations completed as part of the CAMP should include project specific equipment and phasing of the construction activities should approximate the construction schedule as closely as possible. Construction activities will be tracked once construction commences to determine if construction mitigation is adequate or needs to be modified.

Response 12.5
The commenter suggests that several mitigation measures that SLOAPCD recommended that be included in the certified FEIR were not, and suggests including them in the SEIR. These relate to the following issues: Truck Routing, Naturally Occurring Asbestos, Demolition Asbestos, Developmental Burning, and Construction Permit Requirements. Responses 25.7 through 25.11 of the certified Final EIR address the reasons why these were not included in that document. For clarity, these responses are included again below in their entirety. It should be noted that the City is required to comply with SLOAPCD requirements that related to demotion and construction, and their potential inclusion as mitigation measures in the SEIR would not change the required compliance. The City looks forward to working with APCD with respect to air quality permit compliance during the construction and development phases of the project.

The following paragraphs are summarized from the certified Final EIR, and respond to APCD's concerns on a more technical level:

Truck Routing. The commenter states that truck routes should be evaluated and selected to ensure routing patterns have the least impact to residential dwellings and other sensitive receptors, such as schools, parks, day care centers, nursing homes, and hospitals. The commenter states that toxic risk should be evaluated if significant truck trips would routinely operate in close proximity to sensitive receptors. Construction truck trips would be expected to follow the most direct route to U.S. 101, which primarily passes existing commercial areas, rather than residences. As described in Section 4.12 of the certified FEIR, *Transportation*, the planned Prado Road interchange and southbound ramps would provide additional direct access to U.S. 101 that would not pass residential uses. Hauling activities would occur primarily during grading and site preparation activities at the beginning of each construction phase. Based on the default construction phasing estimates used by CalEEMod, site preparation and grading activities would occur for approximately 40 to 50 days per construction phase. Potential health risk impacts are typically anticipated for projects that would expose sensitive receptors (such as residential uses) to toxic air contaminants (including diesel exhaust) for an extended period of time, generally 30 or more years. Because construction truck trips would primarily pass through commercial, not residential areas, and due to the relatively short duration of this activity in comparison to the typical analysis period for health risk impacts, health risks associated with construction trips would not result in a significant impact.

In addition, certified FEIR Mitigation Measure N-1(a) in Section 4.10, *Noise*, requires that construction vehicles and haul trucks utilize roadways that avoid residential neighborhoods and sensitive receptors. The measure also requires the applicant to submit a proposed construction vehicle and hauling route for City review and approval prior to grading/building permit issuance. Implementation of certified FEIR Mitigation Measure N-1(a) would restrict haul trucks route and reduce impacts related to toxic air contaminants from hauling and construction vehicles to a less than significant level. No additional mitigation is required.

Naturally Occurring Asbestos. The commenter states that the SEIR should note that prior to any construction activities at the site, the project proponent must submit to the SLOAPCD all required documentation, reports, and exemption requests related to naturally occurring asbestos (NOA). The commenter recommends that the requirement to complete NOA notification and reporting to the SLOAPCD be included as a condition of approval for the project. As noted in certified FEIR Section 4.3, *Air Quality*, the project would be required by ARB's Air Toxics Control Measure (NOA ATCM) for Construction, Grading, Quarrying, and

Surface Mining Operations to submit a geologic evaluation and exemption request to SLOAPCD for approval prior to any grading activities. Furthermore, as described in certified FEIR Section 4.7, *Hazards and Hazardous Materials*, Mitigation Measure HAZ-6 requires sampling for NOA on site and development of a site-specific health and safety plan prior to grading activities, if NOA is detected in soil or bedrock beneath the project site.

Demolition Asbestos. The commenter states that asbestos containing materials (ACM) could be encountered during the demolition or remodeling of existing structures or the disturbance, demolition, or relocation of above or below ground utility pipes/pipelines (e.g., asbestos-cement pipes or insulation on pipes). The commenter notes that if the project would include any of these activities, then it may be subject to regulatory requirements, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M - asbestos NESHAP). Certified FEIR Section 4.7, *Hazards and Hazardous Materials*, includes a summary of NESHAP requirements. Impact HAZ-7 notes that Dalidio Farm Complex includes buildings that, due to their age, may contain asbestos and/or lead-based paint, but concludes that compliance with existing rules and regulations (SLOAPCD Rule 412, Airborne Toxic Control Measures; Section 93106 of the California Code of Regulations, Asbestos Airborne Toxic Control Measure for Surfacing Applications; CalOSHA; and California Code of Regulations §1532.1) would reduce impacts related to ACM and lead-based paint during building demolition to a less than significant level.

Developmental Burning. The commenter states that SLOAPCD prohibits developmental burning of vegetative material within San Luis Obispo County. The project does not propose developmental burning of vegetative material. Therefore, no revisions to the SEIR are required in response to this comment.

Construction Permit Requirements. The commenter recommends that, in order to minimize delays, the project proponent contact SLOAPCD prior to start of the project regarding permitting requirements for construction equipment because portable equipment, 50 horsepower (hp) or greater, used during construction activities may require California statewide portable equipment registration (issued by the California Air Resources Board) or a SLOAPCD permit. The project would be required to acquire permits for portable equipment as required by ARB's portable equipment registration program or SLOAPCD's permit program.

From: Mila Vujovich-LaBarre <milavu@hotmail.com> **Letter 13**
Sent: Wednesday, June 13, 2018 3:01 PM
To: Corey, Tyler <tcorey@slocity.org>; Advisory Bodies <advisorybodies@slocity.org>
Cc: Harmon, Heidi <hharmon@slocity.org>; Johnson, Derek <djohnson@slocity.org>; Codron, Michael <mcodron@slocity.org>; Gomez, Aaron <agomez@slocity.org>; Pease, Andy <apease@slocity.org>; Rivoire, Dan <DRivoire@slocity.org>; Christianson, Carlyn <cchristianson@slocity.org>; Cantrell, Deanna <DCantrell@slocity.org>; Olson, Garret <golson@slocity.org>; eric prater <eprater@slcusd.org>
Subject: San Luis Ranch EIR comments

Dear Planning Commission, City Council, and City Staff:
The San Luis Ranch Development Environmental Impact Report concerns me for many reasons.

The report states that air quality, cultural resources, land use policy consistency, noise, and transportation problems created by this project will be significant and unavoidable.

This project at the time of buildout will also place unavoidable adverse impacts in the City's current sewer, water, school, law enforcement and fire protection capacities.

All of these significant and unavoidable impacts were accepted by Council on July 18, 2017 due to the following "over-riding considerations. "

For the reasons specified below, the City found that the following considerations outweighed the proposed projects unavoidable environmental risks:
a)Provision of new residential and commercial uses
b)Provision of a variety of housing types for all income levels **13.1**
c) Open space and agricultural protection
d) Provision of park and recreational facilities
e) Well planned neighborhood would reduce per capita vehicle trips
f) Provision of new jobs
g) Transient occupancy tax
h) National Flood Insurance program and the community rating system rating improvement
i) Implementation of the General Plan

All that being said there are still major concerns that I have with this project.

In the name of transparency, as a citizen, I was President of Save San Luis Obispo when City residents succeeded in halting development on this very property over a decade ago.
It is still 131 acres of Class 1 agricultural land.

Currently the City is claiming to be proactive on "Climate Change." Building on 131 acres of Class 1 agricultural land that tops our City's emergency water supply simply does not make sense.

As many people may know, I did put forth a solution that was to create a "win-win-win" solution. I proposed that the administrative powers at Cal Poly and the San Luis Ranch owner Gary Grossman execute a good old-fashioned land swap.
Cal Poly could utilize the 131 acres of agricultural land in perpetuity for their educational efforts, complete with farm house style lodging for a handful of students majoring in agriculture. There could be a "Made in SLO" small retail site for agricultural products from the site and/or from throughout the County. Gary Grossman could build his residential units on Cal Poly land in a public/private partnership for residents, Cal Poly employees and students. The hotel that Grossman wants to build could be built adjacent to the residential units and be nearly completely staffed by students majoring in Business or Food Science. This deal would eliminate multiple problems. I wrote this a few years back and I still believe it is the best solution that would eliminate nearly all of the detrimental impacts that the proposed San Luis Ranch development will have on our community. 13.2

Currently, my concerns are focused on the following:

Cost and Affordable Housing

In regard to the guise of affordable housing, I have personally examined some of the new development in town that was billed as affordable. It is a buzz word that is simply not true.
There may be a small handful of units that fall under the Section 8 provisions but a majority of these homes and condominiums will be built and the developer will charge what the market will bear. 13.3
It is also very interesting that the "affordable housing" component of Serra Meadows and the Toscano development have yet to be built. At what phase of development on San Luis Ranch will "affordable housing" be built?

Water

Nearly 3.5 years ago, a group of concerned citizens and I began meeting with City officials about the drought and the long term availability for water for our community. These meetings started because one of the local developers looked at me in a different meeting and stated that he was not really sure if the City had enough water for all of the development that was given the proverbial "green light" in the Land use Circulation Element (LUCE) document. 13.4
I do not believe that our City has enough water for the project buildout that is in the LUCE. The LUCE was developed by and supported by a number of people that were in development. The dissenting opinion or the Minority Report for the LUCE talks about concerns about water. The LUCE talked about the availability of water quality but did not go into enough depth on water quantity. Again, before any building is allowed on San Luis Ranch, the long term availability of quality, affordable water should be verified.

Traffic

Prado Road has been on the City General Plan on paper since 1960. The road in the approved LUCE now extends, as a four-lane truck highway, from Madonna Road through to Broad Street. There has never been a comprehensive EIR of Prado Road which is in violation of CEQA.
The cumulative impacts of the road and the cost of the road have never been properly documented or analyzed. The City transportation department will say that is has been "studied" but the studies have all been myopic. If so much development is being permitted, approved and constructed, City Residents are owed a long term analysis of the impacts of this road and development should be paying for Prado Road not City residents.

Currently, Prado Road is being "piecemealed" or illegally segmented. This approach will be very detrimental to the residents of our beautiful City a decade from now. The breadth and the depth of the San Luis Ranch development needs to have the Prado Road overpass/ intersection at Highway 101 completed. The traffic will be horrific for residents and tourists alike. If the City is now encouraging multi-modal transportation 13.5 then the overpass at Prado Road should be encouraged and paid for by development interests. Just imagine the amount of pedestrian and bicycle traffic alongside the cars and trucks! If a four-lane truck highway is what the LUCE document calls for, then it should be done. Planners should not be "cherry picking" the LUCE document. In other words, allowing for the development without the accompanying support of sufficient, affordable water and a sound traffic infrastructure.

Please remember, the traffic infrastructure is not there just so people can go to their homes and jobs easily. It is in place to provide appropriate police and fire emergency services, as well for our growing population.

It is of great concern that the construction of Prado Road does not appear mandatory prior to occupancy of Phase 2 of the project.

Funneling all of the traffic to Madonna Road and to Froom Ranch Road is a recipe for disaster.

Pedestrian Traffic and Park Access
Although it has been discussed in numerous meetings, there should be bonafide access to the Laguna Lake open space and park for residents of all ages. In the current plan, Madonna Road will become unsafe and snarled with traffic. A pedestrian and bike 13.6 bridge should be a part of the construction for the residents of San Luis Ranch and as a courtesy for the general population.

Schools
All of the new developments are going to impact the local San Luis Coastal Unified School District (SLCUSD). This is occurring at the same time that the SLCUSD will be 13.7 experiencing severe financial cutbacks due to the closure of Diablo Canyon.

My math does not show that the net gains in property taxes and fees from development are going to provide for the long term educational infrastructure, including payroll for certificated and non-certificated staff.

Viewshed

The scenic, public view shed will be permanently altered. It is treasured by locals and tourists alike. In numerous meetings since 2004, I have stated that if development takes place on this property, it should be configured so that it is east to west adjoining the existing shopping center. That way the vista and trees along Madonna Road could be saved. The magnificent view could be partially preserved. 13.8

Thank you for your consideration.

Sincerely,

Mila Vujovich-La Barre
650 Skyline Drive
San Luis Obispo, California 93405
milavu@hotmail.com
[redacted]

Response to Letter 13

COMMENTER: Mila Vujovich-LaBarre, Private Citizen

DATE: June 13, 2018

Response 13.1
The commenter summarizes some of the key findings of the certified Final EIR, and states concerns with the previously-approved project in general. The Planning Commission and City Council will consider these concerns as they consider the revised project.

Response 13.2
The commenter suggests an alternate location for building housing that involves a land swap with Cal Poly. It should be noted that the San Luis Ranch project was previously approved at the proposed project (San Luis Ranch) site, so alternate development locations are not under consideration at this time. The revised project envisions the same development pattern and location as the previously-approved project. The Planning Commission and City Council are considering a revised phasing approach, not a new development pattern or location, as part of the revised project.

Response 13.3
The commenter asks at what phase affordable housing will be developed on the San Luis Ranch site. Under the revised project, the most affordable housing component, the multi-family residential (NG-30) adjacent to Madonna Road, could be built as early as development plans are approved for that location, which is earlier than what was likely under the previously-approved project. It should be noted, however, that the timing of residential development (including product types) is largely a function of market conditions, and the developer's ability to secure financing.

Response 13.4
The commenter is concerned that there is insufficient reliable water to support the project. Water supply issues were examined in Section 4.13 of the certified Final EIR, and both project and cumulative impacts were found to be less than significant. It should be noted that the San Luis Ranch development was already approved in July 2017, and that the revised project is considering a modified phasing approach, and not a change to the approved land use pattern and buildout potential.

Response 13.5
The commenter is concerned that the development of the Prado Road extension has never been thoroughly examined in CEQA document and believes this is "piecemealing" under CEQA. The LUCE EIR considered this project as part of the Circulation Element update, and the traffic analysis thoroughly examined its impacts and potential mitigative aspects in the context of cumulative citywide development. The Prado Road interchange project is also currently undergoing joint CEQA/NEPA review under the review of both the City and Caltrans, and impacts related to that project are being fully assessed. It should be noted that the Prado Road interchange is not part of the revised project, so "piecemealing" is not possible, but impacts

associated with the revised project will be mitigated in part through fair-share funding provided to help construct that interchange. The interchange will ultimately be constructed independent of the revised San Luis Ranch project, because of its recognized importance to both citywide and regional circulation.

Response 13.6
The commenter believes the development should include better pedestrian access to Laguna Lake Park, suggesting a bike bridge over Madonna Road. This issue was discussed in the certified Final EIR, and the previously-approved project now includes improvements to the Madonna/Oceanaire intersection to help facilitate pedestrian access across Madonna Road to Laguna Lake Park. However, as stated above, the San Luis Ranch development was already approved in July 2017, and the revised project is considering a modified phasing approach, and not a change to the development approved land use pattern and buildout potential. Thus, there are no new impacts with respect to this issue under the revised project.

Response 13.7
The commenter believes the revised project would have unacceptable impacts to schools. This issue was discussed in Section 4.14 of the certified Final EIR, and impacts were found to be less than significant. As stated above, the San Luis Ranch development was already approved in July 2017, and the revised project is considering a modified phasing approach, and not a change to the development approved land use pattern and buildout potential. Thus, there are no new impacts with respect to this issue under the revised project.

Response 13.8
The commenter believes the revised project would have unacceptable visual impacts. This issue was discussed in Section 4.1 of the certified Final EIR, and impacts were found to be less than significant. As stated above, the San Luis Ranch development was already approved in July 2017, and the revised project is considering a modified phasing approach, and not a change to the development approved land use pattern and buildout potential. Thus, there are no new impacts with respect to this issue under the revised project.

Letter 14

To: Tyler Corey, Principal Planner
City of San Luis Obispo
Community Development Department
919 Palm St.
San Luis Obispo CA 93401
tcorey@slocity.org

From: Lea Brooks
11130 Islay St.
San Luis Obispo CA 93401
leabrooks332@gmail.com

Re: San Luis Ranch Draft Supplemental Environmental Impact Report

June 13, 2018

Dear Mr. Corey:

Thank you for the opportunity to comment on this report. During the numerous public hearings on the Environmental Impact Report (EIR) for this project, I and many others expressed skepticism that the Prado Road overcrossing would be built with the project's approved phasing because it was uncertain if the City of San Luis Obispo has adequate funding for its share of the cost. Our concerns were dismissed and yet here we are a year later with a Draft Supplemental EIR seeking "modification to the approved project that would only affect the phasing and development schedule, not the land use pattern or ultimate buildout potential of the project."

I remain skeptical that the Prado Road overcrossing will be constructed in a timely basis. San Luis Ranch is projected to generate nearly 17,000 additional vehicle trips per day in an area already challenged with traffic congestion. This added traffic will result in a number of significant and unavoidable environmental impacts. The project, as proposed, fails in its likelihood to help the City reach its 20 percent trips-by-bike goal. Infill housing is a good idea, but connectivity for bicycling and walking beyond the project vicinity is still lacking, especially connectivity to downtown and job sites and other destinations in the airport area. 14.1

My comments focus on the bicycle transportation network, especially the dire need for convenient and connected crossings of Highway 101 near Marsh Street and Los Osos Valley Road and Higuera Street that are perceived as safe by people of all abilities who ride bikes. When the bicycling community requested a crossing of Highway 101 near Marsh Street as mitigation for San Luis Ranch, we were told that the Prado Road overcrossing was *the* connection for San Luis Ranch and a Marsh Street crossing was not within the purview of the developer.

Without the Prado Road overcrossing, Madonna Road remains the primary connection between the Laguna Lake area and San Luis Ranch and downtown. The intersection of

Madonna Road/Higuera Street/South Street is a challenge for people on bikes. Access to the Madonna bike path is so perilous at both ends, especially at Marsh Street, that experienced bicyclists avoid it and parents of Laguna Middle School students are reluctant to have their children use it.

The Draft Supplemental EIR cites T-11, a new traffic impact without the Prado Road overcrossing: *Under Existing and Near-term Plus Project conditions buildout of the project prior to construction of the Prado Road Overpass & NB ramps would result in Highway 101 from Madonna to Los Osos Valley Road operating below Caltrans level of service standards. This is a Class I, significant and unavoidable impact.*
The remaining impacts (Impacts T-4, T-6, T-7, T-8, T-9, and T-10) remain unchanged from the certified Final EIR. Seven of the 11 impacts (T-1, T-2, T-3, T-8, T-9, T-10, and T-11) are Class I, significant and unavoidable. The remaining 4 impacts (T-4, T-5, T-6 and T-7) are Class II, significant but mitigable.

The recommended mitigations in the Draft Supplemental EIR include a Transportation Demand Management Plan that includes:
-Implement a commute trip reduction program to reduce employee trips to the project's commercial uses.
-Create an on-site bike share program open to employees and residents of the project.
-Provide on-site bike lockers and showers. 14.1 (cont'd)
-Create an on-site bike share program open to employees and residents of the project.

These mitigations may be appropriate within the vicinity of San Luis Ranch on the west side of Highway 101. But they ignore the fact that few people will bicycle from the project site to downtown and to job sites and other destinations within bicycling distance on South Higuera and near the airport. Without the Prado Road overcrossing, it's likely only "strong and fearless" bicyclists will brave Madonna and Los Osos Valley roads to cross Highway 101. In addition, undersized infrastructure, gaps in the bicycle transportation network and multiple turn lanes at intersections to accommodate the increase in motor vehicle traffic will discourage even the most experienced bicyclists.

The Draft Supplemental EIR does not adequately address how people on bikes will cross Highway 101 without the Prado Road overcrossing. Without a connected and convenient crossing for people of all abilities who ride bikes, there will be a lack of transportation choice. 14.2

If the Final Supplemental EIR is approved and San Luis Ranch moves forward with added traffic impacts and uncertainty regarding the timing of the Prado Road overcrossing, some of these mitigations should be required at a minimum:
-An emergency/temporary solution to the Madonna bike path access points at the Madonna Inn and Marsh Street. Without a Prado Road overcrossing, the lack of bicycle access *is* an emergency, especially for Laguna Middle School students. Providing safe routes to school should be a high priority for the City. 14.3
-Buffered and green bike lanes on Madonna Road between Highway 101 and Higuera Street.
-An agreement with the Pacific Coast Center at the intersection of Madonna Road and

Higuera Street for a bicycle route through the center to South Street and to Bridge Street to avoid the Madonna/Higuera/South Street intersection.
-Building a Prado Road overcrossing of Highway 101 for bicyclists and pedestrians only.
-Improvements to Los Osos Valley Road between the Highway 101 interchange and Higuera Street, including green bike lanes and a bike box.
-Funding for the Bob Jones Trail segment from Oceanaire Drive to Calle Joaquin above the San Luis Ranch fair share contribution so people on bikes can get closer to the Los Osos Valley Road/Higuera Street intersection without having to ride that segment of Los Osos Valley Road. Without the Prado Road overcrossing, construction of this segment needs to happen now. **14.3 (cont'd)**

The bicycling community is pleased to see recently added buffered and green bike lanes along Madonna Road from Los Osos Valley Road to Highway 101 and on Los Osos Valley Road from the City limits through the Highway 101 interchange and other improvements citywide. However, the City still has major gaps in its bicycle transportation network for people who don't feel comfortable riding next to traffic and through intersections primarily designed for cars. Mitigations to address impacts from the delay in the Prado Road overcrossing should be more effectively used to help fill these gaps as opposed to making them more glaringly deficient. **14.4**

Response to Letter 14

COMMENTER: Lea Brooks, Private Citizen

DATE: January 24, 2017

<u>Response 14.1</u>
The commenter expresses skepticism that the Prado Road overpass will be constructed in a timely manner, and that this could have adverse effects on bicycle circulation, especially for cyclists trying to cross Highway 101. In response, the multimodal transportation analysis included in both the certified Final EIR and in the SEIR consider bicycle circulation, including bike safety, in drawing the conclusions regarding levels of service. Please refer to Tables 4.12-32, 4.12-33, 4.12-38, and 4.12-42 within the certified FEIR, which summarize bicycle circulation impacts and operations with the approved project. The SEIR concludes that the revised project description, as it relates to the timing of the Prado Road interchange, would result in temporary Class I, significant and unavoidable impacts until the Prado Road Overpass & NB Ramps are completed, which include bicycle and pedestrian facilities. The interchange project construction is currently scheduled to being in 2021. It is notable that the revised project would not result in different impacts at buildout, since the development pattern and buildout potential are the same. The SEIR includes mitigation measures to the extent feasible under the revised project description that relate to the project's impact on Caltrans facilities, notably that it is required to pay its fair share of funding for the Prado Road interchange project (see Table 4.1 of this document).

<u>Response 14.2</u>
Please refer to the response to comment 14.1.

<u>Response 14.3</u>
The commenter suggests a variety of potential mitigation measures to address potential bicycle safety and congestion impacts related to the project, including the revised project. The SEIR includes mitigation measures to the extent feasible under the revised project description that relate to the project's impact on Caltrans facilities, notably that it is required to pay its fair share of funding for the Prado Road interchange project (see Table 4.1 of this document). The Planning Commission and City Council could consider the commenter's suggested approaches to mitigation as part of their review of the revised project.

<u>Response 14.4</u>
The commenter is pleased to see a variety of recent citywide bicycle facility improvements, but notes there are still gaps, and that the project can help fill those gaps. It should be noted that under CEQA, there needs to be a nexus (direct relationship) between a project's impacts and the level of mitigation prescribed to address those impacts. The Planning Commission and City Council will consider this concern as it considers the revised project.

Appendix A

Air Quality/Greenhouse Gas Memorandum and Emissions Modeling

Rincon Consultants, Inc.

Environmental Scientists Planners Engineers

M E M O R A N D U M

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Date: April 2, 2018

To: John Rickenbach, AICP, Project Manager;
Tyler Corey, Principal Planner
City of San Luis Obispo
Community Development Department

Project: San Luis Ranch Specific Plan Final EIR

From: Chris Bersbach, Senior Project Manager

E-mail: cbersbach@rinconconsultants.com

cc: Richard Daulton, MURP, Principal

Re: Updated Criteria Pollutant and Greenhouse Gas Emissions Estimates, Impact Conclusions and Mitigation, Revised Project Construction Schedule

---

The City of San Luis Obispo has requested updated criteria pollutant emissions modeling for the San Luis Ranch Project to respond to a request from the applicant to update the proposed construction phasing described in the Specific Plan and certified Final Environmental Impact Report (FEIR). This memorandum describes the revised Specific Plan phasing, the results of the updated emissions modeling.

Specific Plan Revised Construction Timing

The San Luis Ranch Specific Plan FEIR assumed that the Specific Plan Area would be built out according to a phasing schedule and in a specific order included in the Specific Plan. The current request to revise the Specific Plan construction timing would allow phases to be constructed in any order, and possibly overlapping. This analysis conservatively assumes that all residential and non-residential build-out may occur simultaneously, and considers two potential development scenarios:

1. In Scenario 1, build-out would occur consistent with the construction scenario default developed in the California Emissions Estimator Model (CalEEMod), which is consistent with San Luis Obispo Air Pollution Control District (SLOAPCD) guidelines for projects in the South Central Coast Air Basin (SCCAB).

2. In Scenario 2, all residential and non-residential build-out would occur within a single year.

Updated Emissions Estimates

Methodology

Rincon Consultants, Inc. estimated criteria pollutant and greenhouse gas (GHG) emissions for the Specific Plan using CalEEMod version 2016.3.1[1]. CalEEMod construction schedule defaults were used for Scenario 1, except in the case of architectural coating for Scenario1. For Scenario 2, CalEEMod construction schedule defaults were shortened proportionally to reflect the conservative assumption that the residential and non-residential development would be completed within a single year. Similar to the methodology employed in the emissions modeling in the FEIR, the architectural coating phase for each model run was extended in Scenario 1 and Scenario 2 to overlap with half of the building construction phase because painting is generally completed as buildings within a phase are completed, rather than subsequent to all building construction. Construction assumptions are detailed in the CalEEMod output files (refer to attachment).

All other modeling assumptions included in the original FEIR emissions estimates were incorporated into the revised emissions model runs, including off-site hauling of import soil material, demolition of the existing buildings in the northern area of the project site, estimates of vehicle trips associated with the proposed development, and the open space and park areas' use of reclaimed water. All other values utilized in the emissions modeling were based on applicable SLOAPCD recommended defaults.

The FEIR included mitigation measures intended to reduce temporary construction emissions, and estimated both unmitigated and mitigated criteria pollutant emissions. This analysis includes updated emissions estimates for both the unmitigated and mitigated scenarios.

Emissions Estimates

The revised construction timing used in Scenario 1 and Scenario 2 does not include any changes to the final build-out of the San Luis Ranch Specific Plan. Therefore, total project emissions, including operational emissions of criteria pollutants and GHGs, would remain unchanged. The primary purpose of the updated criteria pollutant emissions estimates is to evaluate whether annual emissions during Specific Plan construction would change as a result of the revised construction timing, and to assess whether the mitigation measures for project construction emissions included in the FEIR would remain adequate to reduce temporary construction emissions to a less than significant level.

The maximum quarterly unmitigated construction emissions are shown in Table 1 (Scenario 1) and Table 2 (Scenario 2). These tables are an update of Table 4.3-6 from the FEIR.

[1] The current version of CalEEMod is 2016.3.2. This analysis uses the previous version 2016.3.1 for consistency with the emissions estimates provided in the FEIR. Version 2016.3.2 does not include substantial methodological changes from version 2016.3.1, including emissions factors. Therefore, the results from version 2016.3.1 reflect appropriate and up-to-date methodologies and emissions factors, and results from this version of CalEEMod are appropriate for analyzing project emissions.

Table 1 Scenario 1 Unmitigated Maximum Quarterly Construction Emissions

Construction Year	Maximum Quarter Per Year (tons/quarter)[1]		
	$ROG + NO_X$	Diesel Particulate Matter	Dust
2019	4.30	0.14	0.38
2020	3.52	0.10	0.45
2021	1.59	0.07	0.28
2022	1.50	0.06	0.27
2023	3.03	0.05	0.29
2024	2.96	0.05	0.32
2025	2.90	0.04	0.32
2026	2.46	0.02	0.07
Maximum tons/quarter	**4.30**	**0.14**	**0.45**
SLOAPCD Quarterly Tier 1 Thresholds (tons/quarter)	2.5	0.13	2.5
Threshold Exceeded?	**Yes**	**Yes**	**No**
SLOAPCD Quarterly Tier 2 Thresholds (tons/quarter)	6.3	0.32	2.5
Threshold Exceeded?	**No**	**No**	**No**

Notes: All calculations were made using CalEEMod. See attachment for model results. Diesel Particulate Matter (DPM) is equal to combined exhaust PM_{10} and $PM_{2.5}$, and dust is equal to fugitive PM_{10} from CalEEMod.

1. CalEEMod calculates quarterly emissions of $ROG+NO_X$, but does not generate quarterly emissions for DPM and dust; therefore, maximum annual construction emissions of DPM and dust were divided by the number of quarters undergoing construction in a year to estimate maximum quarterly emissions.

As shown in Table 1, the maximum quarterly combined ROG and NO_X emissions under Scenario 1 would exceed SLOAPCD's Quarterly Tier 1 threshold, but would not exceed the Tier 2 threshold. The project's diesel particulate matter (DPM) emissions under Scenario 1 would exceed the Tier 1 threshold, but would not exceed the Tier 2 threshold. The project's dust emissions under Scenario 1 would not exceed Tier 1 or 2 thresholds. These results are generally consistent with, but slightly reduced, in comparison to the results shown in Table 4.3-6 from the FEIR, which identified combined ROG and NO_X emissions above the Tier 2 threshold. The reduction in quarterly emissions is due to the later start of project construction (year 2019, versus year 2017 in the FEIR), which results in lower default equipment emission rates due to the increasing use of newer, cleaner construction equipment, as well as the distribution of construction activity over a longer overall schedule (eight years, versus five years in the FEIR).

Table 2 Scenario 2 Unmitigated Maximum Quarterly Construction Emissions

Construction Year	Maximum Quarter Per Year (tons/quarter)[1]		
	ROG + NO_X	Diesel Particulate Matter	Dust
2019	15.21	0.73	0.35
Maximum tons/quarter	**15.21**	**0.73**	**0.35**
SLOAPCD Quarterly Tier 1 Thresholds (tons/quarter)	2.5	0.13	2.5
Threshold Exceeded?	**Yes**	**Yes**	**No**
SLOAPCD Quarterly Tier 2 Thresholds (tons/quarter)	6.3	0.32	2.5
Threshold Exceeded?	**Yes**	**Yes**	**No**

Notes: All calculations were made using CalEEMod. See attachment for model results. DPM is equal to combined exhaust PM_{10} and $PM_{2.5}$, and dust is equal to fugitive PM_{10} from CalEEMod.

1. CalEEMod calculates quarterly emissions of ROG+NO_X, but does not generate quarterly emissions for DPM and dust; therefore, maximum annual construction emissions of DPM and dust were divided by the number of quarters undergoing construction in a year to estimate maximum quarterly emissions.

As shown in Table 2, the project's maximum quarterly combined ROG and NO_X emissions under Scenario 2 would exceed SLOAPCD's Quarterly Tier 1 and Tier 2 thresholds. The project's DPM emissions under Scenario 2 would exceed Tier 1 and 2 thresholds. The project's dust emissions under Scenario 2 would not exceed Tier 1 or 2 thresholds. These results are higher than the results shown in Table 4.3-6 from the FEIR, which identified combined ROG and NO_X emissions slightly above the Tier 2 threshold, and DPM emissions below the Tier 2 threshold. The increase in quarterly emissions is due to the compression of all anticipated construction activity within a shorter overall schedule (one year, versus five years in the FEIR).

Final EIR Conclusions and Mitigation Requirements

Temporary Construction Emissions

Consistent with the findings of the FEIR, Mitigation Measures AQ-2(a) through AQ-2(e) are required to reduce construction emissions of ROG, NO_X, and DPM:

- **AQ-2(a) Fugitive Dust Control Measures**
- **AQ-2(b) Standard Control Measures for Construction Equipment**
- **AQ-2(c) Best Available Control Technology (BACT) for Construction Equipment**
- **AQ-2(d) Architectural Coating**
- **AQ-2(e) Construction Activity Management Plan**

The project's maximum quarterly emissions with implementation of Tier 3 off-road engine compliance and level 2 diesel particulate filters required by Mitigation Measure AQ-2(c), as well as low VOC-emission paint required by Mitigation Measure AQ-2(d) are shown in Table 3 (Scenario 1) and Table 4 (Scenario 2). These tables are an update of Table 4.3-7 from in the FEIR.

Table 3 Scenario 1 Mitigated Maximum Quarterly Construction Emissions

Construction Year	Maximum Quarter Per Year (tons/quarter)[1]		
	ROG + NO_X	Diesel Particulate Matter	Dust
2019	3.40	0.04	0.21
2020	2.87	0.05	0.35
2021	1.48	0.04	0.28
2022	1.42	0.04	0.27
2023	1.69	0.04	0.29
2024	1.66	0.04	0.32
2025	1.63	0.04	0.32
2026	1.24	0.02	0.07
Total	**3.40**	**0.05**	**0.35**
SLOAPCD Quarterly Tier 1 Thresholds (tons/quarter)	2.5	0.13	2.5
Threshold Exceeded?	**Yes**	**No**	**No**
SLOAPCD Quarterly Tier 2 Thresholds (tons/quarter)	6.3	0.32	2.5
Threshold Exceeded?	**No**	**No**	**No**

Notes: All calculations were made using CalEEMod. See attachment for model results. DPM is equal to combined exhaust PM_{10} and $PM_{2.5}$, and dust is equal to fugitive PM_{10} from CalEEMod.

1. CalEEMod calculates quarterly emissions of ROG+NO_X, but does not generate quarterly emissions for DPM and dust; therefore, maximum annual construction emissions of DPM and dust were divided by the number of quarters undergoing construction in a year to estimate maximum quarterly emissions.

As shown in Table 3, with implementation of Mitigation Measures AQ-2(c) and AQ-2(d), construction emissions under Scenario 1 would not exceed any of the SLOAPCD Quarterly Tier 2 thresholds of significance. Therefore, consistent with the findings of the FEIR, implementation of a Construction Activity Management Plan (CAMP) and off-site mitigation would not be required and impacts would be less than significant with mitigation.

Table 4 Scenario 2 Mitigated Maximum Quarterly Construction Emissions

Construction Year	Maximum Quarter Per Year (tons/quarter)[1]		
	ROG + NO_X	Diesel Particulate Matter	Dust
2019	10.63	0.27	0.32
Total	**10.63**	**0.27**	**0.32**
SLOAPCD Quarterly Tier 1 Thresholds (tons/quarter)	2.5	0.13	2.5
Threshold Exceeded?	**Yes**	**Yes**	**No**
SLOAPCD Quarterly Tier 2 Thresholds (tons/quarter)	6.3	0.32	2.5
Threshold Exceeded?	**Yes**	**No**	**No**

Notes: All calculations were made using CalEEMod. See attachment for model results. DPM is equal to combined exhaust PM_{10} and $PM_{2.5}$, and dust is equal to fugitive PM_{10} from CalEEMod.

1. CalEEMod calculates quarterly emissions of ROG+NO_X, but does not generate quarterly emissions for DPM and dust; therefore, maximum annual construction emissions of DPM and dust were divided by the number of quarters undergoing construction in a year to estimate maximum quarterly emissions.

As shown in Table 4, with implementation of Mitigation Measures AQ-2(c) and AQ-2(d), construction emissions under Scenario 2 would not exceed the SLOAPCD Quarterly Tier 2 thresholds of significance for DPM or dust. However, emissions of ROG + NO_X would exceed the Tier 2 threshold of 6.3 tons/quarter. Therefore, consistent with SLOAPCD guidelines (refer to Section 2.3.3 of the *CEQA Air Quality Handbook*), implementation of a CAMP would be required, and off-site mitigation may be necessary to reduce impacts to a less than significant level.

Other Final Environmental Impact Report Air Quality Impacts

As described above, the revised construction timing does not include any changes to the overall build-out of the San Luis Ranch Specific Plan. Nonetheless, SLOAPCD requires any project with grading areas greater than 4.0 acres or that are within 1,000 feet of any sensitive receptor to implement standard fugitive dust mitigation measures. Therefore, the FEIR conclusions with regard to Impacts AQ-1, AQ-3, AQ-4, and potential cumulative air quality would not change as a result of the revised Specific Plan construction timing. These potential air quality impacts are discussed briefly below.

- **Impact AQ-1: Clean Air Plan consistency**. As described in the FEIR, the Specific Plan would be inconsistent with the SLOAPCD 2001 Clean Air Plan because it would result in an increase in vehicle miles traveled (VMT) that would exceed the rate of population growth. Mitigation Measure AQ-1, *Encourage Telecommuting*, as well as Mitigation Measure AQ-3(a) and AQ-3(b) described below, would reduce regional air pollutant emissions and ensure that the project would be consistent with the Clean Air Plan transportation control measures and land use strategies. However, mitigation is not available that would reduce projected VMT such that the project's vehicle trip rate increase would not exceed population growth in the region. Therefore, impacts related to consistency with the 2001 Clean Air Plan would remain significant and unavoidable (Class I), consistent with the findings of the FEIR.
- **Impact AQ-3: Long-term operational emissions**. Total project emissions, including operational emissions of criteria pollutants, would remain unchanged. Mitigation Measures AQ-3(a), *Standard Operational Mitigation Measures*, and AQ-3(b), *Off-site Mitigation*, would reduce impacts to regional air quality below SLOAPCD's annual operational thresholds. Therefore, long-term

operational air quality impacts would be less than significant with mitigation (Class II), consistent with the findings of the FEIR.

- **Impact AQ-4: Exposure of sensitive receptors to substantial pollutant concentrations**. The FEIR did not identify impacts to sensitive receptors associated with construction activity, and as discussed above, short-term construction emissions would be generally consistent with, and somewhat lower than, those identified in the FEIR. The primary sources of toxic air contaminant emissions identified in the FEIR were vehicle trips on area roadways and industrial uses. The revised construction timing would not increase exposure of sensitive receptors to either of these sources. Therefore, potential impacts from exposure of sensitive receptors to substantial pollutant concentrations would remain less than significant (Class III), consistent with the findings of the FEIR.
- **Cumulative Air Quality Impacts**. As described in the FEIR, a project that exceeds applicable SLOAPCD significance thresholds or is found to be inconsistent with the Clean Air Plan would result in significant cumulative impacts. As discussed under Impacts AQ-1 through and AQ-3, the project is inconsistent with the 2001 Clean Air Plan and would exceed SLOAPCD construction and operational thresholds. The revised construction timing would not reduce these identified impacts. Therefore, cumulative impacts on air quality would be significant and unavoidable (Class I), consistent with the findings of the FEIR.
- **Greenhouse Gas Emissions Impacts**. Annualized project GHG emissions, which are based on full buildout of the Specific Plan, would remain unchanged. Therefore, GHG emissions impacts would be less than significant (Class III), consistent with the findings of the FEIR.

Conclusion

Based on the updated emissions analysis presented herein, Rincon Consultants, Inc. finds that under Scenario 1, which assumes that build-out would occur consistent with the default construction scenario based on SLOAPCD guidelines, the impact determinations, mitigation measures, and residual impact conclusions included in the San Luis Ranch Specific Plan FEIR air quality and GHG emissions analyses would remain unchanged as a result of the revised Specific Plan construction timing. Under Scenario 2, which assumes that all residential and non-residential build-out would occur within a single year, the impact determinations and residual impact conclusions included in the San Luis Ranch Specific Plan FEIR air quality and GHG emissions analyses would remain unchanged as a result of the revised Specific Plan construction timing; however, due to the higher emissions associated with the compressed construction schedule, construction of the project under Scenario 2 would require implementation of a CAMP, which may require off-site mitigation to reduce construction air quality impacts to a less than significant level, consistent with SLOAPCD guidelines (refer to Section 2.3.3 of the *CEQA Air Quality Handbook*). Consistent with these guidelines, the applicant would be required to coordinate with SLOAPCD to provide funding for off-site emission reduction measures to reduce emissions to below daily threshold levels. The project applicant would be required to coordinate with SLOAPCD to provide funding for off-site emissions reduction measures prior to issuance of grading permits. The project applicant or developers of individual projects within the Specific Plan Area would be required to submit proof that emissions have been reduced to below daily threshold levels to the Community Development Department.

Att: CalEEMod version 2016.3.1 model results & modeling assumptions

Attachment

Unmitigated CalEEMod Results

SLR Compressed Schedule Unmitigated

San Luis Obispo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	100.00	1000sqft	4.20	100,000.00	0
Parking Lot	13.66	Acre	13.66	595,029.60	0
Hotel	200.00	Room	3.50	290,400.00	0
Apartments Mid Rise	280.00	Dwelling Unit	17.00	280,000.00	801
Single Family Housing	300.00	Dwelling Unit	25.00	540,000.00	858
Regional Shopping Center	150.00	1000sqft	12.00	150,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.2	**Precipitation Freq (Days)**	44
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Applicant provided information

Land Use - source: Build-out phasing plan

Construction Phase - Schedule compressed into one year

Demolition -

Grading -

Architectural Coating -

Vehicle Trips - Trip generation rate based on Omni-Means 2016 Traffic Impact Study.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Woodstoves - Per MM AQ-3

Energy Use -

Construction Off-road Equipment Mitigation -

Area Mitigation -

Off-road Equipment - proportionally based on compressed schedule

Off-road Equipment - proportionally based on compressed schedule

Off-road Equipment - proportionally based on compressed schedule

Off-road Equipment - proportionally based on compressed schedule

Off-road Equipment - proportionally based on compressed schedule

Off-road Equipment - proportionally based on compressed schedule

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblGrading	MaterialImported	0.00	250,480.00
tblLandUse	LotAcreage	2.30	4.20
tblLandUse	LotAcreage	6.67	3.50
tblLandUse	LotAcreage	7.37	17.00

tblLandUse	LotAcreage	97.40	25.00
tblLandUse	LotAcreage	3.44	12.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	10.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	30.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	16.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	24.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	11.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	11.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	11.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	20.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	13.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	16.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblProjectCharacteristics	OperationalYear	2018	2020
tblVehicleTrips	ST_TR	6.39	5.29
tblVehicleTrips	ST_TR	2.46	2.68
tblVehicleTrips	ST_TR	8.19	4.86
tblVehicleTrips	ST_TR	49.97	10.38
tblVehicleTrips	ST_TR	9.91	5.29

tblVehicleTrips	SU_TR	5.86	4.61
tblVehicleTrips	SU_TR	1.05	1.14
tblVehicleTrips	SU_TR	5.95	3.52
tblVehicleTrips	SU_TR	25.24	5.24
tblVehicleTrips	SU_TR	8.62	4.61
tblVehicleTrips	WD_TR	6.65	5.09
tblVehicleTrips	WD_TR	11.03	12.00
tblVehicleTrips	WD_TR	8.17	4.85
tblVehicleTrips	WD_TR	42.70	8.87
tblVehicleTrips	WD_TR	9.52	5.09
tblWoodstoves	WoodstoveDayYear	60.00	0.00
tblWoodstoves	WoodstoveDayYear	60.00	0.00
tblWoodstoves	WoodstoveWoodMass	2,016.00	0.00
tblWoodstoves	WoodstoveWoodMass	2,016.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	22.6112	34.1607	24.6159	0.0563	1.4131	1.5142	2.9272	0.4256	1.4203	1.8459	0.0000	5,133.5082	5,133.5082	0.8370	0.0000	5,154.4333
Maximum	**22.6112**	**34.1607**	**24.6159**	**0.0563**	**1.4131**	**1.5142**	**2.9272**	**0.4256**	**1.4203**	**1.8459**	**0.0000**	**5,133.5082**	**5,133.5082**	**0.8370**	**0.0000**	**5,154.4333**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	22.6112	34.1607	24.6159	0.0563	1.4131	1.5142	2.9272	0.4256	1.4203	1.8459	0.0000	5,133.5049	5,133.5049	0.8370	0.0000	5,154.4300
Maximum	**22.6112**	**34.1607**	**24.6159**	**0.0563**	**1.4131**	**1.5142**	**2.9272**	**0.4256**	**1.4203**	**1.8459**	**0.0000**	**5,133.5049**	**5,133.5049**	**0.8370**	**0.0000**	**5,154.4300**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2019	3-31-2019	15.2068	15.2068
2	4-1-2019	6-30-2019	7.2578	7.2578
3	7-1-2019	9-30-2019	13.6999	13.6999
		Highest	15.2068	15.2068

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/14/2019	5	10	
2	Site Preparation	Site Preparation	1/15/2019	2/1/2019	5	14	
3	Grading	Grading	2/4/2019	3/1/2019	5	20	
4	Building Construction	Building Construction	3/4/2019	11/29/2019	5	195	
5	Architectural Coating	Architectural Coating	8/19/2019	12/31/2019	5	97	
6	Paving	Paving	12/2/2019	12/27/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 50

Acres of Paving: 13.66

Residential Indoor: 1,660,500; Residential Outdoor: 553,500; Non-Residential Indoor: 810,600; Non-Residential Outdoor: 270,200; Striped Parking Area: 35,702 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	10	8.00	81	0.73
Demolition	Excavators	30	8.00	158	0.38
Demolition	Rubber Tired Dozers	20	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	13	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	17	8.00	97	0.37
Grading	Excavators	16	8.00	158	0.38
Grading	Graders	8	8.00	187	0.41
Grading	Rubber Tired Dozers	8	8.00	247	0.40
Grading	Scrapers	16	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	16	8.00	97	0.37
Building Construction	Cranes	8	7.00	231	0.29
Building Construction	Forklifts	24	8.00	89	0.20
Building Construction	Generator Sets	8	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	24	7.00	97	0.37
Building Construction	Welders	8	8.00	46	0.45
Architectural Coating	Air Compressors	8	6.00	78	0.48
Paving	Pavers	11	8.00	130	0.42
Paving	Paving Equipment	11	8.00	132	0.36
Paving	Rollers	11	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	80.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	31,310.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	761.00	248.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	152.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.9300e-003	0.0000	8.9300e-003	1.3500e-003	0.0000	1.3500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1757	1.7892	1.1030	1.9400e-003		0.0898	0.0898		0.0835	0.0835	0.0000	173.1316	173.1316	0.0482	0.0000	174.3357
Total	**0.1757**	**1.7892**	**1.1030**	**1.9400e-003**	**8.9300e-003**	**0.0898**	**0.0987**	**1.3500e-003**	**0.0835**	**0.0848**	**0.0000**	**173.1316**	**173.1316**	**0.0482**	**0.0000**	**174.3357**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1000e-004	0.0141	3.0500e-003	3.0000e-005	6.8000e-004	8.0000e-005	7.7000e-004	1.9000e-004	8.0000e-005	2.7000e-004	0.0000	3.1040	3.1040	1.8000e-004	0.0000	3.1084
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	3.4000e-004	2.9300e-003	1.0000e-005	7.2000e-004	0.0000	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6233	0.6233	2.0000e-005	0.0000	0.6239
Total	**7.7000e-004**	**0.0144**	**5.9800e-003**	**4.0000e-005**	**1.4000e-003**	**8.0000e-005**	**1.5000e-003**	**3.8000e-004**	**8.0000e-005**	**4.7000e-004**	**0.0000**	**3.7273**	**3.7273**	**2.0000e-004**	**0.0000**	**3.7323**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.9300e-003	0.0000	8.9300e-003	1.3500e-003	0.0000	1.3500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1757	1.7892	1.1030	1.9400e-003		0.0898	0.0898		0.0835	0.0835	0.0000	173.1314	173.1314	0.0482	0.0000	174.3355
Total	**0.1757**	**1.7892**	**1.1030**	**1.9400e-003**	**8.9300e-003**	**0.0898**	**0.0987**	**1.3500e-003**	**0.0835**	**0.0848**	**0.0000**	**173.1314**	**173.1314**	**0.0482**	**0.0000**	**174.3355**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1000e-004	0.0141	3.0500e-003	3.0000e-005	6.8000e-004	8.0000e-005	7.7000e-004	1.9000e-004	8.0000e-005	2.7000e-004	0.0000	3.1040	3.1040	1.8000e-004	0.0000	3.1084
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	3.4000e-004	2.9300e-003	1.0000e-005	7.2000e-004	0.0000	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6233	0.6233	2.0000e-005	0.0000	0.6239
Total	**7.7000e-004**	**0.0144**	**5.9800e-003**	**4.0000e-005**	**1.4000e-003**	**8.0000e-005**	**1.5000e-003**	**3.8000e-004**	**8.0000e-005**	**4.7000e-004**	**0.0000**	**3.7273**	**3.7273**	**2.0000e-004**	**0.0000**	**3.7323**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1265	0.0000	0.1265	0.0695	0.0000	0.0695	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1310	1.3769	0.6639	1.1500e-003		0.0721	0.0721		0.0664	0.0664	0.0000	102.9940	102.9940	0.0326	0.0000	103.8087
Total	**0.1310**	**1.3769**	**0.6639**	**1.1500e-003**	**0.1265**	**0.0721**	**0.1986**	**0.0695**	**0.0664**	**0.1359**	**0.0000**	**102.9940**	**102.9940**	**0.0326**	**0.0000**	**103.8087**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	5.7000e-004	4.9200e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0472	1.0472	4.0000e-005	0.0000	1.0482
Total	**6.1000e-004**	**5.7000e-004**	**4.9200e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0472**	**1.0472**	**4.0000e-005**	**0.0000**	**1.0482**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1265	0.0000	0.1265	0.0695	0.0000	0.0695	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1310	1.3769	0.6639	1.1500e-003		0.0721	0.0721		0.0664	0.0664	0.0000	102.9939	102.9939	0.0326	0.0000	103.8086
Total	**0.1310**	**1.3769**	**0.6639**	**1.1500e-003**	**0.1265**	**0.0721**	**0.1986**	**0.0695**	**0.0664**	**0.1359**	**0.0000**	**102.9939**	**102.9939**	**0.0326**	**0.0000**	**103.8086**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	5.7000e-004	4.9200e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0472	1.0472	4.0000e-005	0.0000	1.0482
Total	**6.1000e-004**	**5.7000e-004**	**4.9200e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0472**	**1.0472**	**4.0000e-005**	**0.0000**	**1.0482**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1098	0.0000	0.1098	0.0395	0.0000	0.0395	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3791	4.3616	2.6701	4.9600e-003		0.1906	0.1906		0.1754	0.1754	0.0000	445.6106	445.6106	0.1410	0.0000	449.1352
Total	**0.3791**	**4.3616**	**2.6701**	**4.9600e-003**	**0.1098**	**0.1906**	**0.3004**	**0.0395**	**0.1754**	**0.2148**	**0.0000**	**445.6106**	**445.6106**	**0.1410**	**0.0000**	**449.1352**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1611	5.4984	1.1922	0.0124	0.2668	0.0327	0.2995	0.0733	0.0313	0.1046	0.0000	1,214.8175	1,214.8175	0.0690	0.0000	1,216.5425
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.6000e-004	9.0000e-004	7.8200e-003	2.0000e-005	1.9300e-003	1.0000e-005	1.9400e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.6623	1.6623	6.0000e-005	0.0000	1.6638
Total	**0.1621**	**5.4993**	**1.2000**	**0.0125**	**0.2688**	**0.0327**	**0.3015**	**0.0738**	**0.0313**	**0.1051**	**0.0000**	**1,216.4798**	**1,216.4798**	**0.0691**	**0.0000**	**1,218.2063**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1098	0.0000	0.1098	0.0395	0.0000	0.0395	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3791	4.3616	2.6701	4.9600e-003		0.1906	0.1906		0.1754	0.1754	0.0000	445.6100	445.6100	0.1410	0.0000	449.1347
Total	**0.3791**	**4.3616**	**2.6701**	**4.9600e-003**	**0.1098**	**0.1906**	**0.3004**	**0.0395**	**0.1754**	**0.2148**	**0.0000**	**445.6100**	**445.6100**	**0.1410**	**0.0000**	**449.1347**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1611	5.4984	1.1922	0.0124	0.2668	0.0327	0.2995	0.0733	0.0313	0.1046	0.0000	1,214.8175	1,214.8175	0.0690	0.0000	1,216.5425
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.6000e-004	9.0000e-004	7.8200e-003	2.0000e-005	1.9300e-003	1.0000e-005	1.9400e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.6623	1.6623	6.0000e-005	0.0000	1.6638
Total	**0.1621**	**5.4993**	**1.2000**	**0.0125**	**0.2688**	**0.0327**	**0.3015**	**0.0738**	**0.0313**	**0.1051**	**0.0000**	**1,216.4798**	**1,216.4798**	**0.0691**	**0.0000**	**1,218.2063**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8417	16.4415	13.3878	0.0210		1.0061	1.0061		0.9459	0.9459	0.0000	1,833.8127	1,833.8127	0.4467	0.0000	1,844.9811
Total	**1.8417**	**16.4415**	**13.3878**	**0.0210**		**1.0061**	**1.0061**		**0.9459**	**0.9459**	**0.0000**	**1,833.8127**	**1,833.8127**	**0.4467**	**0.0000**	**1,844.9811**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1132	2.7580	0.8653	4.8300e-003	0.1098	0.0221	0.1319	0.0317	0.0211	0.0528	0.0000	465.8332	465.8332	0.0299	0.0000	466.5812
Worker	0.3564	0.3348	2.9000	6.8300e-003	0.7143	4.8500e-003	0.7192	0.1898	4.4800e-003	0.1943	0.0000	616.6747	616.6747	0.0230	0.0000	617.2494
Total	**0.4696**	**3.0928**	**3.7652**	**0.0117**	**0.8241**	**0.0269**	**0.8510**	**0.2216**	**0.0256**	**0.2472**	**0.0000**	**1,082.5079**	**1,082.5079**	**0.0529**	**0.0000**	**1,083.8305**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8417	16.4415	13.3877	0.0210		1.0061	1.0061		0.9459	0.9459	0.0000	1,833.8106	1,833.8106	0.4467	0.0000	1,844.9789
Total	**1.8417**	**16.4415**	**13.3877**	**0.0210**		**1.0061**	**1.0061**		**0.9459**	**0.9459**	**0.0000**	**1,833.8106**	**1,833.8106**	**0.4467**	**0.0000**	**1,844.9789**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1132	2.7580	0.8653	4.8300e-003	0.1098	0.0221	0.1319	0.0317	0.0211	0.0528	0.0000	465.8332	465.8332	0.0299	0.0000	466.5812
Worker	0.3564	0.3348	2.9000	6.8300e-003	0.7143	4.8500e-003	0.7192	0.1898	4.4800e-003	0.1943	0.0000	616.6747	616.6747	0.0230	0.0000	617.2494
Total	**0.4696**	**3.0928**	**3.7652**	**0.0117**	**0.8241**	**0.0269**	**0.8510**	**0.2216**	**0.0256**	**0.2472**	**0.0000**	**1,082.5079**	**1,082.5079**	**0.0529**	**0.0000**	**1,083.8305**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	19.2134					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1034	0.7121	0.7144	1.1500e-003		0.0500	0.0500		0.0500	0.0500	0.0000	99.0663	99.0663	8.3700e-003	0.0000	99.2754
Total	**19.3167**	**0.7121**	**0.7144**	**1.1500e-003**		**0.0500**	**0.0500**		**0.0500**	**0.0500**	**0.0000**	**99.0663**	**99.0663**	**8.3700e-003**	**0.0000**	**99.2754**

3.6 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0354	0.0333	0.2881	6.8000e-004	0.0710	4.8000e-004	0.0715	0.0189	4.4000e-004	0.0193	0.0000	61.2706	61.2706	2.2800e-003	0.0000	61.3277
Total	**0.0354**	**0.0333**	**0.2881**	**6.8000e-004**	**0.0710**	**4.8000e-004**	**0.0715**	**0.0189**	**4.4000e-004**	**0.0193**	**0.0000**	**61.2706**	**61.2706**	**2.2800e-003**	**0.0000**	**61.3277**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	19.2134					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1034	0.7121	0.7144	1.1500e-003		0.0500	0.0500		0.0500	0.0500	0.0000	99.0661	99.0661	8.3700e-003	0.0000	99.2753
Total	**19.3167**	**0.7121**	**0.7144**	**1.1500e-003**		**0.0500**	**0.0500**		**0.0500**	**0.0500**	**0.0000**	**99.0661**	**99.0661**	**8.3700e-003**	**0.0000**	**99.2753**

3.6 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0354	0.0333	0.2881	6.8000e-004	0.0710	4.8000e-004	0.0715	0.0189	4.4000e-004	0.0193	0.0000	61.2706	61.2706	2.2800e-003	0.0000	61.3277
Total	**0.0354**	**0.0333**	**0.2881**	**6.8000e-004**	**0.0710**	**4.8000e-004**	**0.0715**	**0.0189**	**4.4000e-004**	**0.0193**	**0.0000**	**61.2706**	**61.2706**	**2.2800e-003**	**0.0000**	**61.3277**

3.7 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0800	0.8384	0.8066	1.2500e-003		0.0454	0.0454		0.0417	0.0417	0.0000	112.6135	112.6135	0.0356	0.0000	113.5042
Paving	0.0179					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0979**	**0.8384**	**0.8066**	**1.2500e-003**		**0.0454**	**0.0454**		**0.0417**	**0.0417**	**0.0000**	**112.6135**	**112.6135**	**0.0356**	**0.0000**	**113.5042**

3.7 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	6.8000e-004	5.8600e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2467	1.2467	5.0000e-005	0.0000	1.2479
Total	**7.2000e-004**	**6.8000e-004**	**5.8600e-003**	**1.0000e-005**	**1.4400e-003**	**1.0000e-005**	**1.4500e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.2467**	**1.2467**	**5.0000e-005**	**0.0000**	**1.2479**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0800	0.8384	0.8066	1.2500e-003		0.0454	0.0454		0.0417	0.0417	0.0000	112.6134	112.6134	0.0356	0.0000	113.5041
Paving	0.0179					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0979**	**0.8384**	**0.8066**	**1.2500e-003**		**0.0454**	**0.0454**		**0.0417**	**0.0417**	**0.0000**	**112.6134**	**112.6134**	**0.0356**	**0.0000**	**113.5041**

3.7 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	6.8000e-004	5.8600e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2467	1.2467	5.0000e-005	0.0000	1.2479
Total	**7.2000e-004**	**6.8000e-004**	**5.8600e-003**	**1.0000e-005**	**1.4400e-003**	**1.0000e-005**	**1.4500e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.2467**	**1.2467**	**5.0000e-005**	**0.0000**	**1.2479**

SLR Default Schedule - Unmitigated

San Luis Obispo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	100.00	1000sqft	4.20	100,000.00	0
Parking Lot	13.66	Acre	13.66	595,029.60	0
Hotel	200.00	Room	3.50	290,400.00	0
Apartments Mid Rise	280.00	Dwelling Unit	17.00	280,000.00	801
Single Family Housing	300.00	Dwelling Unit	25.00	540,000.00	858
Regional Shopping Center	150.00	1000sqft	12.00	150,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.2	**Precipitation Freq (Days)**	44
Climate Zone	4			**Operational Year**	2027
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Applicant provided information

Land Use - source: Build-out phasing plan

Construction Phase - Updated arch coating to reflect more accurate construction schedule

Demolition -

Grading -

Architectural Coating -

Vehicle Trips - Trip generation rate based on Omni-Means 2016 Traffic Impact Study.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Woodstoves - Per MM AQ-3

Energy Use -

Construction Off-road Equipment Mitigation -

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	110.00	775.00
tblGrading	MaterialExported	0.00	250,480.00
tblLandUse	LotAcreage	2.30	4.20
tblLandUse	LotAcreage	6.67	3.50
tblLandUse	LotAcreage	7.37	17.00
tblLandUse	LotAcreage	97.40	25.00
tblLandUse	LotAcreage	3.44	12.00
tblProjectCharacteristics	OperationalYear	2018	2027
tblVehicleTrips	ST_TR	6.39	5.29
tblVehicleTrips	ST_TR	2.46	2.68

tblVehicleTrips	ST_TR	8.19	4.86
tblVehicleTrips	ST_TR	49.97	10.38
tblVehicleTrips	ST_TR	9.91	5.29
tblVehicleTrips	SU_TR	5.86	4.61
tblVehicleTrips	SU_TR	1.05	1.14
tblVehicleTrips	SU_TR	5.95	3.52
tblVehicleTrips	SU_TR	25.24	5.24
tblVehicleTrips	SU_TR	8.62	4.61
tblVehicleTrips	WD_TR	6.65	5.09
tblVehicleTrips	WD_TR	11.03	12.00
tblVehicleTrips	WD_TR	8.17	4.85
tblVehicleTrips	WD_TR	42.70	8.87
tblVehicleTrips	WD_TR	9.52	5.09
tblWoodstoves	WoodstoveDayYear	60.00	0.00
tblWoodstoves	WoodstoveDayYear	60.00	0.00
tblWoodstoves	WoodstoveWoodMass	2,016.00	0.00
tblWoodstoves	WoodstoveWoodMass	2,016.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.6477	9.2658	4.2211	0.0141	1.5107	0.2977	1.8084	0.6518	0.2756	0.9273	0.0000	1,327.917 2	1,327.917 2	0.2101	0.0000	1,333.170 3
2020	0.8322	8.2407	6.5423	0.0212	1.7885	0.2045	1.9930	0.5738	0.1913	0.7650	0.0000	1,961.377 8	1,961.377 8	0.1843	0.0000	1,965.984 6
2021	0.7515	5.7084	6.1618	0.0185	1.1031	0.1400	1.2431	0.2966	0.1316	0.4282	0.0000	1,693.795 2	1,693.795 2	0.1328	0.0000	1,697.115 8
2022	0.6913	5.2622	5.7826	0.0180	1.0989	0.1188	1.2177	0.2954	0.1118	0.4072	0.0000	1,655.710 1	1,655.710 1	0.1290	0.0000	1,658.934 1
2023	3.1456	4.6455	5.7097	0.0184	1.1721	0.1043	1.2764	0.3149	0.0982	0.4131	0.0000	1,685.554 5	1,685.554 5	0.1245	0.0000	1,688.666 1
2024	7.1836	4.5990	5.9209	0.0193	1.2991	0.0984	1.3975	0.3487	0.0930	0.4416	0.0000	1,770.734 7	1,770.734 7	0.1263	0.0000	1,773.891 5
2025	7.1164	4.3654	5.6287	0.0188	1.2942	0.0852	1.3794	0.3474	0.0805	0.4278	0.0000	1,727.802 7	1,727.802 7	0.1235	0.0000	1,730.889 2
2026	3.9744	1.2459	1.9604	5.0400e-003	0.2967	0.0400	0.3367	0.0794	0.0374	0.1168	0.0000	455.8826	455.8826	0.0573	0.0000	457.3140
Maximum	**7.1836**	**9.2658**	**6.5423**	**0.0212**	**1.7885**	**0.2977**	**1.9930**	**0.6518**	**0.2756**	**0.9273**	**0.0000**	**1,961.377 8**	**1,961.377 8**	**0.2101**	**0.0000**	**1,965.984 6**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.6477	9.2657	4.2211	0.0141	1.5107	0.2977	1.8084	0.6518	0.2756	0.9273	0.0000	1,327.9165	1,327.9165	0.2101	0.0000	1,333.1697
2020	0.8322	8.2407	6.5423	0.0212	1.7885	0.2045	1.9930	0.5738	0.1913	0.7650	0.0000	1,961.3773	1,961.3773	0.1843	0.0000	1,965.9841
2021	0.7515	5.7084	6.1618	0.0185	1.1031	0.1400	1.2431	0.2966	0.1316	0.4282	0.0000	1,693.7948	1,693.7948	0.1328	0.0000	1,697.1154
2022	0.6913	5.2622	5.7826	0.0180	1.0989	0.1188	1.2177	0.2954	0.1118	0.4072	0.0000	1,655.7097	1,655.7097	0.1290	0.0000	1,658.9338
2023	3.1456	4.6455	5.7097	0.0184	1.1721	0.1043	1.2764	0.3149	0.0982	0.4131	0.0000	1,685.5541	1,685.5541	0.1245	0.0000	1,688.6657
2024	7.1836	4.5989	5.9209	0.0193	1.2991	0.0984	1.3975	0.3487	0.0930	0.4416	0.0000	1,770.7343	1,770.7343	0.1263	0.0000	1,773.8911
2025	7.1164	4.3654	5.6287	0.0188	1.2942	0.0852	1.3794	0.3474	0.0805	0.4278	0.0000	1,727.8023	1,727.8023	0.1235	0.0000	1,730.8888
2026	3.9744	1.2459	1.9604	5.0400e-003	0.2967	0.0400	0.3367	0.0794	0.0374	0.1168	0.0000	455.8824	455.8824	0.0573	0.0000	457.3138
Maximum	**7.1836**	**9.2657**	**6.5423**	**0.0212**	**1.7885**	**0.2977**	**1.9930**	**0.6518**	**0.2756**	**0.9273**	**0.0000**	**1,961.3773**	**1,961.3773**	**0.2101**	**0.0000**	**1,965.9841**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-7-2019**	**4-6-2019**	1.2770	1.2770
2	**4-7-2019**	**7-6-2019**	1.4496	1.4496

3	**7-7-2019**	**10-6-2019**	3.1210	3.1210
4	**10-7-2019**	**1-6-2020**	4.3023	4.3023
5	**1-7-2020**	**4-6-2020**	3.5214	3.5214
6	**4-7-2020**	**7-6-2020**	1.7475	1.7475
7	**7-7-2020**	**10-6-2020**	1.7683	1.7683
8	**10-7-2020**	**1-6-2021**	1.7808	1.7808
9	**1-7-2021**	**4-6-2021**	1.5936	1.5936
10	**4-7-2021**	**7-6-2021**	1.5915	1.5915
11	**7-7-2021**	**10-6-2021**	1.6104	1.6104
12	**10-7-2021**	**1-6-2022**	1.6225	1.6225
13	**1-7-2022**	**4-6-2022**	1.4744	1.4744
14	**4-7-2022**	**7-6-2022**	1.4729	1.4729
15	**7-7-2022**	**10-6-2022**	1.4904	1.4904
16	**10-7-2022**	**1-6-2023**	1.4959	1.4959
17	**1-7-2023**	**4-6-2023**	1.2868	1.2868
18	**4-7-2023**	**7-6-2023**	1.2843	1.2843
19	**7-7-2023**	**10-6-2023**	2.3028	2.3028
20	**10-7-2023**	**1-6-2024**	3.0252	3.0252
21	**1-7-2024**	**4-6-2024**	2.9290	2.9290
22	**4-7-2024**	**7-6-2024**	2.9098	2.9098
23	**7-7-2024**	**10-6-2024**	2.9431	2.9431
24	**10-7-2024**	**1-6-2025**	2.9583	2.9583
25	**1-7-2025**	**4-6-2025**	2.8335	2.8335
26	**4-7-2025**	**7-6-2025**	2.8472	2.8472
27	**7-7-2025**	**10-6-2025**	2.8798	2.8798
28	**10-7-2025**	**1-6-2026**	2.8962	2.8962
29	**1-7-2026**	**4-6-2026**	2.4613	2.4613

30	**4-7-2026**	**7-6-2026**	2.0000	2.0000
31	**7-7-2026**	**9-30-2026**	0.5494	0.5494
		Highest	4.3023	4.3023

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/7/2019	5/24/2019	5	100	
2	Site Preparation	Site Preparation	5/25/2019	8/16/2019	5	60	
3	Grading	Grading	8/17/2019	3/20/2020	5	155	
4	Building Construction	Building Construction	3/21/2020	2/27/2026	5	1550	
5	Architectural Coating	Architectural Coating	8/14/2023	7/31/2026	5	775	
6	Paving	Paving	2/28/2026	7/31/2026	5	110	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 387.5

Acres of Paving: 13.66

Residential Indoor: 1,660,500; Residential Outdoor: 553,500; Non-Residential Indoor: 810,600; Non-Residential Outdoor: 270,200; Striped Parking Area: 35,702 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	80.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	31,310.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	761.00	248.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	152.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.9300e-003	0.0000	8.9300e-003	1.3500e-003	0.0000	1.3500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1757	1.7892	1.1030	1.9400e-003		0.0898	0.0898		0.0835	0.0835	0.0000	173.1316	173.1316	0.0482	0.0000	174.3357
Total	**0.1757**	**1.7892**	**1.1030**	**1.9400e-003**	**8.9300e-003**	**0.0898**	**0.0987**	**1.3500e-003**	**0.0835**	**0.0848**	**0.0000**	**173.1316**	**173.1316**	**0.0482**	**0.0000**	**174.3357**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1000e-004	0.0141	3.0500e-003	3.0000e-005	6.8000e-004	8.0000e-005	7.7000e-004	1.9000e-004	8.0000e-005	2.7000e-004	0.0000	3.1040	3.1040	1.8000e-004	0.0000	3.1084
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-003	3.3800e-003	0.0293	7.0000e-005	7.2200e-003	5.0000e-005	7.2700e-003	1.9200e-003	5.0000e-005	1.9600e-003	0.0000	6.2334	6.2334	2.3000e-004	0.0000	6.2393
Total	**4.0100e-003**	**0.0174**	**0.0324**	**1.0000e-004**	**7.9000e-003**	**1.3000e-004**	**8.0400e-003**	**2.1100e-003**	**1.3000e-004**	**2.2300e-003**	**0.0000**	**9.3374**	**9.3374**	**4.1000e-004**	**0.0000**	**9.3476**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.9300e-003	0.0000	8.9300e-003	1.3500e-003	0.0000	1.3500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1757	1.7892	1.1030	1.9400e-003		0.0898	0.0898		0.0835	0.0835	0.0000	173.1314	173.1314	0.0482	0.0000	174.3355
Total	**0.1757**	**1.7892**	**1.1030**	**1.9400e-003**	**8.9300e-003**	**0.0898**	**0.0987**	**1.3500e-003**	**0.0835**	**0.0848**	**0.0000**	**173.1314**	**173.1314**	**0.0482**	**0.0000**	**174.3355**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1000e-004	0.0141	3.0500e-003	3.0000e-005	6.8000e-004	8.0000e-005	7.7000e-004	1.9000e-004	8.0000e-005	2.7000e-004	0.0000	3.1040	3.1040	1.8000e-004	0.0000	3.1084
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-003	3.3800e-003	0.0293	7.0000e-005	7.2200e-003	5.0000e-005	7.2700e-003	1.9200e-003	5.0000e-005	1.9600e-003	0.0000	6.2334	6.2334	2.3000e-004	0.0000	6.2393
Total	**4.0100e-003**	**0.0174**	**0.0324**	**1.0000e-004**	**7.9000e-003**	**1.3000e-004**	**8.0400e-003**	**2.1100e-003**	**1.3000e-004**	**2.2300e-003**	**0.0000**	**9.3374**	**9.3374**	**4.1000e-004**	**0.0000**	**9.3476**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5420	0.0000	0.5420	0.2979	0.0000	0.2979	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1301	1.3672	0.6619	1.1400e-003		0.0717	0.0717		0.0660	0.0660	0.0000	102.5061	102.5061	0.0324	0.0000	103.3169
Total	**0.1301**	**1.3672**	**0.6619**	**1.1400e-003**	**0.5420**	**0.0717**	**0.6137**	**0.2979**	**0.0660**	**0.3639**	**0.0000**	**102.5061**	**102.5061**	**0.0324**	**0.0000**	**103.3169**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5900e-003	2.4400e-003	0.0211	5.0000e-005	5.2000e-003	4.0000e-005	5.2300e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.4881	4.4881	1.7000e-004	0.0000	4.4923
Total	**2.5900e-003**	**2.4400e-003**	**0.0211**	**5.0000e-005**	**5.2000e-003**	**4.0000e-005**	**5.2300e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.4881**	**4.4881**	**1.7000e-004**	**0.0000**	**4.4923**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5420	0.0000	0.5420	0.2979	0.0000	0.2979	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1301	1.3672	0.6619	1.1400e-003		0.0717	0.0717		0.0660	0.0660	0.0000	102.5059	102.5059	0.0324	0.0000	103.3167
Total	**0.1301**	**1.3672**	**0.6619**	**1.1400e-003**	**0.5420**	**0.0717**	**0.6137**	**0.2979**	**0.0660**	**0.3639**	**0.0000**	**102.5059**	**102.5059**	**0.0324**	**0.0000**	**103.3167**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5900e-003	2.4400e-003	0.0211	5.0000e-005	5.2000e-003	4.0000e-005	5.2300e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.4881	4.4881	1.7000e-004	0.0000	4.4923
Total	**2.5900e-003**	**2.4400e-003**	**0.0211**	**5.0000e-005**	**5.2000e-003**	**4.0000e-005**	**5.2300e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.4881**	**4.4881**	**1.7000e-004**	**0.0000**	**4.4923**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.6952	0.0000	0.6952	0.2822	0.0000	0.2822	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2298	2.6442	1.6188	3.0100e-003		0.1156	0.1156		0.1063	0.1063	0.0000	270.1514	270.1514	0.0855	0.0000	272.2882
Total	**0.2298**	**2.6442**	**1.6188**	**3.0100e-003**	**0.6952**	**0.1156**	**0.8108**	**0.2822**	**0.1063**	**0.3885**	**0.0000**	**270.1514**	**270.1514**	**0.0855**	**0.0000**	**272.2882**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1008	3.4409	0.7461	7.7900e-003	0.2421	0.0205	0.2626	0.0643	0.0196	0.0839	0.0000	760.2406	760.2406	0.0432	0.0000	761.3202
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6600e-003	4.3800e-003	0.0379	9.0000e-005	9.3400e-003	6.0000e-005	9.4000e-003	2.4800e-003	6.0000e-005	2.5400e-003	0.0000	8.0619	8.0619	3.0000e-004	0.0000	8.0694
Total	**0.1055**	**3.4453**	**0.7840**	**7.8800e-003**	**0.2514**	**0.0205**	**0.2720**	**0.0668**	**0.0197**	**0.0864**	**0.0000**	**768.3026**	**768.3026**	**0.0435**	**0.0000**	**769.3896**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.6952	0.0000	0.6952	0.2822	0.0000	0.2822	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2298	2.6442	1.6188	3.0100e-003		0.1156	0.1156		0.1063	0.1063	0.0000	270.1511	270.1511	0.0855	0.0000	272.2879
Total	**0.2298**	**2.6442**	**1.6188**	**3.0100e-003**	**0.6952**	**0.1156**	**0.8108**	**0.2822**	**0.1063**	**0.3885**	**0.0000**	**270.1511**	**270.1511**	**0.0855**	**0.0000**	**272.2879**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1008	3.4409	0.7461	7.7900e-003	0.2421	0.0205	0.2626	0.0643	0.0196	0.0839	0.0000	760.2406	760.2406	0.0432	0.0000	761.3202
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6600e-003	4.3800e-003	0.0379	9.0000e-005	9.3400e-003	6.0000e-005	9.4000e-003	2.4800e-003	6.0000e-005	2.5400e-003	0.0000	8.0619	8.0619	3.0000e-004	0.0000	8.0694
Total	**0.1055**	**3.4453**	**0.7840**	**7.8800e-003**	**0.2514**	**0.0205**	**0.2720**	**0.0668**	**0.0197**	**0.0864**	**0.0000**	**768.3026**	**768.3026**	**0.0435**	**0.0000**	**769.3896**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.6952	0.0000	0.6952	0.2822	0.0000	0.2822	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1291	1.4557	0.9268	1.8000e-003		0.0630	0.0630		0.0580	0.0580	0.0000	158.0045	158.0045	0.0511	0.0000	159.2820
Total	**0.1291**	**1.4557**	**0.9268**	**1.8000e-003**	**0.6952**	**0.0630**	**0.7583**	**0.2822**	**0.0580**	**0.3402**	**0.0000**	**158.0045**	**158.0045**	**0.0511**	**0.0000**	**159.2820**

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0509	1.8842	0.4094	4.6100e-003	0.2255	8.2100e-003	0.2337	0.0583	7.8600e-003	0.0661	0.0000	450.6201	450.6201	0.0255	0.0000	451.2583
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5400e-003	2.3000e-003	0.0200	5.0000e-005	5.5800e-003	4.0000e-005	5.6200e-003	1.4800e-003	3.0000e-005	1.5200e-003	0.0000	4.6714	4.6714	1.5000e-004	0.0000	4.6752
Total	**0.0534**	**1.8865**	**0.4293**	**4.6600e-003**	**0.2311**	**8.2500e-003**	**0.2393**	**0.0597**	**7.8900e-003**	**0.0676**	**0.0000**	**455.2915**	**455.2915**	**0.0257**	**0.0000**	**455.9335**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.6952	0.0000	0.6952	0.2822	0.0000	0.2822	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1291	1.4557	0.9268	1.8000e-003		0.0630	0.0630		0.0580	0.0580	0.0000	158.0043	158.0043	0.0511	0.0000	159.2818
Total	**0.1291**	**1.4557**	**0.9268**	**1.8000e-003**	**0.6952**	**0.0630**	**0.7583**	**0.2822**	**0.0580**	**0.3402**	**0.0000**	**158.0043**	**158.0043**	**0.0511**	**0.0000**	**159.2818**

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0509	1.8842	0.4094	4.6100e-003	0.2255	8.2100e-003	0.2337	0.0583	7.8600e-003	0.0661	0.0000	450.6201	450.6201	0.0255	0.0000	451.2583
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5400e-003	2.3000e-003	0.0200	5.0000e-005	5.5800e-003	4.0000e-005	5.6200e-003	1.4800e-003	3.0000e-005	1.5200e-003	0.0000	4.6714	4.6714	1.5000e-004	0.0000	4.6752
Total	**0.0534**	**1.8865**	**0.4293**	**4.6600e-003**	**0.2311**	**8.2500e-003**	**0.2393**	**0.0597**	**7.8900e-003**	**0.0676**	**0.0000**	**455.2915**	**455.2915**	**0.0257**	**0.0000**	**455.9335**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2162	1.9570	1.7186	2.7500e-003		0.1139	0.1139		0.1071	0.1071	0.0000	236.2422	236.2422	0.0576	0.0000	237.6831
Total	**0.2162**	**1.9570**	**1.7186**	**2.7500e-003**		**0.1139**	**0.1139**		**0.1071**	**0.1071**	**0.0000**	**236.2422**	**236.2422**	**0.0576**	**0.0000**	**237.6831**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0941	2.6332	0.7978	5.0400e-003	0.1149	0.0144	0.1293	0.0332	0.0137	0.0469	0.0000	486.6658	486.6658	0.0293	0.0000	487.3976
Worker	0.3395	0.3084	2.6699	6.9200e-003	0.7473	4.9100e-003	0.7522	0.1986	4.5300e-003	0.2031	0.0000	625.1739	625.1739	0.0206	0.0000	625.6884
Total	**0.4335**	**2.9416**	**3.4677**	**0.0120**	**0.8622**	**0.0193**	**0.8815**	**0.2318**	**0.0183**	**0.2501**	**0.0000**	**1,111.8397**	**1,111.8397**	**0.0499**	**0.0000**	**1,113.0860**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2162	1.9570	1.7185	2.7500e-003		0.1139	0.1139		0.1071	0.1071	0.0000	236.2419	236.2419	0.0576	0.0000	237.6828
Total	**0.2162**	**1.9570**	**1.7185**	**2.7500e-003**		**0.1139**	**0.1139**		**0.1071**	**0.1071**	**0.0000**	**236.2419**	**236.2419**	**0.0576**	**0.0000**	**237.6828**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0941	2.6332	0.7978	5.0400e-003	0.1149	0.0144	0.1293	0.0332	0.0137	0.0469	0.0000	486.6658	486.6658	0.0293	0.0000	487.3976
Worker	0.3395	0.3084	2.6699	6.9200e-003	0.7473	4.9100e-003	0.7522	0.1986	4.5300e-003	0.2031	0.0000	625.1739	625.1739	0.0206	0.0000	625.6884
Total	**0.4335**	**2.9416**	**3.4677**	**0.0120**	**0.8622**	**0.0193**	**0.8815**	**0.2318**	**0.0183**	**0.2501**	**0.0000**	**1,111.8397**	**1,111.8397**	**0.0499**	**0.0000**	**1,113.0860**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2481	2.2749	2.1631	3.5100e-003		0.1251	0.1251		0.1176	0.1176	0.0000	302.2867	302.2867	0.0729	0.0000	304.1099
Total	**0.2481**	**2.2749**	**2.1631**	**3.5100e-003**		**0.1251**	**0.1251**		**0.1176**	**0.1176**	**0.0000**	**302.2867**	**302.2867**	**0.0729**	**0.0000**	**304.1099**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0987	3.0807	0.9027	6.4000e-003	0.1470	8.7900e-003	0.1558	0.0425	8.4100e-003	0.0509	0.0000	618.9137	618.9137	0.0365	0.0000	619.8262
Worker	0.4048	0.3528	3.0960	8.5500e-003	0.9561	6.0800e-003	0.9622	0.2541	5.6100e-003	0.2597	0.0000	772.5948	772.5948	0.0234	0.0000	773.1797
Total	**0.5034**	**3.4335**	**3.9988**	**0.0150**	**1.1031**	**0.0149**	**1.1180**	**0.2966**	**0.0140**	**0.3106**	**0.0000**	**1,391.5085**	**1,391.5085**	**0.0599**	**0.0000**	**1,393.0059**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2481	2.2749	2.1631	3.5100e-003		0.1251	0.1251		0.1176	0.1176	0.0000	302.2863	302.2863	0.0729	0.0000	304.1095
Total	**0.2481**	**2.2749**	**2.1631**	**3.5100e-003**		**0.1251**	**0.1251**		**0.1176**	**0.1176**	**0.0000**	**302.2863**	**302.2863**	**0.0729**	**0.0000**	**304.1095**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0987	3.0807	0.9027	6.4000e-003	0.1470	8.7900e-003	0.1558	0.0425	8.4100e-003	0.0509	0.0000	618.9137	618.9137	0.0365	0.0000	619.8262
Worker	0.4048	0.3528	3.0960	8.5500e-003	0.9561	6.0800e-003	0.9622	0.2541	5.6100e-003	0.2597	0.0000	772.5948	772.5948	0.0234	0.0000	773.1797
Total	**0.5034**	**3.4335**	**3.9988**	**0.0150**	**1.1031**	**0.0149**	**1.1180**	**0.2966**	**0.0140**	**0.3106**	**0.0000**	**1,391.5085**	**1,391.5085**	**0.0599**	**0.0000**	**1,393.0059**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2428	301.2428	0.0722	0.0000	303.0471
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2428**	**301.2428**	**0.0722**	**0.0000**	**303.0471**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0909	2.9161	0.8301	6.3300e-003	0.1465	7.7100e-003	0.1542	0.0423	7.3700e-003	0.0497	0.0000	612.3426	612.3426	0.0359	0.0000	613.2403
Worker	0.3786	0.3160	2.8253	8.2100e-003	0.9524	5.8900e-003	0.9583	0.2531	5.4300e-003	0.2585	0.0000	742.1247	742.1247	0.0209	0.0000	742.6468
Total	**0.4695**	**3.2321**	**3.6554**	**0.0145**	**1.0989**	**0.0136**	**1.1125**	**0.2954**	**0.0128**	**0.3082**	**0.0000**	**1,354.4673**	**1,354.4673**	**0.0568**	**0.0000**	**1,355.8871**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2425	301.2425	0.0722	0.0000	303.0467
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2425**	**301.2425**	**0.0722**	**0.0000**	**303.0467**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0909	2.9161	0.8301	6.3300e-003	0.1465	7.7100e-003	0.1542	0.0423	7.3700e-003	0.0497	0.0000	612.3426	612.3426	0.0359	0.0000	613.2403
Worker	0.3786	0.3160	2.8253	8.2100e-003	0.9524	5.8900e-003	0.9583	0.2531	5.4300e-003	0.2585	0.0000	742.1247	742.1247	0.0209	0.0000	742.6468
Total	**0.4695**	**3.2321**	**3.6554**	**0.0145**	**1.0989**	**0.0136**	**1.1125**	**0.2954**	**0.0128**	**0.3082**	**0.0000**	**1,354.4673**	**1,354.4673**	**0.0568**	**0.0000**	**1,355.8871**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3462	301.3462	0.0717	0.0000	303.1383
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3462**	**301.3462**	**0.0717**	**0.0000**	**303.1383**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0694	2.4044	0.7293	6.2200e-003	0.1465	3.5700e-003	0.1501	0.0423	3.4100e-003	0.0458	0.0000	602.2776	602.2776	0.0319	0.0000	603.0760
Worker	0.3557	0.2841	2.5800	7.9000e-003	0.9524	5.7300e-003	0.9582	0.2531	5.2900e-003	0.2584	0.0000	714.2912	714.2912	0.0186	0.0000	714.7573
Total	**0.4251**	**2.6885**	**3.3092**	**0.0141**	**1.0989**	**9.3000e-003**	**1.1083**	**0.2955**	**8.7000e-003**	**0.3042**	**0.0000**	**1,316.5688**	**1,316.5688**	**0.0506**	**0.0000**	**1,317.8333**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3458	301.3458	0.0717	0.0000	303.1380
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3458**	**301.3458**	**0.0717**	**0.0000**	**303.1380**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0694	2.4044	0.7293	6.2200e-003	0.1465	3.5700e-003	0.1501	0.0423	3.4100e-003	0.0458	0.0000	602.2776	602.2776	0.0319	0.0000	603.0760
Worker	0.3557	0.2841	2.5800	7.9000e-003	0.9524	5.7300e-003	0.9582	0.2531	5.2900e-003	0.2584	0.0000	714.2912	714.2912	0.0186	0.0000	714.7573
Total	**0.4251**	**2.6885**	**3.3092**	**0.0141**	**1.0989**	**9.3000e-003**	**1.1083**	**0.2955**	**8.7000e-003**	**0.3042**	**0.0000**	**1,316.5688**	**1,316.5688**	**0.0506**	**0.0000**	**1,317.8333**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7223**	**303.7223**	**0.0718**	**0.0000**	**305.5179**

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0663	2.3683	0.6908	6.2200e-003	0.1477	3.3200e-003	0.1510	0.0427	3.1700e-003	0.0459	0.0000	603.5830	603.5830	0.0324	0.0000	604.3917
Worker	0.3379	0.2583	2.3965	7.6500e-003	0.9597	5.6400e-003	0.9654	0.2551	5.2000e-003	0.2603	0.0000	691.8029	691.8029	0.0169	0.0000	692.2244
Total	**0.4042**	**2.6266**	**3.0872**	**0.0139**	**1.1074**	**8.9600e-003**	**1.1164**	**0.2977**	**8.3700e-003**	**0.3061**	**0.0000**	**1,295.3859**	**1,295.3859**	**0.0492**	**0.0000**	**1,296.6160**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7220**	**303.7220**	**0.0718**	**0.0000**	**305.5175**

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0663	2.3683	0.6908	6.2200e-003	0.1477	3.3200e-003	0.1510	0.0427	3.1700e-003	0.0459	0.0000	603.5830	603.5830	0.0324	0.0000	604.3917
Worker	0.3379	0.2583	2.3965	7.6500e-003	0.9597	5.6400e-003	0.9654	0.2551	5.2000e-003	0.2603	0.0000	691.8029	691.8029	0.0169	0.0000	692.2244
Total	**0.4042**	**2.6266**	**3.0872**	**0.0139**	**1.1074**	**8.9600e-003**	**1.1164**	**0.2977**	**8.3700e-003**	**0.3061**	**0.0000**	**1,295.3859**	**1,295.3859**	**0.0492**	**0.0000**	**1,296.6160**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0630	2.3091	0.6536	6.1600e-003	0.1471	3.0500e-003	0.1502	0.0425	2.9100e-003	0.0454	0.0000	598.1500	598.1500	0.0324	0.0000	598.9591
Worker	0.3185	0.2330	2.2004	7.3100e-003	0.9561	5.5000e-003	0.9616	0.2541	5.0700e-003	0.2592	0.0000	661.5431	661.5431	0.0151	0.0000	661.9210
Total	**0.3815**	**2.5421**	**2.8540**	**0.0135**	**1.1032**	**8.5500e-003**	**1.1118**	**0.2966**	**7.9800e-003**	**0.3046**	**0.0000**	**1,259.6931**	**1,259.6931**	**0.0475**	**0.0000**	**1,260.8801**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0630	2.3091	0.6536	6.1600e-003	0.1471	3.0500e-003	0.1502	0.0425	2.9100e-003	0.0454	0.0000	598.1500	598.1500	0.0324	0.0000	598.9591
Worker	0.3185	0.2330	2.2004	7.3100e-003	0.9561	5.5000e-003	0.9616	0.2541	5.0700e-003	0.2592	0.0000	661.5431	661.5431	0.0151	0.0000	661.9210
Total	**0.3815**	**2.5421**	**2.8540**	**0.0135**	**1.1032**	**8.5500e-003**	**1.1118**	**0.2966**	**7.9800e-003**	**0.3046**	**0.0000**	**1,259.6931**	**1,259.6931**	**0.0475**	**0.0000**	**1,260.8801**

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0287	0.2619	0.3378	5.7000e-004		0.0111	0.0111		0.0104	0.0104	0.0000	48.7031	48.7031	0.0115	0.0000	48.9893
Total	**0.0287**	**0.2619**	**0.3378**	**5.7000e-004**		**0.0111**	**0.0111**		**0.0104**	**0.0104**	**0.0000**	**48.7031**	**48.7031**	**0.0115**	**0.0000**	**48.9893**

3.5 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.7000e-003	0.3644	0.1005	9.9000e-004	0.0237	4.6000e-004	0.0241	6.8400e-003	4.4000e-004	7.2800e-003	0.0000	95.7822	95.7822	5.2300e-003	0.0000	95.9129
Worker	0.0487	0.0342	0.3284	1.1300e-003	0.1539	8.6000e-004	0.1547	0.0409	7.9000e-004	0.0417	0.0000	102.5013	102.5013	2.2000e-003	0.0000	102.5564
Total	**0.0584**	**0.3985**	**0.4290**	**2.1200e-003**	**0.1775**	**1.3200e-003**	**0.1789**	**0.0477**	**1.2300e-003**	**0.0490**	**0.0000**	**198.2835**	**198.2835**	**7.4300e-003**	**0.0000**	**198.4693**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0287	0.2619	0.3378	5.7000e-004		0.0111	0.0111		0.0104	0.0104	0.0000	48.7030	48.7030	0.0115	0.0000	48.9892
Total	**0.0287**	**0.2619**	**0.3378**	**5.7000e-004**		**0.0111**	**0.0111**		**0.0104**	**0.0104**	**0.0000**	**48.7030**	**48.7030**	**0.0115**	**0.0000**	**48.9892**

3.5 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.7000e-003	0.3644	0.1005	9.9000e-004	0.0237	4.6000e-004	0.0241	6.8400e-003	4.4000e-004	7.2800e-003	0.0000	95.7822	95.7822	5.2300e-003	0.0000	95.9129
Worker	0.0487	0.0342	0.3284	1.1300e-003	0.1539	8.6000e-004	0.1547	0.0409	7.9000e-004	0.0417	0.0000	102.5013	102.5013	2.2000e-003	0.0000	102.5564
Total	**0.0584**	**0.3985**	**0.4290**	**2.1200e-003**	**0.1775**	**1.3200e-003**	**0.1789**	**0.0477**	**1.2300e-003**	**0.0490**	**0.0000**	**198.2835**	**198.2835**	**7.4300e-003**	**0.0000**	**198.4693**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.4791					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.5800e-003	0.0652	0.0906	1.5000e-004		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	12.7663	12.7663	7.6000e-004	0.0000	12.7854
Total	**2.4887**	**0.0652**	**0.0906**	**1.5000e-004**		**3.5400e-003**	**3.5400e-003**		**3.5400e-003**	**3.5400e-003**	**0.0000**	**12.7663**	**12.7663**	**7.6000e-004**	**0.0000**	**12.7854**

3.6 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0273	0.0218	0.1982	6.1000e-004	0.0732	4.4000e-004	0.0736	0.0194	4.1000e-004	0.0199	0.0000	54.8733	54.8733	1.4300e-003	0.0000	54.9091
Total	**0.0273**	**0.0218**	**0.1982**	**6.1000e-004**	**0.0732**	**4.4000e-004**	**0.0736**	**0.0194**	**4.1000e-004**	**0.0199**	**0.0000**	**54.8733**	**54.8733**	**1.4300e-003**	**0.0000**	**54.9091**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.4791					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.5800e-003	0.0652	0.0906	1.5000e-004		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	12.7663	12.7663	7.6000e-004	0.0000	12.7854
Total	**2.4887**	**0.0652**	**0.0906**	**1.5000e-004**		**3.5400e-003**	**3.5400e-003**		**3.5400e-003**	**3.5400e-003**	**0.0000**	**12.7663**	**12.7663**	**7.6000e-004**	**0.0000**	**12.7854**

3.6 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0273	0.0218	0.1982	6.1000e-004	0.0732	4.4000e-004	0.0736	0.0194	4.1000e-004	0.0199	0.0000	54.8733	54.8733	1.4300e-003	0.0000	54.9091
Total	**0.0273**	**0.0218**	**0.1982**	**6.1000e-004**	**0.0732**	**4.4000e-004**	**0.0736**	**0.0194**	**4.1000e-004**	**0.0199**	**0.0000**	**54.8733**	**54.8733**	**1.4300e-003**	**0.0000**	**54.9091**

3.6 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.4954					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0237	0.1597	0.2371	3.9000e-004		7.9800e-003	7.9800e-003		7.9800e-003	7.9800e-003	0.0000	33.4476	33.4476	1.8800e-003	0.0000	33.4947
Total	**6.5190**	**0.1597**	**0.2371**	**3.9000e-004**		**7.9800e-003**	**7.9800e-003**		**7.9800e-003**	**7.9800e-003**	**0.0000**	**33.4476**	**33.4476**	**1.8800e-003**	**0.0000**	**33.4947**

3.6 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0675	0.0516	0.4787	1.5300e-003	0.1917	1.1300e-003	0.1928	0.0509	1.0400e-003	0.0520	0.0000	138.1788	138.1788	3.3700e-003	0.0000	138.2629
Total	**0.0675**	**0.0516**	**0.4787**	**1.5300e-003**	**0.1917**	**1.1300e-003**	**0.1928**	**0.0509**	**1.0400e-003**	**0.0520**	**0.0000**	**138.1788**	**138.1788**	**3.3700e-003**	**0.0000**	**138.2629**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.4954					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0237	0.1597	0.2371	3.9000e-004		7.9800e-003	7.9800e-003		7.9800e-003	7.9800e-003	0.0000	33.4476	33.4476	1.8800e-003	0.0000	33.4947
Total	**6.5190**	**0.1597**	**0.2371**	**3.9000e-004**		**7.9800e-003**	**7.9800e-003**		**7.9800e-003**	**7.9800e-003**	**0.0000**	**33.4476**	**33.4476**	**1.8800e-003**	**0.0000**	**33.4947**

3.6 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0675	0.0516	0.4787	1.5300e-003	0.1917	1.1300e-003	0.1928	0.0509	1.0400e-003	0.0520	0.0000	138.1788	138.1788	3.3700e-003	0.0000	138.2629
Total	**0.0675**	**0.0516**	**0.4787**	**1.5300e-003**	**0.1917**	**1.1300e-003**	**0.1928**	**0.0509**	**1.0400e-003**	**0.0520**	**0.0000**	**138.1788**	**138.1788**	**3.3700e-003**	**0.0000**	**138.2629**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.4706					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3200	33.3200	1.8200e-003	0.0000	33.3654
Total	**6.4929**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3200**	**33.3200**	**1.8200e-003**	**0.0000**	**33.3654**

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0636	0.0465	0.4395	1.4600e-003	0.1910	1.1000e-003	0.1921	0.0508	1.0100e-003	0.0518	0.0000	132.1348	132.1348	3.0200e-003	0.0000	132.2102
Total	**0.0636**	**0.0465**	**0.4395**	**1.4600e-003**	**0.1910**	**1.1000e-003**	**0.1921**	**0.0508**	**1.0100e-003**	**0.0518**	**0.0000**	**132.1348**	**132.1348**	**3.0200e-003**	**0.0000**	**132.2102**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.4706					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3199	33.3199	1.8200e-003	0.0000	33.3654
Total	**6.4929**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3199**	**33.3199**	**1.8200e-003**	**0.0000**	**33.3654**

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0636	0.0465	0.4395	1.4600e-003	0.1910	1.1000e-003	0.1921	0.0508	1.0100e-003	0.0518	0.0000	132.1348	132.1348	3.0200e-003	0.0000	132.2102
Total	**0.0636**	**0.0465**	**0.4395**	**1.4600e-003**	**0.1910**	**1.1000e-003**	**0.1921**	**0.0508**	**1.0100e-003**	**0.0518**	**0.0000**	**132.1348**	**132.1348**	**3.0200e-003**	**0.0000**	**132.2102**

3.6 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.7683					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0130	0.0871	0.1375	2.3000e-004		3.9100e-003	3.9100e-003		3.9100e-003	3.9100e-003	0.0000	19.4047	19.4047	1.0600e-003	0.0000	19.4312
Total	**3.7813**	**0.0871**	**0.1375**	**2.3000e-004**		**3.9100e-003**	**3.9100e-003**		**3.9100e-003**	**3.9100e-003**	**0.0000**	**19.4047**	**19.4047**	**1.0600e-003**	**0.0000**	**19.4312**

3.6 Architectural Coating - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0352	0.0247	0.2374	8.2000e-004	0.1112	6.2000e-004	0.1118	0.0296	5.7000e-004	0.0301	0.0000	74.0939	74.0939	1.5900e-003	0.0000	74.1337
Total	**0.0352**	**0.0247**	**0.2374**	**8.2000e-004**	**0.1112**	**6.2000e-004**	**0.1118**	**0.0296**	**5.7000e-004**	**0.0301**	**0.0000**	**74.0939**	**74.0939**	**1.5900e-003**	**0.0000**	**74.1337**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.7683					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0130	0.0871	0.1375	2.3000e-004		3.9100e-003	3.9100e-003		3.9100e-003	3.9100e-003	0.0000	19.4047	19.4047	1.0600e-003	0.0000	19.4312
Total	**3.7813**	**0.0871**	**0.1375**	**2.3000e-004**		**3.9100e-003**	**3.9100e-003**		**3.9100e-003**	**3.9100e-003**	**0.0000**	**19.4047**	**19.4047**	**1.0600e-003**	**0.0000**	**19.4312**

3.6 Architectural Coating - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0352	0.0247	0.2374	8.2000e-004	0.1112	6.2000e-004	0.1118	0.0296	5.7000e-004	0.0301	0.0000	74.0939	74.0939	1.5900e-003	0.0000	74.1337
Total	**0.0352**	**0.0247**	**0.2374**	**8.2000e-004**	**0.1112**	**6.2000e-004**	**0.1118**	**0.0296**	**5.7000e-004**	**0.0301**	**0.0000**	**74.0939**	**74.0939**	**1.5900e-003**	**0.0000**	**74.1337**

3.7 Paving - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0503	0.4720	0.8018	1.2500e-003		0.0230	0.0230		0.0212	0.0212	0.0000	110.1059	110.1059	0.0356	0.0000	110.9962
Paving	0.0179					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0682**	**0.4720**	**0.8018**	**1.2500e-003**		**0.0230**	**0.0230**		**0.0212**	**0.0212**	**0.0000**	**110.1059**	**110.1059**	**0.0356**	**0.0000**	**110.9962**

3.7 Paving - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5200e-003	1.7600e-003	0.0170	6.0000e-005	7.9400e-003	4.0000e-005	7.9900e-003	2.1100e-003	4.0000e-005	2.1500e-003	0.0000	5.2915	5.2915	1.1000e-004	0.0000	5.2944
Total	**2.5200e-003**	**1.7600e-003**	**0.0170**	**6.0000e-005**	**7.9400e-003**	**4.0000e-005**	**7.9900e-003**	**2.1100e-003**	**4.0000e-005**	**2.1500e-003**	**0.0000**	**5.2915**	**5.2915**	**1.1000e-004**	**0.0000**	**5.2944**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0503	0.4720	0.8018	1.2500e-003		0.0230	0.0230		0.0212	0.0212	0.0000	110.1058	110.1058	0.0356	0.0000	110.9960
Paving	0.0179					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0682**	**0.4720**	**0.8018**	**1.2500e-003**		**0.0230**	**0.0230**		**0.0212**	**0.0212**	**0.0000**	**110.1058**	**110.1058**	**0.0356**	**0.0000**	**110.9960**

3.7 Paving - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5200e-003	1.7600e-003	0.0170	6.0000e-005	7.9400e-003	4.0000e-005	7.9900e-003	2.1100e-003	4.0000e-005	2.1500e-003	0.0000	5.2915	5.2915	1.1000e-004	0.0000	5.2944
Total	**2.5200e-003**	**1.7600e-003**	**0.0170**	**6.0000e-005**	**7.9400e-003**	**4.0000e-005**	**7.9900e-003**	**2.1100e-003**	**4.0000e-005**	**2.1500e-003**	**0.0000**	**5.2915**	**5.2915**	**1.1000e-004**	**0.0000**	**5.2944**

Mitigated CalEEMod Results

SLR Compressed Schedule

San Luis Obispo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	100.00	1000sqft	4.20	100,000.00	0
Parking Lot	13.66	Acre	13.66	595,029.60	0
Hotel	200.00	Room	3.50	290,400.00	0
Apartments Mid Rise	280.00	Dwelling Unit	17.00	280,000.00	801
Single Family Housing	300.00	Dwelling Unit	25.00	540,000.00	858
Regional Shopping Center	150.00	1000sqft	12.00	150,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.2	**Precipitation Freq (Days)**	44
Climate Zone	4			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - source: Build-out phasing plan

Construction Phase - Schedule compressed into one year

Demolition -

Grading -

Architectural Coating - Per MM AQ-2

Vehicle Trips - Trip generation rate based on Omni-Means 2016 Traffic Impact Study.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Woodstoves - Per MM AQ-3

Energy Use -

Construction Off-road Equipment Mitigation - per MM AQ-2

Area Mitigation -

Off-road Equipment - proportionally updated to reflect compressed schedule

Off-road Equipment - proportionally updated to reflect compressed schedule

Off-road Equipment - proportionally updated to reflect compressed schedule

Off-road Equipment - proportionally updated to reflect compressed schedule

Off-road Equipment - proportionally updated to reflect compressed schedule

Off-road Equipment - proportionally updated to reflect compressed schedule

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00
tblArchitecturalCoating	EF_Parking	150.00	50.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	50.00

tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
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tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblGrading	MaterialImported	0.00	250,480.00
tblLandUse	LotAcreage	2.30	4.20
tblLandUse	LotAcreage	6.67	3.50
tblLandUse	LotAcreage	7.37	17.00
tblLandUse	LotAcreage	97.40	25.00
tblLandUse	LotAcreage	3.44	12.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	10.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	30.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	16.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	24.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	11.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	11.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	11.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	20.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	13.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	16.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	24.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	16.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	17.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblVehicleTrips	ST_TR	6.39	5.29
tblVehicleTrips	ST_TR	2.46	2.68
tblVehicleTrips	ST_TR	8.19	4.86
tblVehicleTrips	ST_TR	49.97	10.38
tblVehicleTrips	ST_TR	9.91	5.29
tblVehicleTrips	SU_TR	5.86	4.61
tblVehicleTrips	SU_TR	1.05	1.14
tblVehicleTrips	SU_TR	5.95	3.52
tblVehicleTrips	SU_TR	25.24	5.24
tblVehicleTrips	SU_TR	8.62	4.61
tblVehicleTrips	WD_TR	6.65	5.09
tblVehicleTrips	WD_TR	11.03	12.00
tblVehicleTrips	WD_TR	8.17	4.85

tblVehicleTrips	WD_TR	42.70	8.87
tblVehicleTrips	WD_TR	9.52	5.09
tblWoodstoves	WoodstoveDayYear	60.00	0.00
tblWoodstoves	WoodstoveDayYear	60.00	0.00
tblWoodstoves	WoodstoveWoodMass	2,016.00	0.00
tblWoodstoves	WoodstoveWoodMass	2,016.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	7.2571	34.1607	24.6159	0.0563	1.4131	1.5142	2.9272	0.4256	1.4203	1.8459	0.0000	5,133.5082	5,133.5082	0.8370	0.0000	5,154.4333
Maximum	**7.2571**	**34.1607**	**24.6159**	**0.0563**	**1.4131**	**1.5142**	**2.9272**	**0.4256**	**1.4203**	**1.8459**	**0.0000**	**5,133.5082**	**5,133.5082**	**0.8370**	**0.0000**	**5,154.4333**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	5.3220	24.7732	25.7364	0.0563	1.2782	0.5356	1.8138	0.3649	0.5328	0.8977	0.0000	5,133.5049	5,133.5049	0.8370	0.0000	5,154.4300
Maximum	**5.3220**	**24.7732**	**25.7364**	**0.0563**	**1.2782**	**0.5356**	**1.8138**	**0.3649**	**0.5328**	**0.8977**	**0.0000**	**5,133.5049**	**5,133.5049**	**0.8370**	**0.0000**	**5,154.4300**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**26.67**	**27.48**	**-4.55**	**0.00**	**9.54**	**64.63**	**38.04**	**14.26**	**62.49**	**51.37**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

SLR Compressed Schedule - San Luis Obispo County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2019	3-31-2019	15.2068	10.6271
2	4-1-2019	6-30-2019	7.2578	5.0374
3	7-1-2019	9-30-2019	8.8382	6.5092
		Highest	15.2068	10.6271

3.0 Construction Detail

Construction Phase

SLR Compressed Schedule - San Luis Obispo County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/14/2019	5	10	
2	Site Preparation	Site Preparation	1/15/2019	2/1/2019	5	14	
3	Grading	Grading	2/4/2019	3/1/2019	5	20	
4	Building Construction	Building Construction	3/4/2019	11/29/2019	5	195	
5	Architectural Coating	Architectural Coating	8/19/2019	12/31/2019	5	97	
6	Paving	Paving	12/2/2019	12/27/2019	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 50

Acres of Paving: 13.66

Residential Indoor: 1,660,500; Residential Outdoor: 553,500; Non-Residential Indoor: 810,600; Non-Residential Outdoor: 270,200; Striped Parking Area: 35,702 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	10	8.00	81	0.73
Demolition	Excavators	30	8.00	158	0.38
Demolition	Rubber Tired Dozers	20	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	13	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	17	8.00	97	0.37
Grading	Excavators	16	8.00	158	0.38
Grading	Graders	8	8.00	187	0.41
Grading	Rubber Tired Dozers	8	8.00	247	0.40
Grading	Scrapers	16	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	16	8.00	97	0.37
Building Construction	Cranes	8	7.00	231	0.29
Building Construction	Forklifts	24	8.00	89	0.20
Building Construction	Generator Sets	8	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	24	7.00	97	0.37
Building Construction	Welders	8	8.00	46	0.45
Architectural Coating	Air Compressors	8	6.00	78	0.48
Paving	Pavers	11	8.00	130	0.42
Paving	Paving Equipment	11	8.00	132	0.36
Paving	Rollers	11	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	80.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	31,310.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	761.00	248.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	152.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.9300e-003	0.0000	8.9300e-003	1.3500e-003	0.0000	1.3500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1757	1.7892	1.1030	1.9400e-003		0.0898	0.0898		0.0835	0.0835	0.0000	173.1316	173.1316	0.0482	0.0000	174.3357
Total	**0.1757**	**1.7892**	**1.1030**	**1.9400e-003**	**8.9300e-003**	**0.0898**	**0.0987**	**1.3500e-003**	**0.0835**	**0.0848**	**0.0000**	**173.1316**	**173.1316**	**0.0482**	**0.0000**	**174.3357**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1000e-004	0.0141	3.0500e-003	3.0000e-005	6.8000e-004	8.0000e-005	7.7000e-004	1.9000e-004	8.0000e-005	2.7000e-004	0.0000	3.1040	3.1040	1.8000e-004	0.0000	3.1084
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	3.4000e-004	2.9300e-003	1.0000e-005	7.2000e-004	0.0000	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6233	0.6233	2.0000e-005	0.0000	0.6239
Total	**7.7000e-004**	**0.0144**	**5.9800e-003**	**4.0000e-005**	**1.4000e-003**	**8.0000e-005**	**1.5000e-003**	**3.8000e-004**	**8.0000e-005**	**4.7000e-004**	**0.0000**	**3.7273**	**3.7273**	**2.0000e-004**	**0.0000**	**3.7323**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.0200e-003	0.0000	4.0200e-003	6.1000e-004	0.0000	6.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0462	0.9157	1.2337	1.9400e-003		0.0216	0.0216		0.0216	0.0216	0.0000	173.1314	173.1314	0.0482	0.0000	174.3355
Total	**0.0462**	**0.9157**	**1.2337**	**1.9400e-003**	**4.0200e-003**	**0.0216**	**0.0256**	**6.1000e-004**	**0.0216**	**0.0222**	**0.0000**	**173.1314**	**173.1314**	**0.0482**	**0.0000**	**174.3355**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1000e-004	0.0141	3.0500e-003	3.0000e-005	6.8000e-004	8.0000e-005	7.7000e-004	1.9000e-004	8.0000e-005	2.7000e-004	0.0000	3.1040	3.1040	1.8000e-004	0.0000	3.1084
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	3.4000e-004	2.9300e-003	1.0000e-005	7.2000e-004	0.0000	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6233	0.6233	2.0000e-005	0.0000	0.6239
Total	**7.7000e-004**	**0.0144**	**5.9800e-003**	**4.0000e-005**	**1.4000e-003**	**8.0000e-005**	**1.5000e-003**	**3.8000e-004**	**8.0000e-005**	**4.7000e-004**	**0.0000**	**3.7273**	**3.7273**	**2.0000e-004**	**0.0000**	**3.7323**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1265	0.0000	0.1265	0.0695	0.0000	0.0695	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1310	1.3769	0.6639	1.1500e-003		0.0721	0.0721		0.0664	0.0664	0.0000	102.9940	102.9940	0.0326	0.0000	103.8087
Total	**0.1310**	**1.3769**	**0.6639**	**1.1500e-003**	**0.1265**	**0.0721**	**0.1986**	**0.0695**	**0.0664**	**0.1359**	**0.0000**	**102.9940**	**102.9940**	**0.0326**	**0.0000**	**103.8087**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	5.7000e-004	4.9200e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0472	1.0472	4.0000e-005	0.0000	1.0482
Total	**6.1000e-004**	**5.7000e-004**	**4.9200e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0472**	**1.0472**	**4.0000e-005**	**0.0000**	**1.0482**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0569	0.0000	0.0569	0.0313	0.0000	0.0313	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0281	0.5743	0.6910	1.1500e-003		0.0142	0.0142		0.0142	0.0142	0.0000	102.9939	102.9939	0.0326	0.0000	103.8086
Total	**0.0281**	**0.5743**	**0.6910**	**1.1500e-003**	**0.0569**	**0.0142**	**0.0711**	**0.0313**	**0.0142**	**0.0455**	**0.0000**	**102.9939**	**102.9939**	**0.0326**	**0.0000**	**103.8086**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	5.7000e-004	4.9200e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0472	1.0472	4.0000e-005	0.0000	1.0482
Total	**6.1000e-004**	**5.7000e-004**	**4.9200e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0472**	**1.0472**	**4.0000e-005**	**0.0000**	**1.0482**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1098	0.0000	0.1098	0.0395	0.0000	0.0395	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3791	4.3616	2.6701	4.9600e-003		0.1906	0.1906		0.1754	0.1754	0.0000	445.6106	445.6106	0.1410	0.0000	449.1352
Total	**0.3791**	**4.3616**	**2.6701**	**4.9600e-003**	**0.1098**	**0.1906**	**0.3004**	**0.0395**	**0.1754**	**0.2148**	**0.0000**	**445.6106**	**445.6106**	**0.1410**	**0.0000**	**449.1352**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1611	5.4984	1.1922	0.0124	0.2668	0.0327	0.2995	0.0733	0.0313	0.1046	0.0000	1,214.8175	1,214.8175	0.0690	0.0000	1,216.5425
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.6000e-004	9.0000e-004	7.8200e-003	2.0000e-005	1.9300e-003	1.0000e-005	1.9400e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.6623	1.6623	6.0000e-005	0.0000	1.6638
Total	**0.1621**	**5.4993**	**1.2000**	**0.0125**	**0.2688**	**0.0327**	**0.3015**	**0.0738**	**0.0313**	**0.1051**	**0.0000**	**1,216.4798**	**1,216.4798**	**0.0691**	**0.0000**	**1,218.2063**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0494	0.0000	0.0494	0.0178	0.0000	0.0178	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1219	2.3983	2.9378	4.9600e-003		0.0520	0.0520		0.0520	0.0520	0.0000	445.6100	445.6100	0.1410	0.0000	449.1347
Total	**0.1219**	**2.3983**	**2.9378**	**4.9600e-003**	**0.0494**	**0.0520**	**0.1014**	**0.0178**	**0.0520**	**0.0697**	**0.0000**	**445.6100**	**445.6100**	**0.1410**	**0.0000**	**449.1347**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1611	5.4984	1.1922	0.0124	0.2668	0.0327	0.2995	0.0733	0.0313	0.1046	0.0000	1,214.8175	1,214.8175	0.0690	0.0000	1,216.5425
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.6000e-004	9.0000e-004	7.8200e-003	2.0000e-005	1.9300e-003	1.0000e-005	1.9400e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.6623	1.6623	6.0000e-005	0.0000	1.6638
Total	**0.1621**	**5.4993**	**1.2000**	**0.0125**	**0.2688**	**0.0327**	**0.3015**	**0.0738**	**0.0313**	**0.1051**	**0.0000**	**1,216.4798**	**1,216.4798**	**0.0691**	**0.0000**	**1,218.2063**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8417	16.4415	13.3878	0.0210		1.0061	1.0061		0.9459	0.9459	0.0000	1,833.8127	1,833.8127	0.4467	0.0000	1,844.9811
Total	**1.8417**	**16.4415**	**13.3878**	**0.0210**		**1.0061**	**1.0061**		**0.9459**	**0.9459**	**0.0000**	**1,833.8127**	**1,833.8127**	**0.4467**	**0.0000**	**1,844.9811**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1132	2.7580	0.8653	4.8300e-003	0.1098	0.0221	0.1319	0.0317	0.0211	0.0528	0.0000	465.8332	465.8332	0.0299	0.0000	466.5812
Worker	0.3564	0.3348	2.9000	6.8300e-003	0.7143	4.8500e-003	0.7192	0.1898	4.4800e-003	0.1943	0.0000	616.6747	616.6747	0.0230	0.0000	617.2494
Total	**0.4696**	**3.0928**	**3.7652**	**0.0117**	**0.8241**	**0.0269**	**0.8510**	**0.2216**	**0.0256**	**0.2472**	**0.0000**	**1,082.5079**	**1,082.5079**	**0.0529**	**0.0000**	**1,083.8305**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5256	11.0963	13.9415	0.0210		0.3524	0.3524		0.3524	0.3524	0.0000	1,833.8106	1,833.8106	0.4467	0.0000	1,844.9789
Total	**0.5256**	**11.0963**	**13.9415**	**0.0210**		**0.3524**	**0.3524**		**0.3524**	**0.3524**	**0.0000**	**1,833.8106**	**1,833.8106**	**0.4467**	**0.0000**	**1,844.9789**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1132	2.7580	0.8653	4.8300e-003	0.1098	0.0221	0.1319	0.0317	0.0211	0.0528	0.0000	465.8332	465.8332	0.0299	0.0000	466.5812
Worker	0.3564	0.3348	2.9000	6.8300e-003	0.7143	4.8500e-003	0.7192	0.1898	4.4800e-003	0.1943	0.0000	616.6747	616.6747	0.0230	0.0000	617.2494
Total	**0.4696**	**3.0928**	**3.7652**	**0.0117**	**0.8241**	**0.0269**	**0.8510**	**0.2216**	**0.0256**	**0.2472**	**0.0000**	**1,082.5079**	**1,082.5079**	**0.0529**	**0.0000**	**1,083.8305**

3.6 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.8592					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1034	0.7121	0.7144	1.1500e-003		0.0500	0.0500		0.0500	0.0500	0.0000	99.0663	99.0663	8.3700e-003	0.0000	99.2754
Total	**3.9626**	**0.7121**	**0.7144**	**1.1500e-003**		**0.0500**	**0.0500**		**0.0500**	**0.0500**	**0.0000**	**99.0663**	**99.0663**	**8.3700e-003**	**0.0000**	**99.2754**

3.6 Architectural Coating - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0354	0.0333	0.2881	6.8000e-004	0.0710	4.8000e-004	0.0715	0.0189	4.4000e-004	0.0193	0.0000	61.2706	61.2706	2.2800e-003	0.0000	61.3277
Total	**0.0354**	**0.0333**	**0.2881**	**6.8000e-004**	**0.0710**	**4.8000e-004**	**0.0715**	**0.0189**	**4.4000e-004**	**0.0193**	**0.0000**	**61.2706**	**61.2706**	**2.2800e-003**	**0.0000**	**61.3277**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.8592					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0231	0.5265	0.7110	1.1500e-003		0.0185	0.0185		0.0185	0.0185	0.0000	99.0661	99.0661	8.3700e-003	0.0000	99.2753
Total	**3.8823**	**0.5265**	**0.7110**	**1.1500e-003**		**0.0185**	**0.0185**		**0.0185**	**0.0185**	**0.0000**	**99.0661**	**99.0661**	**8.3700e-003**	**0.0000**	**99.2753**

3.6 Architectural Coating - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0354	0.0333	0.2881	6.8000e-004	0.0710	4.8000e-004	0.0715	0.0189	4.4000e-004	0.0193	0.0000	61.2706	61.2706	2.2800e-003	0.0000	61.3277
Total	**0.0354**	**0.0333**	**0.2881**	**6.8000e-004**	**0.0710**	**4.8000e-004**	**0.0715**	**0.0189**	**4.4000e-004**	**0.0193**	**0.0000**	**61.2706**	**61.2706**	**2.2800e-003**	**0.0000**	**61.3277**

3.7 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0800	0.8384	0.8066	1.2500e-003		0.0454	0.0454		0.0417	0.0417	0.0000	112.6135	112.6135	0.0356	0.0000	113.5042
Paving	0.0179					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0979**	**0.8384**	**0.8066**	**1.2500e-003**		**0.0454**	**0.0454**		**0.0417**	**0.0417**	**0.0000**	**112.6135**	**112.6135**	**0.0356**	**0.0000**	**113.5042**

3.7 Paving - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	6.8000e-004	5.8600e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2467	1.2467	5.0000e-005	0.0000	1.2479
Total	**7.2000e-004**	**6.8000e-004**	**5.8600e-003**	**1.0000e-005**	**1.4400e-003**	**1.0000e-005**	**1.4500e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.2467**	**1.2467**	**5.0000e-005**	**0.0000**	**1.2479**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0309	0.6212	0.9513	1.2500e-003		0.0168	0.0168		0.0168	0.0168	0.0000	112.6134	112.6134	0.0356	0.0000	113.5041
Paving	0.0179					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0487**	**0.6212**	**0.9513**	**1.2500e-003**		**0.0168**	**0.0168**		**0.0168**	**0.0168**	**0.0000**	**112.6134**	**112.6134**	**0.0356**	**0.0000**	**113.5041**

3.7 Paving - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.2000e-004	6.8000e-004	5.8600e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2467	1.2467	5.0000e-005	0.0000	1.2479
Total	**7.2000e-004**	**6.8000e-004**	**5.8600e-003**	**1.0000e-005**	**1.4400e-003**	**1.0000e-005**	**1.4500e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.2467**	**1.2467**	**5.0000e-005**	**0.0000**	**1.2479**

SLR Default Schedule

San Luis Obispo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	100.00	1000sqft	4.20	100,000.00	0
Parking Lot	13.66	Acre	13.66	595,029.60	0
Hotel	200.00	Room	3.50	290,400.00	0
Apartments Mid Rise	280.00	Dwelling Unit	17.00	280,000.00	801
Single Family Housing	300.00	Dwelling Unit	25.00	540,000.00	858
Regional Shopping Center	150.00	1000sqft	12.00	150,000.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 3.2 **Precipitation Freq (Days)** 44

Climate Zone 4 **Operational Year** 2027

Utility Company Pacific Gas & Electric Company

CO2 Intensity (lb/MWhr) 641.35 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Applicant provided information

Land Use - source: Build-out phasing plan

Construction Phase - Updated arch coating to reflect more accurate construction schedule

Demolition -

Grading -

Architectural Coating - Per MM AQ-2

Vehicle Trips - Trip generation rate based on Omni-Means 2016 Traffic Impact Study.

Woodstoves - Per MM AQ-3

Energy Use -

Construction Off-road Equipment Mitigation - per MM AQ-2

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00
tblArchitecturalCoating	EF_Parking	150.00	50.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	50.00
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2

tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	DPF	No Change	Level 2
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblGrading	MaterialExported	0.00	250,480.00
tblLandUse	LotAcreage	2.30	4.20
tblLandUse	LotAcreage	6.67	3.50
tblLandUse	LotAcreage	7.37	17.00
tblLandUse	LotAcreage	97.40	25.00
tblLandUse	LotAcreage	3.44	12.00
tblProjectCharacteristics	OperationalYear	2018	2027
tblVehicleTrips	ST_TR	6.39	5.29
tblVehicleTrips	ST_TR	2.46	2.68
tblVehicleTrips	ST_TR	8.19	4.86
tblVehicleTrips	ST_TR	49.97	10.38
tblVehicleTrips	ST_TR	9.91	5.29
tblVehicleTrips	SU_TR	5.86	4.61
tblVehicleTrips	SU_TR	1.05	1.14
tblVehicleTrips	SU_TR	5.95	3.52
tblVehicleTrips	SU_TR	25.24	5.24
tblVehicleTrips	SU_TR	8.62	4.61
tblVehicleTrips	WD_TR	6.65	5.09
tblVehicleTrips	WD_TR	11.03	12.00
tblVehicleTrips	WD_TR	8.17	4.85

tblVehicleTrips	WD_TR	42.70	8.87
tblVehicleTrips	WD_TR	9.52	5.09
tblWoodstoves	WoodstoveDayYear	60.00	0.00
tblWoodstoves	WoodstoveDayYear	60.00	0.00
tblWoodstoves	WoodstoveWoodMass	2,016.00	0.00
tblWoodstoves	WoodstoveWoodMass	2,016.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.6477	9.2658	4.2211	0.0141	1.5107	0.2977	1.8084	0.6518	0.2756	0.9273	0.0000	1,327.9172	1,327.9172	0.2101	0.0000	1,333.1703
2020	0.8322	8.2407	6.5423	0.0212	1.7885	0.2045	1.9930	0.5738	0.1913	0.7650	0.0000	1,961.3778	1,961.3778	0.1843	0.0000	1,965.9846
2021	0.7515	5.7084	6.1618	0.0185	1.1031	0.1400	1.2431	0.2966	0.1316	0.4282	0.0000	1,693.7952	1,693.7952	0.1328	0.0000	1,697.1158
2022	0.6913	5.2622	5.7826	0.0180	1.0989	0.1188	1.2177	0.2954	0.1118	0.4072	0.0000	1,655.7101	1,655.7101	0.1290	0.0000	1,658.9341
2023	1.1644	4.6455	5.7097	0.0184	1.1721	0.1043	1.2764	0.3149	0.0982	0.4131	0.0000	1,685.5545	1,685.5545	0.1245	0.0000	1,688.6661
2024	1.9929	4.5990	5.9209	0.0193	1.2991	0.0984	1.3975	0.3487	0.0930	0.4416	0.0000	1,770.7347	1,770.7347	0.1263	0.0000	1,773.8915
2025	1.9456	4.3654	5.6287	0.0188	1.2942	0.0852	1.3794	0.3474	0.0805	0.4278	0.0000	1,727.8027	1,727.8027	0.1235	0.0000	1,730.8892
2026	0.9630	1.2459	1.9604	5.0400e-003	0.2967	0.0400	0.3367	0.0794	0.0374	0.1168	0.0000	455.8826	455.8826	0.0573	0.0000	457.3140
Maximum	**1.9929**	**9.2658**	**6.5423**	**0.0212**	**1.7885**	**0.2977**	**1.9930**	**0.6518**	**0.2756**	**0.9273**	**0.0000**	**1,961.3778**	**1,961.3778**	**0.2101**	**0.0000**	**1,965.9846**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.2601	6.4068	4.5410	0.0141	0.8253	0.0880	0.9133	0.3319	0.0871	0.4190	0.0000	1,327.9165	1,327.9165	0.2101	0.0000	1,333.1697
2020	0.5998	7.1485	6.7851	0.0212	1.4061	0.0924	1.4986	0.4185	0.0911	0.5096	0.0000	1,961.3773	1,961.3773	0.1843	0.0000	1,965.9841
2021	0.5914	5.2900	6.3313	0.0185	1.1031	0.0738	1.1769	0.2966	0.0730	0.3695	0.0000	1,693.7948	1,693.7948	0.1328	0.0000	1,697.1154
2022	0.5571	5.0815	5.9790	0.0180	1.0989	0.0723	1.1712	0.2954	0.0715	0.3670	0.0000	1,655.7097	1,655.7097	0.1290	0.0000	1,658.9338
2023	1.0410	4.6275	5.9226	0.0184	1.1721	0.0709	1.2430	0.3149	0.0702	0.3851	0.0000	1,685.5541	1,685.5541	0.1245	0.0000	1,688.6657
2024	1.8725	4.7195	6.1474	0.0193	1.2991	0.0755	1.3746	0.3487	0.0748	0.4235	0.0000	1,770.7343	1,770.7343	0.1263	0.0000	1,773.8911
2025	1.8405	4.6222	5.8652	0.0188	1.2942	0.0748	1.3690	0.3474	0.0742	0.4215	0.0000	1,727.8023	1,727.8023	0.1235	0.0000	1,730.8888
2026	0.9205	1.4481	2.1492	5.0400e-003	0.2967	0.0318	0.3285	0.0794	0.0317	0.1111	0.0000	455.8824	455.8824	0.0573	0.0000	457.3138
Maximum	**1.8725**	**7.1485**	**6.7851**	**0.0212**	**1.4061**	**0.0924**	**1.4986**	**0.4185**	**0.0911**	**0.5096**	**0.0000**	**1,961.3773**	**1,961.3773**	**0.2101**	**0.0000**	**1,965.9841**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**14.53**	**9.20**	**-4.28**	**0.00**	**11.17**	**46.77**	**14.80**	**16.34**	**43.73**	**23.45**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-7-2019**	**4-6-2019**	1.2770	0.6323
2	**4-7-2019**	**7-6-2019**	1.4496	0.6464

3	7-7-2019	10-6-2019	3.1210	2.1775
4	10-7-2019	1-6-2020	4.3023	3.4002
5	1-7-2020	4-6-2020	3.5214	2.8708
6	4-7-2020	7-6-2020	1.7475	1.5393
7	7-7-2020	10-6-2020	1.7683	1.5578
8	10-7-2020	1-6-2021	1.7808	1.5745
9	1-7-2021	4-6-2021	1.5936	1.4511
10	4-7-2021	7-6-2021	1.5915	1.4474
11	7-7-2021	10-6-2021	1.6104	1.4647
12	10-7-2021	1-6-2022	1.6225	1.4811
13	1-7-2022	4-6-2022	1.4744	1.3965
14	4-7-2022	7-6-2022	1.4729	1.3942
15	7-7-2022	10-6-2022	1.4904	1.4108
16	10-7-2022	1-6-2023	1.4959	1.4193
17	1-7-2023	4-6-2023	1.2868	1.2528
18	4-7-2023	7-6-2023	1.2843	1.2500
19	7-7-2023	10-6-2023	1.5387	1.5024
20	10-7-2023	1-6-2024	1.7233	1.6884
21	1-7-2024	4-6-2024	1.6412	1.6413
22	4-7-2024	7-6-2024	1.6220	1.6221
23	7-7-2024	10-6-2024	1.6412	1.6413
24	10-7-2024	1-6-2025	1.6564	1.6589
25	1-7-2025	4-6-2025	1.5599	1.5973
26	4-7-2025	7-6-2025	1.5594	1.5972
27	7-7-2025	10-6-2025	1.5778	1.6160
28	10-7-2025	1-6-2026	1.5943	1.6325
29	1-7-2026	4-6-2026	1.1876	1.2426

30	**4-7-2026**	**7-6-2026**	0.7122	0.7921
31	**7-7-2026**	**9-30-2026**	0.1957	0.2176
		Highest	4.3023	3.4002

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/7/2019	5/24/2019	5	100	
2	Site Preparation	Site Preparation	5/25/2019	8/16/2019	5	60	
3	Grading	Grading	8/17/2019	3/20/2020	5	155	
4	Building Construction	Building Construction	3/21/2020	2/27/2026	5	1550	
5	Architectural Coating	Architectural Coating	8/14/2023	7/31/2026	5	775	
6	Paving	Paving	2/28/2026	7/31/2026	5	110	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 387.5

Acres of Paving: 13.66

Residential Indoor: 1,660,500; Residential Outdoor: 553,500; Non-Residential Indoor: 810,600; Non-Residential Outdoor: 270,200; Striped Parking Area: 35,702 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	80.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	31,310.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	761.00	248.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	152.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.9300e-003	0.0000	8.9300e-003	1.3500e-003	0.0000	1.3500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1757	1.7892	1.1030	1.9400e-003		0.0898	0.0898		0.0835	0.0835	0.0000	173.1316	173.1316	0.0482	0.0000	174.3357
Total	**0.1757**	**1.7892**	**1.1030**	**1.9400e-003**	**8.9300e-003**	**0.0898**	**0.0987**	**1.3500e-003**	**0.0835**	**0.0848**	**0.0000**	**173.1316**	**173.1316**	**0.0482**	**0.0000**	**174.3357**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1000e-004	0.0141	3.0500e-003	3.0000e-005	6.8000e-004	8.0000e-005	7.7000e-004	1.9000e-004	8.0000e-005	2.7000e-004	0.0000	3.1040	3.1040	1.8000e-004	0.0000	3.1084
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-003	3.3800e-003	0.0293	7.0000e-005	7.2200e-003	5.0000e-005	7.2700e-003	1.9200e-003	5.0000e-005	1.9600e-003	0.0000	6.2334	6.2334	2.3000e-004	0.0000	6.2393
Total	**4.0100e-003**	**0.0174**	**0.0324**	**1.0000e-004**	**7.9000e-003**	**1.3000e-004**	**8.0400e-003**	**2.1100e-003**	**1.3000e-004**	**2.2300e-003**	**0.0000**	**9.3374**	**9.3374**	**4.1000e-004**	**0.0000**	**9.3476**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.0200e-003	0.0000	4.0200e-003	6.1000e-004	0.0000	6.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0462	0.9157	1.2337	1.9400e-003		0.0216	0.0216		0.0216	0.0216	0.0000	173.1314	173.1314	0.0482	0.0000	174.3355
Total	**0.0462**	**0.9157**	**1.2337**	**1.9400e-003**	**4.0200e-003**	**0.0216**	**0.0256**	**6.1000e-004**	**0.0216**	**0.0222**	**0.0000**	**173.1314**	**173.1314**	**0.0482**	**0.0000**	**174.3355**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1000e-004	0.0141	3.0500e-003	3.0000e-005	6.8000e-004	8.0000e-005	7.7000e-004	1.9000e-004	8.0000e-005	2.7000e-004	0.0000	3.1040	3.1040	1.8000e-004	0.0000	3.1084
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-003	3.3800e-003	0.0293	7.0000e-005	7.2200e-003	5.0000e-005	7.2700e-003	1.9200e-003	5.0000e-005	1.9600e-003	0.0000	6.2334	6.2334	2.3000e-004	0.0000	6.2393
Total	**4.0100e-003**	**0.0174**	**0.0324**	**1.0000e-004**	**7.9000e-003**	**1.3000e-004**	**8.0400e-003**	**2.1100e-003**	**1.3000e-004**	**2.2300e-003**	**0.0000**	**9.3374**	**9.3374**	**4.1000e-004**	**0.0000**	**9.3476**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5420	0.0000	0.5420	0.2979	0.0000	0.2979	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1301	1.3672	0.6619	1.1400e-003		0.0717	0.0717		0.0660	0.0660	0.0000	102.5061	102.5061	0.0324	0.0000	103.3169
Total	**0.1301**	**1.3672**	**0.6619**	**1.1400e-003**	**0.5420**	**0.0717**	**0.6137**	**0.2979**	**0.0660**	**0.3639**	**0.0000**	**102.5061**	**102.5061**	**0.0324**	**0.0000**	**103.3169**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5900e-003	2.4400e-003	0.0211	5.0000e-005	5.2000e-003	4.0000e-005	5.2300e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.4881	4.4881	1.7000e-004	0.0000	4.4923
Total	**2.5900e-003**	**2.4400e-003**	**0.0211**	**5.0000e-005**	**5.2000e-003**	**4.0000e-005**	**5.2300e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.4881**	**4.4881**	**1.7000e-004**	**0.0000**	**4.4923**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2439	0.0000	0.2439	0.1341	0.0000	0.1341	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0279	0.5720	0.6888	1.1400e-003		0.0142	0.0142		0.0142	0.0142	0.0000	102.5059	102.5059	0.0324	0.0000	103.3167
Total	**0.0279**	**0.5720**	**0.6888**	**1.1400e-003**	**0.2439**	**0.0142**	**0.2581**	**0.1341**	**0.0142**	**0.1483**	**0.0000**	**102.5059**	**102.5059**	**0.0324**	**0.0000**	**103.3167**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5900e-003	2.4400e-003	0.0211	5.0000e-005	5.2000e-003	4.0000e-005	5.2300e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.4881	4.4881	1.7000e-004	0.0000	4.4923
Total	**2.5900e-003**	**2.4400e-003**	**0.0211**	**5.0000e-005**	**5.2000e-003**	**4.0000e-005**	**5.2300e-003**	**1.3800e-003**	**3.0000e-005**	**1.4100e-003**	**0.0000**	**4.4881**	**4.4881**	**1.7000e-004**	**0.0000**	**4.4923**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.6952	0.0000	0.6952	0.2822	0.0000	0.2822	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2298	2.6442	1.6188	3.0100e-003		0.1156	0.1156		0.1063	0.1063	0.0000	270.1514	270.1514	0.0855	0.0000	272.2882
Total	**0.2298**	**2.6442**	**1.6188**	**3.0100e-003**	**0.6952**	**0.1156**	**0.8108**	**0.2822**	**0.1063**	**0.3885**	**0.0000**	**270.1514**	**270.1514**	**0.0855**	**0.0000**	**272.2882**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1008	3.4409	0.7461	7.7900e-003	0.2421	0.0205	0.2626	0.0643	0.0196	0.0839	0.0000	760.2406	760.2406	0.0432	0.0000	761.3202
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6600e-003	4.3800e-003	0.0379	9.0000e-005	9.3400e-003	6.0000e-005	9.4000e-003	2.4800e-003	6.0000e-005	2.5400e-003	0.0000	8.0619	8.0619	3.0000e-004	0.0000	8.0694
Total	**0.1055**	**3.4453**	**0.7840**	**7.8800e-003**	**0.2514**	**0.0205**	**0.2720**	**0.0668**	**0.0197**	**0.0864**	**0.0000**	**768.3026**	**768.3026**	**0.0435**	**0.0000**	**769.3896**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3129	0.0000	0.3129	0.1270	0.0000	0.1270	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0739	1.4539	1.7810	3.0100e-003		0.0315	0.0315		0.0315	0.0315	0.0000	270.1511	270.1511	0.0855	0.0000	272.2879
Total	**0.0739**	**1.4539**	**1.7810**	**3.0100e-003**	**0.3129**	**0.0315**	**0.3444**	**0.1270**	**0.0315**	**0.1585**	**0.0000**	**270.1511**	**270.1511**	**0.0855**	**0.0000**	**272.2879**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1008	3.4409	0.7461	7.7900e-003	0.2421	0.0205	0.2626	0.0643	0.0196	0.0839	0.0000	760.2406	760.2406	0.0432	0.0000	761.3202
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6600e-003	4.3800e-003	0.0379	9.0000e-005	9.3400e-003	6.0000e-005	9.4000e-003	2.4800e-003	6.0000e-005	2.5400e-003	0.0000	8.0619	8.0619	3.0000e-004	0.0000	8.0694
Total	**0.1055**	**3.4453**	**0.7840**	**7.8800e-003**	**0.2514**	**0.0205**	**0.2720**	**0.0668**	**0.0197**	**0.0864**	**0.0000**	**768.3026**	**768.3026**	**0.0435**	**0.0000**	**769.3896**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.6952	0.0000	0.6952	0.2822	0.0000	0.2822	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1291	1.4557	0.9268	1.8000e-003		0.0630	0.0630		0.0580	0.0580	0.0000	158.0045	158.0045	0.0511	0.0000	159.2820
Total	**0.1291**	**1.4557**	**0.9268**	**1.8000e-003**	**0.6952**	**0.0630**	**0.7583**	**0.2822**	**0.0580**	**0.3402**	**0.0000**	**158.0045**	**158.0045**	**0.0511**	**0.0000**	**159.2820**

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0509	1.8842	0.4094	4.6100e-003	0.2255	8.2100e-003	0.2337	0.0583	7.8600e-003	0.0661	0.0000	450.6201	450.6201	0.0255	0.0000	451.2583
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5400e-003	2.3000e-003	0.0200	5.0000e-005	5.5800e-003	4.0000e-005	5.6200e-003	1.4800e-003	3.0000e-005	1.5200e-003	0.0000	4.6714	4.6714	1.5000e-004	0.0000	4.6752
Total	**0.0534**	**1.8865**	**0.4293**	**4.6600e-003**	**0.2311**	**8.2500e-003**	**0.2393**	**0.0597**	**7.8900e-003**	**0.0676**	**0.0000**	**455.2915**	**455.2915**	**0.0257**	**0.0000**	**455.9335**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3129	0.0000	0.3129	0.1270	0.0000	0.1270	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0442	0.8694	1.0650	1.8000e-003		0.0188	0.0188		0.0188	0.0188	0.0000	158.0043	158.0043	0.0511	0.0000	159.2818
Total	**0.0442**	**0.8694**	**1.0650**	**1.8000e-003**	**0.3129**	**0.0188**	**0.3317**	**0.1270**	**0.0188**	**0.1458**	**0.0000**	**158.0043**	**158.0043**	**0.0511**	**0.0000**	**159.2818**

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0509	1.8842	0.4094	4.6100e-003	0.2255	8.2100e-003	0.2337	0.0583	7.8600e-003	0.0661	0.0000	450.6201	450.6201	0.0255	0.0000	451.2583
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5400e-003	2.3000e-003	0.0200	5.0000e-005	5.5800e-003	4.0000e-005	5.6200e-003	1.4800e-003	3.0000e-005	1.5200e-003	0.0000	4.6714	4.6714	1.5000e-004	0.0000	4.6752
Total	**0.0534**	**1.8865**	**0.4293**	**4.6600e-003**	**0.2311**	**8.2500e-003**	**0.2393**	**0.0597**	**7.8900e-003**	**0.0676**	**0.0000**	**455.2915**	**455.2915**	**0.0257**	**0.0000**	**455.9335**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2162	1.9570	1.7186	2.7500e-003		0.1139	0.1139		0.1071	0.1071	0.0000	236.2422	236.2422	0.0576	0.0000	237.6831
Total	**0.2162**	**1.9570**	**1.7186**	**2.7500e-003**		**0.1139**	**0.1139**		**0.1071**	**0.1071**	**0.0000**	**236.2422**	**236.2422**	**0.0576**	**0.0000**	**237.6831**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0941	2.6332	0.7978	5.0400e-003	0.1149	0.0144	0.1293	0.0332	0.0137	0.0469	0.0000	486.6658	486.6658	0.0293	0.0000	487.3976
Worker	0.3395	0.3084	2.6699	6.9200e-003	0.7473	4.9100e-003	0.7522	0.1986	4.5300e-003	0.2031	0.0000	625.1739	625.1739	0.0206	0.0000	625.6884
Total	**0.4335**	**2.9416**	**3.4677**	**0.0120**	**0.8622**	**0.0193**	**0.8815**	**0.2318**	**0.0183**	**0.2501**	**0.0000**	**1,111.8397**	**1,111.8397**	**0.0499**	**0.0000**	**1,113.0860**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0687	1.4511	1.8231	2.7500e-003		0.0461	0.0461		0.0461	0.0461	0.0000	236.2419	236.2419	0.0576	0.0000	237.6828
Total	**0.0687**	**1.4511**	**1.8231**	**2.7500e-003**		**0.0461**	**0.0461**		**0.0461**	**0.0461**	**0.0000**	**236.2419**	**236.2419**	**0.0576**	**0.0000**	**237.6828**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0941	2.6332	0.7978	5.0400e-003	0.1149	0.0144	0.1293	0.0332	0.0137	0.0469	0.0000	486.6658	486.6658	0.0293	0.0000	487.3976
Worker	0.3395	0.3084	2.6699	6.9200e-003	0.7473	4.9100e-003	0.7522	0.1986	4.5300e-003	0.2031	0.0000	625.1739	625.1739	0.0206	0.0000	625.6884
Total	**0.4335**	**2.9416**	**3.4677**	**0.0120**	**0.8622**	**0.0193**	**0.8815**	**0.2318**	**0.0183**	**0.2501**	**0.0000**	**1,111.8397**	**1,111.8397**	**0.0499**	**0.0000**	**1,113.0860**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2481	2.2749	2.1631	3.5100e-003		0.1251	0.1251		0.1176	0.1176	0.0000	302.2867	302.2867	0.0729	0.0000	304.1099
Total	**0.2481**	**2.2749**	**2.1631**	**3.5100e-003**		**0.1251**	**0.1251**		**0.1176**	**0.1176**	**0.0000**	**302.2867**	**302.2867**	**0.0729**	**0.0000**	**304.1099**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0987	3.0807	0.9027	6.4000e-003	0.1470	8.7900e-003	0.1558	0.0425	8.4100e-003	0.0509	0.0000	618.9137	618.9137	0.0365	0.0000	619.8262
Worker	0.4048	0.3528	3.0960	8.5500e-003	0.9561	6.0800e-003	0.9622	0.2541	5.6100e-003	0.2597	0.0000	772.5948	772.5948	0.0234	0.0000	773.1797
Total	**0.5034**	**3.4335**	**3.9988**	**0.0150**	**1.1031**	**0.0149**	**1.1180**	**0.2966**	**0.0140**	**0.3106**	**0.0000**	**1,391.5085**	**1,391.5085**	**0.0599**	**0.0000**	**1,393.0059**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0879	1.8565	2.3325	3.5100e-003		0.0590	0.0590		0.0590	0.0590	0.0000	302.2863	302.2863	0.0729	0.0000	304.1095
Total	**0.0879**	**1.8565**	**2.3325**	**3.5100e-003**		**0.0590**	**0.0590**		**0.0590**	**0.0590**	**0.0000**	**302.2863**	**302.2863**	**0.0729**	**0.0000**	**304.1095**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0987	3.0807	0.9027	6.4000e-003	0.1470	8.7900e-003	0.1558	0.0425	8.4100e-003	0.0509	0.0000	618.9137	618.9137	0.0365	0.0000	619.8262
Worker	0.4048	0.3528	3.0960	8.5500e-003	0.9561	6.0800e-003	0.9622	0.2541	5.6100e-003	0.2597	0.0000	772.5948	772.5948	0.0234	0.0000	773.1797
Total	**0.5034**	**3.4335**	**3.9988**	**0.0150**	**1.1031**	**0.0149**	**1.1180**	**0.2966**	**0.0140**	**0.3106**	**0.0000**	**1,391.5085**	**1,391.5085**	**0.0599**	**0.0000**	**1,393.0059**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2428	301.2428	0.0722	0.0000	303.0471
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2428**	**301.2428**	**0.0722**	**0.0000**	**303.0471**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0909	2.9161	0.8301	6.3300e-003	0.1465	7.7100e-003	0.1542	0.0423	7.3700e-003	0.0497	0.0000	612.3426	612.3426	0.0359	0.0000	613.2403
Worker	0.3786	0.3160	2.8253	8.2100e-003	0.9524	5.8900e-003	0.9583	0.2531	5.4300e-003	0.2585	0.0000	742.1247	742.1247	0.0209	0.0000	742.6468
Total	**0.4695**	**3.2321**	**3.6554**	**0.0145**	**1.0989**	**0.0136**	**1.1125**	**0.2954**	**0.0128**	**0.3082**	**0.0000**	**1,354.4673**	**1,354.4673**	**0.0568**	**0.0000**	**1,355.8871**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0876	1.8494	2.3236	3.5000e-003		0.0587	0.0587		0.0587	0.0587	0.0000	301.2425	301.2425	0.0722	0.0000	303.0467
Total	**0.0876**	**1.8494**	**2.3236**	**3.5000e-003**		**0.0587**	**0.0587**		**0.0587**	**0.0587**	**0.0000**	**301.2425**	**301.2425**	**0.0722**	**0.0000**	**303.0467**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0909	2.9161	0.8301	6.3300e-003	0.1465	7.7100e-003	0.1542	0.0423	7.3700e-003	0.0497	0.0000	612.3426	612.3426	0.0359	0.0000	613.2403
Worker	0.3786	0.3160	2.8253	8.2100e-003	0.9524	5.8900e-003	0.9583	0.2531	5.4300e-003	0.2585	0.0000	742.1247	742.1247	0.0209	0.0000	742.6468
Total	**0.4695**	**3.2321**	**3.6554**	**0.0145**	**1.0989**	**0.0136**	**1.1125**	**0.2954**	**0.0128**	**0.3082**	**0.0000**	**1,354.4673**	**1,354.4673**	**0.0568**	**0.0000**	**1,355.8871**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3462	301.3462	0.0717	0.0000	303.1383
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3462**	**301.3462**	**0.0717**	**0.0000**	**303.1383**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0694	2.4044	0.7293	6.2200e-003	0.1465	3.5700e-003	0.1501	0.0423	3.4100e-003	0.0458	0.0000	602.2776	602.2776	0.0319	0.0000	603.0760
Worker	0.3557	0.2841	2.5800	7.9000e-003	0.9524	5.7300e-003	0.9582	0.2531	5.2900e-003	0.2584	0.0000	714.2912	714.2912	0.0186	0.0000	714.7573
Total	**0.4251**	**2.6885**	**3.3092**	**0.0141**	**1.0989**	**9.3000e-003**	**1.1083**	**0.2955**	**8.7000e-003**	**0.3042**	**0.0000**	**1,316.5688**	**1,316.5688**	**0.0506**	**0.0000**	**1,317.8333**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Off-Road	0.0876	1.8494	2.3236	3.5000e-003		0.0587	0.0587		0.0587	0.0587	0.0000	301.3458	301.3458	0.0717	0.0000	303.1380
Total	**0.0876**	**1.8494**	**2.3236**	**3.5000e-003**		**0.0587**	**0.0587**		**0.0587**	**0.0587**	**0.0000**	**301.3458**	**301.3458**	**0.0717**	**0.0000**	**303.1380**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0694	2.4044	0.7293	6.2200e-003	0.1465	3.5700e-003	0.1501	0.0423	3.4100e-003	0.0458	0.0000	602.2776	602.2776	0.0319	0.0000	603.0760
Worker	0.3557	0.2841	2.5800	7.9000e-003	0.9524	5.7300e-003	0.9582	0.2531	5.2900e-003	0.2584	0.0000	714.2912	714.2912	0.0186	0.0000	714.7573
Total	**0.4251**	**2.6885**	**3.3092**	**0.0141**	**1.0989**	**9.3000e-003**	**1.1083**	**0.2955**	**8.7000e-003**	**0.3042**	**0.0000**	**1,316.5688**	**1,316.5688**	**0.0506**	**0.0000**	**1,317.8333**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Off-Road	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7223**	**303.7223**	**0.0718**	**0.0000**	**305.5179**

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0663	2.3683	0.6908	6.2200e-003	0.1477	3.3200e-003	0.1510	0.0427	3.1700e-003	0.0459	0.0000	603.5830	603.5830	0.0324	0.0000	604.3917
Worker	0.3379	0.2583	2.3965	7.6500e-003	0.9597	5.6400e-003	0.9654	0.2551	5.2000e-003	0.2603	0.0000	691.8029	691.8029	0.0169	0.0000	692.2244
Total	**0.4042**	**2.6266**	**3.0872**	**0.0139**	**1.1074**	**8.9600e-003**	**1.1164**	**0.2977**	**8.3700e-003**	**0.3061**	**0.0000**	**1,295.3859**	**1,295.3859**	**0.0492**	**0.0000**	**1,296.6160**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0883	1.8636	2.3415	3.5300e-003		0.0592	0.0592		0.0592	0.0592	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	**0.0883**	**1.8636**	**2.3415**	**3.5300e-003**		**0.0592**	**0.0592**		**0.0592**	**0.0592**	**0.0000**	**303.7220**	**303.7220**	**0.0718**	**0.0000**	**305.5175**

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0663	2.3683	0.6908	6.2200e-003	0.1477	3.3200e-003	0.1510	0.0427	3.1700e-003	0.0459	0.0000	603.5830	603.5830	0.0324	0.0000	604.3917
Worker	0.3379	0.2583	2.3965	7.6500e-003	0.9597	5.6400e-003	0.9654	0.2551	5.2000e-003	0.2603	0.0000	691.8029	691.8029	0.0169	0.0000	692.2244
Total	**0.4042**	**2.6266**	**3.0872**	**0.0139**	**1.1074**	**8.9600e-003**	**1.1164**	**0.2977**	**8.3700e-003**	**0.3061**	**0.0000**	**1,295.3859**	**1,295.3859**	**0.0492**	**0.0000**	**1,296.6160**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0630	2.3091	0.6536	6.1600e-003	0.1471	3.0500e-003	0.1502	0.0425	2.9100e-003	0.0454	0.0000	598.1500	598.1500	0.0324	0.0000	598.9591
Worker	0.3185	0.2330	2.2004	7.3100e-003	0.9561	5.5000e-003	0.9616	0.2541	5.0700e-003	0.2592	0.0000	661.5431	661.5431	0.0151	0.0000	661.9210
Total	**0.3815**	**2.5421**	**2.8540**	**0.0135**	**1.1032**	**8.5500e-003**	**1.1118**	**0.2966**	**7.9800e-003**	**0.3046**	**0.0000**	**1,259.6931**	**1,259.6931**	**0.0475**	**0.0000**	**1,260.8801**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0879	1.8565	2.3325	3.5200e-003		0.0590	0.0590		0.0590	0.0590	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.0879**	**1.8565**	**2.3325**	**3.5200e-003**		**0.0590**	**0.0590**		**0.0590**	**0.0590**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0630	2.3091	0.6536	6.1600e-003	0.1471	3.0500e-003	0.1502	0.0425	2.9100e-003	0.0454	0.0000	598.1500	598.1500	0.0324	0.0000	598.9591
Worker	0.3185	0.2330	2.2004	7.3100e-003	0.9561	5.5000e-003	0.9616	0.2541	5.0700e-003	0.2592	0.0000	661.5431	661.5431	0.0151	0.0000	661.9210
Total	**0.3815**	**2.5421**	**2.8540**	**0.0135**	**1.1032**	**8.5500e-003**	**1.1118**	**0.2966**	**7.9800e-003**	**0.3046**	**0.0000**	**1,259.6931**	**1,259.6931**	**0.0475**	**0.0000**	**1,260.8801**

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0287	0.2619	0.3378	5.7000e-004		0.0111	0.0111		0.0104	0.0104	0.0000	48.7031	48.7031	0.0115	0.0000	48.9893
Total	**0.0287**	**0.2619**	**0.3378**	**5.7000e-004**		**0.0111**	**0.0111**		**0.0104**	**0.0104**	**0.0000**	**48.7031**	**48.7031**	**0.0115**	**0.0000**	**48.9893**

3.5 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.7000e-003	0.3644	0.1005	9.9000e-004	0.0237	4.6000e-004	0.0241	6.8400e-003	4.4000e-004	7.2800e-003	0.0000	95.7822	95.7822	5.2300e-003	0.0000	95.9129
Worker	0.0487	0.0342	0.3284	1.1300e-003	0.1539	8.6000e-004	0.1547	0.0409	7.9000e-004	0.0417	0.0000	102.5013	102.5013	2.2000e-003	0.0000	102.5564
Total	**0.0584**	**0.3985**	**0.4290**	**2.1200e-003**	**0.1775**	**1.3200e-003**	**0.1789**	**0.0477**	**1.2300e-003**	**0.0490**	**0.0000**	**198.2835**	**198.2835**	**7.4300e-003**	**0.0000**	**198.4693**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0142	0.2988	0.3754	5.7000e-004		9.4900e-003	9.4900e-003		9.4900e-003	9.4900e-003	0.0000	48.7030	48.7030	0.0115	0.0000	48.9892
Total	**0.0142**	**0.2988**	**0.3754**	**5.7000e-004**		**9.4900e-003**	**9.4900e-003**		**9.4900e-003**	**9.4900e-003**	**0.0000**	**48.7030**	**48.7030**	**0.0115**	**0.0000**	**48.9892**

3.5 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.7000e-003	0.3644	0.1005	9.9000e-004	0.0237	4.6000e-004	0.0241	6.8400e-003	4.4000e-004	7.2800e-003	0.0000	95.7822	95.7822	5.2300e-003	0.0000	95.9129
Worker	0.0487	0.0342	0.3284	1.1300e-003	0.1539	8.6000e-004	0.1547	0.0409	7.9000e-004	0.0417	0.0000	102.5013	102.5013	2.2000e-003	0.0000	102.5564
Total	**0.0584**	**0.3985**	**0.4290**	**2.1200e-003**	**0.1775**	**1.3200e-003**	**0.1789**	**0.0477**	**1.2300e-003**	**0.0490**	**0.0000**	**198.2835**	**198.2835**	**7.4300e-003**	**0.0000**	**198.4693**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4980					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.5800e-003	0.0652	0.0906	1.5000e-004		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	12.7663	12.7663	7.6000e-004	0.0000	12.7854
Total	**0.5075**	**0.0652**	**0.0906**	**1.5000e-004**		**3.5400e-003**	**3.5400e-003**		**3.5400e-003**	**3.5400e-003**	**0.0000**	**12.7663**	**12.7663**	**7.6000e-004**	**0.0000**	**12.7854**

3.6 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0273	0.0218	0.1982	6.1000e-004	0.0732	4.4000e-004	0.0736	0.0194	4.1000e-004	0.0199	0.0000	54.8733	54.8733	1.4300e-003	0.0000	54.9091
Total	**0.0273**	**0.0218**	**0.1982**	**6.1000e-004**	**0.0732**	**4.4000e-004**	**0.0736**	**0.0194**	**4.1000e-004**	**0.0199**	**0.0000**	**54.8733**	**54.8733**	**1.4300e-003**	**0.0000**	**54.9091**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4980					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9700e-003	0.0679	0.0916	1.5000e-004		2.3800e-003	2.3800e-003		2.3800e-003	2.3800e-003	0.0000	12.7663	12.7663	7.6000e-004	0.0000	12.7854
Total	**0.5009**	**0.0679**	**0.0916**	**1.5000e-004**		**2.3800e-003**	**2.3800e-003**		**2.3800e-003**	**2.3800e-003**	**0.0000**	**12.7663**	**12.7663**	**7.6000e-004**	**0.0000**	**12.7854**

3.6 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0273	0.0218	0.1982	6.1000e-004	0.0732	4.4000e-004	0.0736	0.0194	4.1000e-004	0.0199	0.0000	54.8733	54.8733	1.4300e-003	0.0000	54.9091
Total	**0.0273**	**0.0218**	**0.1982**	**6.1000e-004**	**0.0732**	**4.4000e-004**	**0.0736**	**0.0194**	**4.1000e-004**	**0.0199**	**0.0000**	**54.8733**	**54.8733**	**1.4300e-003**	**0.0000**	**54.9091**

3.6 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.3047					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0237	0.1597	0.2371	3.9000e-004		7.9800e-003	7.9800e-003		7.9800e-003	7.9800e-003	0.0000	33.4476	33.4476	1.8800e-003	0.0000	33.4947
Total	**1.3284**	**0.1597**	**0.2371**	**3.9000e-004**		**7.9800e-003**	**7.9800e-003**		**7.9800e-003**	**7.9800e-003**	**0.0000**	**33.4476**	**33.4476**	**1.8800e-003**	**0.0000**	**33.4947**

3.6 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0675	0.0516	0.4787	1.5300e-003	0.1917	1.1300e-003	0.1928	0.0509	1.0400e-003	0.0520	0.0000	138.1788	138.1788	3.3700e-003	0.0000	138.2629
Total	**0.0675**	**0.0516**	**0.4787**	**1.5300e-003**	**0.1917**	**1.1300e-003**	**0.1928**	**0.0509**	**1.0400e-003**	**0.0520**	**0.0000**	**138.1788**	**138.1788**	**3.3700e-003**	**0.0000**	**138.2629**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.3047					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7900e-003	0.1778	0.2401	3.9000e-004		6.2300e-003	6.2300e-003		6.2300e-003	6.2300e-003	0.0000	33.4476	33.4476	1.8800e-003	0.0000	33.4947
Total	**1.3125**	**0.1778**	**0.2401**	**3.9000e-004**		**6.2300e-003**	**6.2300e-003**		**6.2300e-003**	**6.2300e-003**	**0.0000**	**33.4476**	**33.4476**	**1.8800e-003**	**0.0000**	**33.4947**

3.6 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0675	0.0516	0.4787	1.5300e-003	0.1917	1.1300e-003	0.1928	0.0509	1.0400e-003	0.0520	0.0000	138.1788	138.1788	3.3700e-003	0.0000	138.2629
Total	**0.0675**	**0.0516**	**0.4787**	**1.5300e-003**	**0.1917**	**1.1300e-003**	**0.1928**	**0.0509**	**1.0400e-003**	**0.0520**	**0.0000**	**138.1788**	**138.1788**	**3.3700e-003**	**0.0000**	**138.2629**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.2997					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3200	33.3200	1.8200e-003	0.0000	33.3654
Total	**1.3220**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3200**	**33.3200**	**1.8200e-003**	**0.0000**	**33.3654**

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0636	0.0465	0.4395	1.4600e-003	0.1910	1.1000e-003	0.1921	0.0508	1.0100e-003	0.0518	0.0000	132.1348	132.1348	3.0200e-003	0.0000	132.2102
Total	**0.0636**	**0.0465**	**0.4395**	**1.4600e-003**	**0.1910**	**1.1000e-003**	**0.1921**	**0.0508**	**1.0100e-003**	**0.0518**	**0.0000**	**132.1348**	**132.1348**	**3.0200e-003**	**0.0000**	**132.2102**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.2997					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7600e-003	0.1771	0.2391	3.9000e-004		6.2000e-003	6.2000e-003		6.2000e-003	6.2000e-003	0.0000	33.3199	33.3199	1.8200e-003	0.0000	33.3654
Total	**1.3075**	**0.1771**	**0.2391**	**3.9000e-004**		**6.2000e-003**	**6.2000e-003**		**6.2000e-003**	**6.2000e-003**	**0.0000**	**33.3199**	**33.3199**	**1.8200e-003**	**0.0000**	**33.3654**

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0636	0.0465	0.4395	1.4600e-003	0.1910	1.1000e-003	0.1921	0.0508	1.0100e-003	0.0518	0.0000	132.1348	132.1348	3.0200e-003	0.0000	132.2102
Total	**0.0636**	**0.0465**	**0.4395**	**1.4600e-003**	**0.1910**	**1.1000e-003**	**0.1921**	**0.0508**	**1.0100e-003**	**0.0518**	**0.0000**	**132.1348**	**132.1348**	**3.0200e-003**	**0.0000**	**132.2102**

3.6 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7569					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0130	0.0871	0.1375	2.3000e-004		3.9100e-003	3.9100e-003		3.9100e-003	3.9100e-003	0.0000	19.4047	19.4047	1.0600e-003	0.0000	19.4312
Total	**0.7699**	**0.0871**	**0.1375**	**2.3000e-004**		**3.9100e-003**	**3.9100e-003**		**3.9100e-003**	**3.9100e-003**	**0.0000**	**19.4047**	**19.4047**	**1.0600e-003**	**0.0000**	**19.4312**

3.6 Architectural Coating - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0352	0.0247	0.2374	8.2000e-004	0.1112	6.2000e-004	0.1118	0.0296	5.7000e-004	0.0301	0.0000	74.0939	74.0939	1.5900e-003	0.0000	74.1337
Total	**0.0352**	**0.0247**	**0.2374**	**8.2000e-004**	**0.1112**	**6.2000e-004**	**0.1118**	**0.0296**	**5.7000e-004**	**0.0301**	**0.0000**	**74.0939**	**74.0939**	**1.5900e-003**	**0.0000**	**74.1337**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7569					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.5200e-003	0.1031	0.1393	2.3000e-004		3.6100e-003	3.6100e-003		3.6100e-003	3.6100e-003	0.0000	19.4047	19.4047	1.0600e-003	0.0000	19.4312
Total	**0.7614**	**0.1031**	**0.1393**	**2.3000e-004**		**3.6100e-003**	**3.6100e-003**		**3.6100e-003**	**3.6100e-003**	**0.0000**	**19.4047**	**19.4047**	**1.0600e-003**	**0.0000**	**19.4312**

3.6 Architectural Coating - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0352	0.0247	0.2374	8.2000e-004	0.1112	6.2000e-004	0.1118	0.0296	5.7000e-004	0.0301	0.0000	74.0939	74.0939	1.5900e-003	0.0000	74.1337
Total	**0.0352**	**0.0247**	**0.2374**	**8.2000e-004**	**0.1112**	**6.2000e-004**	**0.1118**	**0.0296**	**5.7000e-004**	**0.0301**	**0.0000**	**74.0939**	**74.0939**	**1.5900e-003**	**0.0000**	**74.1337**

3.7 Paving - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0503	0.4720	0.8018	1.2500e-003		0.0230	0.0230		0.0212	0.0212	0.0000	110.1059	110.1059	0.0356	0.0000	110.9962
Paving	0.0179					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0682**	**0.4720**	**0.8018**	**1.2500e-003**		**0.0230**	**0.0230**		**0.0212**	**0.0212**	**0.0000**	**110.1059**	**110.1059**	**0.0356**	**0.0000**	**110.9962**

3.7 Paving - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5200e-003	1.7600e-003	0.0170	6.0000e-005	7.9400e-003	4.0000e-005	7.9900e-003	2.1100e-003	4.0000e-005	2.1500e-003	0.0000	5.2915	5.2915	1.1000e-004	0.0000	5.2944
Total	**2.5200e-003**	**1.7600e-003**	**0.0170**	**6.0000e-005**	**7.9400e-003**	**4.0000e-005**	**7.9900e-003**	**2.1100e-003**	**4.0000e-005**	**2.1500e-003**	**0.0000**	**5.2915**	**5.2915**	**1.1000e-004**	**0.0000**	**5.2944**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0309	0.6212	0.9513	1.2500e-003		0.0168	0.0168		0.0168	0.0168	0.0000	110.1058	110.1058	0.0356	0.0000	110.9960
Paving	0.0179					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0487**	**0.6212**	**0.9513**	**1.2500e-003**		**0.0168**	**0.0168**		**0.0168**	**0.0168**	**0.0000**	**110.1058**	**110.1058**	**0.0356**	**0.0000**	**110.9960**

3.7 Paving - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5200e-003	1.7600e-003	0.0170	6.0000e-005	7.9400e-003	4.0000e-005	7.9900e-003	2.1100e-003	4.0000e-005	2.1500e-003	0.0000	5.2915	5.2915	1.1000e-004	0.0000	5.2944
Total	**2.5200e-003**	**1.7600e-003**	**0.0170**	**6.0000e-005**	**7.9400e-003**	**4.0000e-005**	**7.9900e-003**	**2.1100e-003**	**4.0000e-005**	**2.1500e-003**	**0.0000**	**5.2915**	**5.2915**	**1.1000e-004**	**0.0000**	**5.2944**

Appendix B

Multimodal Transportation Impact Analysis Report

San Luis Ranch Specific Plan

Multimodal Transportation Impact Analysis Report

Near Term US 101 Mainline, Ramps and Weave Operations

Prepared for:

City of San Luis Obispo

Prepared by:

omni · means
A GHD Company

SAN LUIS RANCH SPECIFIC PLAN
MULTIMODAL TRANSPORTATION IMPACT ANALYSIS REPORT

NEAR TERM US 101 MAINLINE, RAMPS AND WEAVE OPERATIONS

Prepared For:
City of San Luis Obispo
919 Palm Street
San Luis Obispo, CA 93401

Prepared By:
Omni-Means, a GHD Company
669 Pacific Street, Suite A
San Luis Obispo, CA 93401
(805) 242 – 0461

April 2018

65-6457-09
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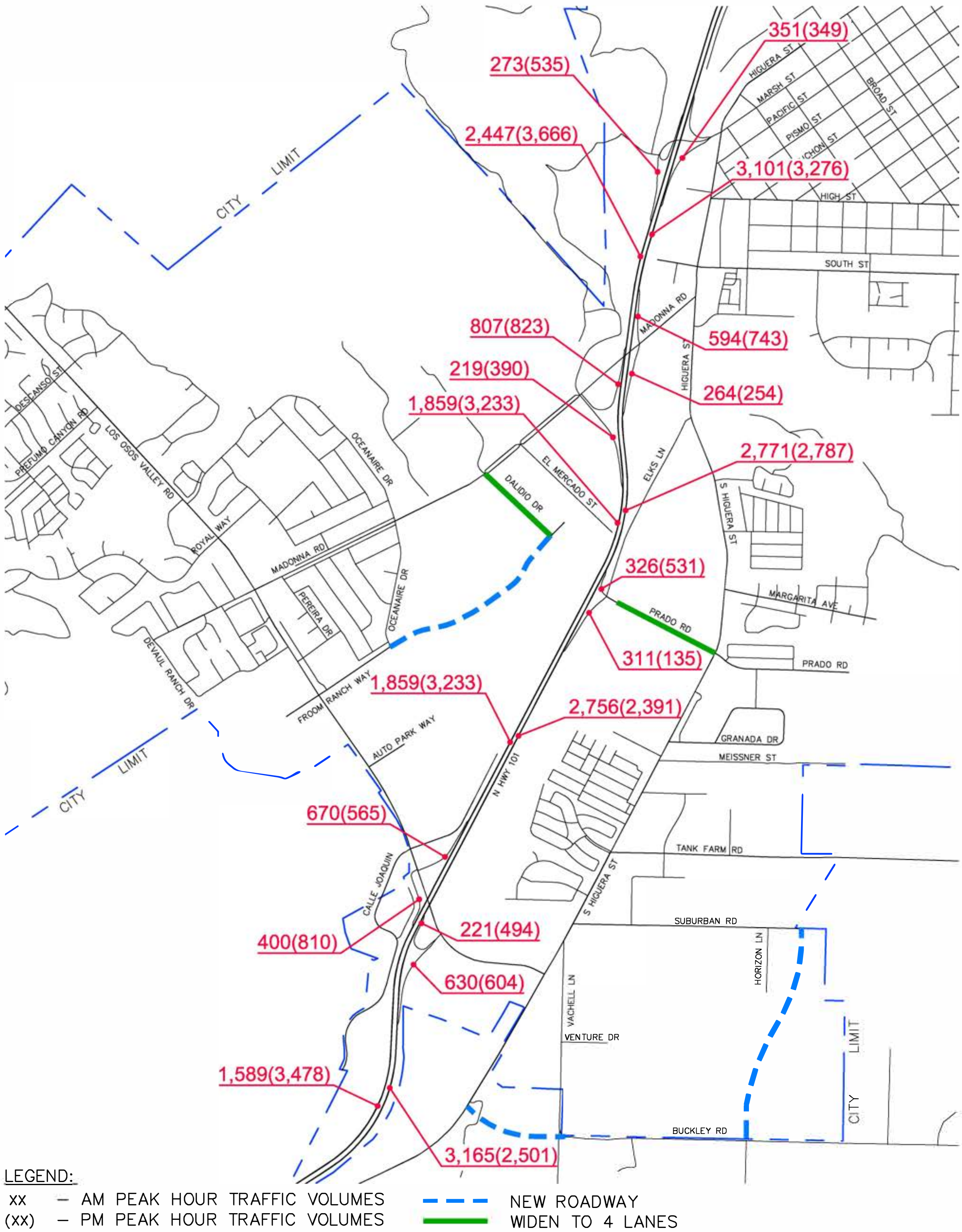
LIST OF FIGURES

LIST OF TABLES

APPENDIX

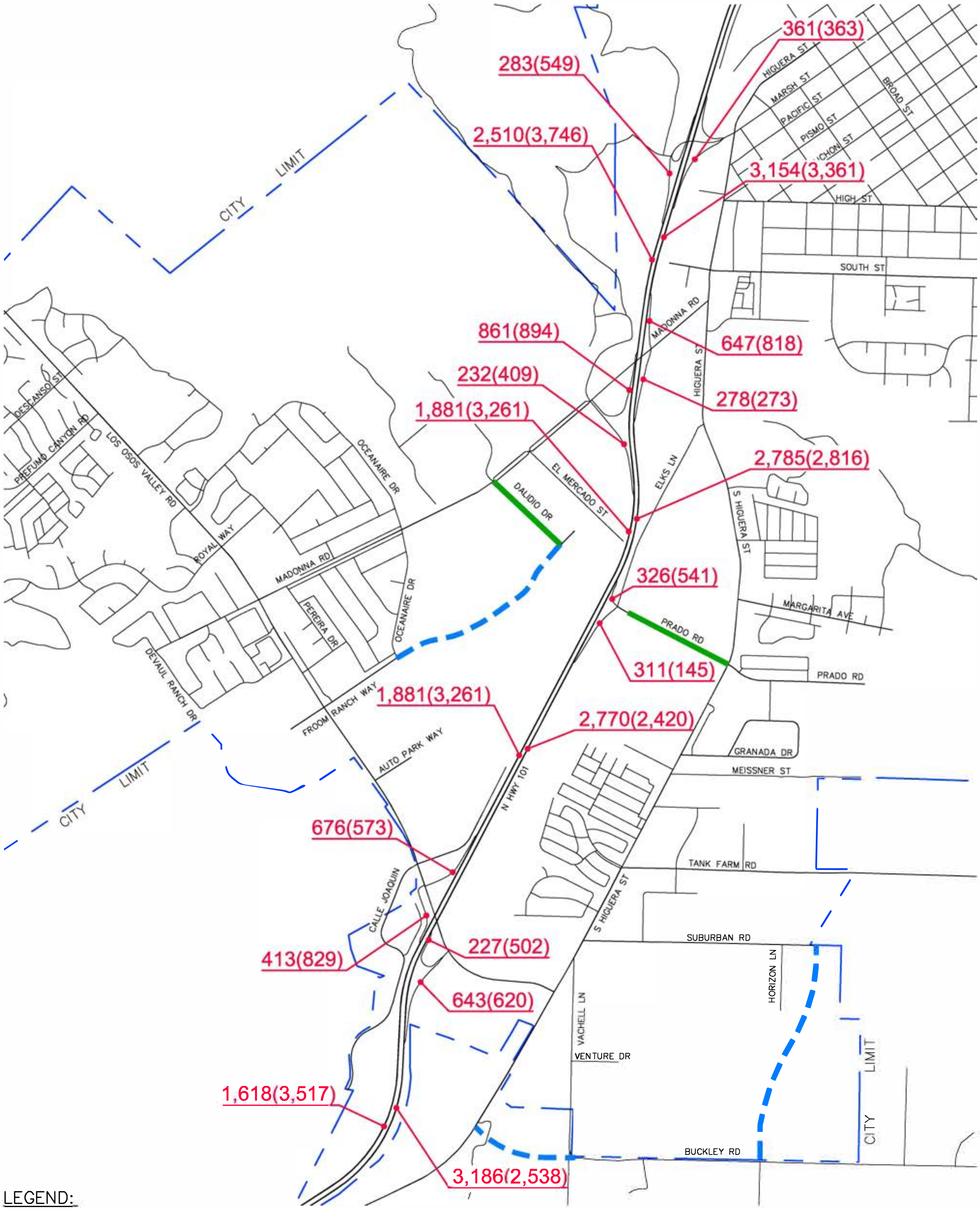


SAN LUIS RANCH SPECIFIC PLAN MULTIMODAL TIS

Figure 1A

Year 2025 Near Term US 101 Peak Hour Traffic Volumes

3/12/2018 9:24 AM O:\PRJ\2117\T2117\T2117TG001_SLR_SP_MMTIS_JAV.DWG



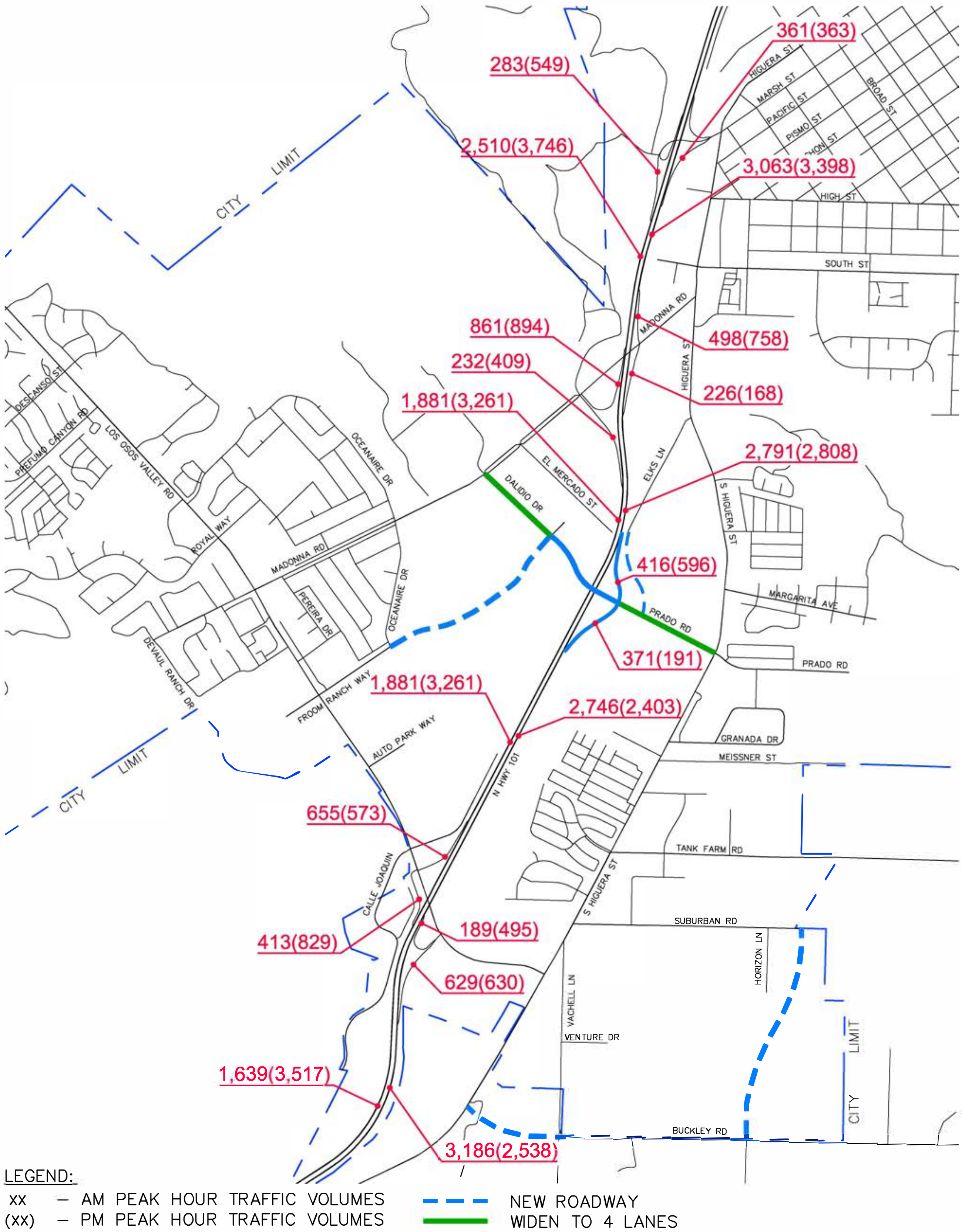
LEGEND:
xx – AM PEAK HOUR TRAFFIC VOLUMES
(xx) – PM PEAK HOUR TRAFFIC VOLUMES
NEW ROADWAY
WIDEN TO 4 LANES

SAN LUIS RANCH SPECIFIC PLAN MULTIMODAL TIS

Figure 2A

Year 2025 Near Term Plus Project US 101 Peak Hour Traffic Volumes

3/12/2018 9:29 AM O:\PRJ\2117\T2117\T2117TG001_SLR_SP_MMTIS_JAV.DWG



SAN LUIS RANCH SPECIFIC PLAN MULTIMODAL TIS

Figure 3A

Year 2025 Near Term Plus Project Mitigation US 101 Peak Hour Traffic Volumes

3/12/2018 9:30 AM O:\PRJ\2117\T2117\T2117TG001_SLR_SP_MMTIS_JAV.DWG

TABLE 52:
YEAR 2025 NEAR TERM CONDITIONS MAINLINE, RAMPS & WEAVING SECTIONS – HCS 2010 ANALYSIS

Interchange Location	Target LOS	Segment Type	No. of Lanes	AM Peak Hour Volume	AM Peak Hour Density (pc/mi/ln)	AM Peak Hour LOS	PM Peak Hour Volume	PM Peak Hour Density (pc/mi/ln)	PM Peak Hour LOS
US 101 Northbound									
US 101 NB South of Los Osos Valley Road	C	Freeway	2	**3,165**	**28.8**	**D**	2,501	22.0	C
US 101 NB Los Osos Valley Road Off Ramp	C	Diverge	1	**630**	**33.2**	**D**	604	26.7	C
US 101 NB Los Osos Valley Road On Ramp	C	Merge	1	221	26.0	C	494	22.6	C
US 101 NB South of Prado Road	C	Freeway	2	2,756	24.4	C	2,391	21.0	C
US 101 NB Prado Road Off Ramp	C	Diverge	1	**311**	**29.7**	**D**	135	26.1	C
US 101 NB South of Madonna Road	C	Weave	2	3,096	26.8	C	3,113	27.0	C
US 101 NB South of Marsh Street	C	Weave	3	3,464	19.5	B	3,660	20.7	C
US 101 Southbound									
US 101 SB South of Marsh Street	C	Weave	3	2,733	15.2	B	4,096	24.4	C
US 101 SB Madonna Road On Ramp	C	Merge	1	219	16.3	B	**390**	**28.4**	**D**
US 101 SB South of Madonna Road	C	Freeway	2	1,859	16.3	B	**3,233**	**29.7**	**D**
US 101 SB Los Osos Valley Road Off Ramp	C	Diverge	1	670	17.7	B	**565**	**31.2**	**D**
US 101 SB Los Osos Valley Road On Ramp	C	Merge	1	400	16.9	B	**810**	**33.5**	**D**
US 101 SB South of Los Osos Valley Road	C	Freeway	2	1,589	14.0	B	**3,478**	**33.0**	**D**

TABLE 52A:
YEAR 2025 NEAR TERM CONDITIONS WEAVING SECTIONS – LEISCH METHOD

Interchange Location	Target LOS	Segment Type	No. of Lanes	AM Peak Hour Length	AM Peak Hour Total Volume	AM Peak Hour LOS	PM Peak Hour Length	PM Peak Hour Total Volume	PM Peak Hour LOS
US 101 Northbound									
US 101 NB North of Prado Road	C	Weave	2	**2,140**	**3,096**	**E**	**2,140**	**3,113**	**E**
US 101 NB North of Madonna Road	C	Weave	3	**1,330**	**3,464**	**C/D**	**1,330**	**3,660**	**D**
US 101 Southbound									
US 101 SB South of Marsh Street	C	Weave	3	2,065	2,733	B/C	**2,065**	**4,096**	**E**

TABLE 61:
YEAR 2025 NEAR TERM PLUS PROJECT CONDITIONS MAINLINE, RAMPS & WEAVING SECTIONS – HCS 2010 ANALYSIS

Interchange Location	Target LOS	Segment Type	No. of Lanes	AM Peak Hour Volume	AM Peak Hour Density (pc/mi/ln)	AM Peak Hour LOS	PM Peak Hour Volume	PM Peak Hour Density (pc/mi/ln)	PM Peak Hour LOS
US 101 Northbound									
US 101 NB South of Los Osos Valley Road	C	Freeway	2	**3,186**	**29.1**	**D**	2,538	22.3	C
US 101 NB Los Osos Valley Road Off Ramp	C	Diverge	1	**643**	**33.5**	**D**	620	27.1	C
US 101 NB Los Osos Valley Road On Ramp	C	Merge	1	227	26.1	C	502	22.9	C
US 101 NB South of Prado Road	C	Freeway	2	2,770	24.5	C	2,420	21.2	C
US 101 NB Prado Road Off Ramp	C	Diverge	1	**311**	**29.9**	**D**	145	26.4	C
US 101 NB South of Madonna Road	C	Weave	2	3,112	27.0	C	3,146	27.3	C
US 101 NB South of Marsh Street	C	Weave	3	3,523	19.9	B	3,754	21.3	C
US 101 Southbound									
US 101 SB South of Marsh Street	C	Weave	3	2,804	15.6	B	4,184	23.9	C
US 101 SB Madonna Road On Ramp	C	Merge	1	232	16.5	B	**409**	**28.6**	**D**
US 101 SB South of Madonna Road	C	Freeway	2	1,881	16.5	B	3,261	30.0	D
US 101 SB Los Osos Valley Road Off Ramp	C	Diverge	1	676	17.9	B	**573**	**31.5**	**D**
US 101 SB Los Osos Valley Road On Ramp	C	Merge	1	413	17.1	B	**829**	**33.8**	**D**
US 101 SB South of Los Osos Valley Road	C	Freeway	2	1,618	14.2	B	**3,517**	**33.6**	**D**

TABLE 61A:
YEAR 2025 NEAR TERM PLUS PROJECT CONDITIONS WEAVING SECTIONS – LEISCH METHOD

Interchange Location	Target LOS	Segment Type	No. of Lanes	AM Peak Hour Length	AM Peak Hour Total Volume	AM Peak Hour LOS	PM Peak Hour Length	PM Peak Hour Total Volume	PM Peak Hour LOS
US 101 Northbound									
US 101 NB North of Prado Road	C	Weave	2	**2,140**	**3,112**	**E**	**2,140**	**3,146**	**E**
US 101 NB North of Madonna Road	C	Weave	3	**1,330**	**3,523**	**D**	**1,330**	**3,754**	**D**
US 101 Southbound									
US 101 SB South of Marsh Street	C	Weave	3	2,065	2,804	C	**2,065**	**4,184**	**E**

TABLE 61B:
YEAR 2025 NEAR TERM PLUS PROJECT MITIGATION CONDITIONS MAINLINE, RAMPS & WEAVING SECTIONS – HCS 2010 ANALYSIS

Interchange Location	Target LOS	Segment Type	No. of Lanes	AM Peak Hour Volume	AM Peak Hour Density (pc/mi/ln)	AM Peak Hour LOS	PM Peak Hour Volume	PM Peak Hour Density (pc/mi/ln)	PM Peak Hour LOS
US 101 Northbound									
US 101 NB South of Los Osos Valley Road	C	Freeway	2	**3,186**	**29.1**	**D**	2,538	22.3	C
US 101 NB Los Osos Valley Road Off Ramp	C	Diverge	1	**629**	**33.5**	**D**	630	27.1	C
US 101 NB Los Osos Valley Road On Ramp	C	Merge	1	189	25.9	C	495	22.7	C
US 101 NB South of Prado Road	C	Freeway	2	2,746	24.3	C	2,403	21.1	C
US 101 NB Prado Road Off Ramp	C	Diverge	1	**371**	**29.6**	**D**	191	26.3	C
US 101 NB South of Madonna Road	C	Weave	3	3,117	17.4	B	3,137	17.5	B
US 101 NB South of Marsh Street	C	Weave	3	3,421	19.2	B	3,795	21.5	C
US 101 Southbound									
US 101 SB South of Marsh Street	C	Weave	3	2,804	15.6	B	4,184	23.9	C
US 101 SB Madonna Road On Ramp	C	Merge	1	232	16.5	B	**409**	**28.6**	**D**
US 101 SB South of Madonna Road	C	Freeway	2	1,881	16.5	B	3,261	30.0	D
US 101 SB Los Osos Valley Road Off Ramp	C	Diverge	1	655	17.9	B	**573**	**31.5**	**D**
US 101 SB Los Osos Valley Road On Ramp	C	Merge	1	413	17.3	B	**829**	**33.8**	**D**
US 101 SB South of Los Osos Valley Road	C	Freeway	2	1,639	14.4	B	**3,517**	**33.6**	**D**

TABLE 61C:
YEAR 2025 NEAR TERM PLUS PROJECT MITIGATION CONDITIONS WEAVING SECTIONS – LEISCH METHOD

Interchange Location	Target LOS	Segment Type	No. of Lanes	AM Peak Hour Length	AM Peak Hour Total Volume	AM Peak Hour LOS	PM Peak Hour Length	PM Peak Hour Total Volume	PM Peak Hour LOS
US 101 Northbound									
US 101 NB North of Prado Road	C	Weave	3	940	3,117	C	940	3,137	C
US 101 NB North of Madonna Road	C	Weave	3	**1,330**	**3,421**	**C/D**	**1,330**	**3,795**	**D**
US 101 Southbound									
US 101 SB South of Marsh Street	C	Weave	3	2,065	2,804	C	**2,065**	**4,184**	**E**

TECHNICAL APPENDIX

Year 2025 Near Term Conditions

- US 101 Mainline, Merge/Diverge and Weaving Section LOS Worksheets
- Leisch Method Worksheets

Year 2025 Near Term Conditions

US 101 Mainline, Merge/Diverge and Weaving Section LOS Worksheets

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	AM Peak
Freeway/Direction:	US 101 NB
From/To:	s/o LOVR
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	3165	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	860	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1806	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1806	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	62.7	mi/h
Number of lanes, N	2	
Density, D	28.8	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	PM Peak
Freeway/Direction:	US 101 NB
From/To:	s/o LOVR
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	2501	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	680	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1427	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1427	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	65.0	mi/h
Number of lanes, N	2	
Density, D	22.0	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	LOVR NB OFF
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	3165	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	630	vph
Length of first accel/decel lane	230	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	221	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1545	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	3165		630		221	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	860		171		60	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

```
Heavy vehicle adjustment, fHV          0.952       0.952       0.952
Driver population factor, fP           1.00        1.00        1.00
Flow rate, vp                          3612        719         252       pcph

_________________________Estimation of V12 Diverge Areas_______________________

                  L  =            (Equation 13-12 or 13-13)
                   EQ
                  P  =    1.000   Using Equation  0
                   FD
                  v  = v  + (v - v ) P  =  3612   pc/h
                   12   R     F   R   FD

_______________________________Capacity Checks_________________________________

                           Actual        Maximum         LOS F?
     v  = v                3612          4700            No
      Fi   F
     v  = v - v            2893          4700            No
      FO   F   R
     v                     719           2000            No
      R
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34         12
If yes, v    = 3612                   (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

______________________Flow Entering Diverge Influence Area_____________________
                      Actual        Max Desirable         Violation?
     v                3612          4400                  No
      12
_________________Level of Service Determination (if not F)____________________

Density,               D = 4.252 + 0.0086 v  - 0.009  L   =   33.2    pc/mi/ln
                        R                  12          D
Level of service for ramp-freeway junction areas of influence D

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                 D  = 0.493
                                              S
Space mean speed in ramp influence area,     S  = 53.7    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 53.7    mph
_______________________________________________________________________________
```

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	LOVR OFF RAMP
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2501	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	604	vph
Length of first accel/decel lane	230	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	494	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1545	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	2501		604		494	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	680		164		134	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

```
Heavy vehicle adjustment, fHV          0.952       0.952       0.952
Driver population factor, fP           1.00        1.00        1.00
Flow rate, vp                          2854        689         564       pcph

_________________________Estimation of V12 Diverge Areas________________________

                  L  =            (Equation 13-12 or 13-13)
                   EQ
                  P  =    1.000   Using Equation  0
                   FD
                  v  = v  + (v - v ) P  =  2854   pc/h
                   12   R     F   R   FD

_______________________________Capacity Checks_________________________________

                             Actual        Maximum         LOS F?
     v  = v                  2854          4700            No
      Fi   F
     v  = v - v              2165          4700            No
      FO   F   R
     v                       689           2000            No
      R
     v  or v                 0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?             No
      3     av34
Is   v  or v      > 1.5 v  /2              No
      3     av34        12
If yes, v    = 2854                     (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

______________________Flow Entering Diverge Influence Area______________________
                        Actual        Max Desirable         Violation?
     v                  2854          4400                  No
      12
_________________Level of Service Determination (if not F)_____________________

Density,                 D = 4.252 + 0.0086 v  - 0.009  L   =   26.7    pc/mi/ln
                          R                  12          D
Level of service for ramp-freeway junction areas of influence C

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                 D  = 0.490
                                              S
Space mean speed in ramp influence area,     S  = 53.7    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 53.7    mph
_______________________________________________________________________________
```

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst: JAV
Agency/Co.: Omni-Means, a GHD Company
Date performed: 3/14/2018
Analysis time period: AM Peak
Freeway/Dir of Travel: US 101 NB
Junction: LOVR NB ON
Jurisdiction: SLO
Analysis Year: 2025 Near Term
Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2535	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	221	vph
Length of first accel/decel lane	620	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	630	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1545	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2535	221	630	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	689	60	171	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

```
Heavy vehicle adjustment, fHV           0.952       0.952       0.952
Driver population factor, fP            1.00        1.00        1.00
Flow rate, vp                           2893        252         719       pcph

_________________________Estimation of V12 Merge Areas_________________________

                  L  =            (Equation 13-6 or 13-7)
                   EQ
                  P  =    1.000   Using Equation  0
                   FM
                  v  = v  (P  ) =  2893   pc/h
                   12   F   FM

_______________________________Capacity Checks_________________________________

                           Actual        Maximum         LOS F?
     v                     3145          4700            No
      FO
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?          No
      3     av34
Is   v  or v      > 1.5 v  /2           No
      3     av34         12
If yes, v    = 2893                  (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

________________________Flow Entering Merge Influence Area_____________________
                      Actual       Max Desirable        Violation?
     v                3145         4600                 No
      R12
_________________Level of Service Determination (if not F)_____________________

Density, D = 5.475 + 0.00734 v  + 0.0078 v   - 0.00627 L   =   26.0    pc/mi/ln
          R                   R          12            A
Level of service for ramp-freeway junction areas of influence  C

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                 M  = 0.368
                                              S
Space mean speed in ramp influence area,     S  = 56.5    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 56.5    mph
_______________________________________________________________________________
```

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	LOVR NB ON
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	1897	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	494	vph
Length of first accel/decel lane	620	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	604	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1545	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1897	494	604	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	515	134	164	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

```
Heavy vehicle adjustment, fHV            0.952       0.952       0.952
Driver population factor, fP             1.00        1.00        1.00
Flow rate, vp                            2165        564         689        pcph

_________________________Estimation of V12 Merge Areas_________________________

                  L  =            (Equation 13-6 or 13-7)
                   EQ
                  P  =    1.000   Using Equation  0
                   FM
                  v  = v  (P  ) =  2165   pc/h
                   12   F   FM

_______________________________Capacity Checks_________________________________

                           Actual        Maximum         LOS F?
     v                     2729          4700            No
      FO
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34         12
If yes, v    = 2165                   (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

________________________Flow Entering Merge Influence Area_____________________
                      Actual        Max Desirable         Violation?
     v                2729          4600                  No
      R12
_________________Level of Service Determination (if not F)_____________________

Density, D = 5.475 + 0.00734 v  + 0.0078 v   - 0.00627 L   =   22.6    pc/mi/ln
          R                   R          12             A
Level of service for ramp-freeway junction areas of influence  C

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                 M  = 0.337
                                              S
Space mean speed in ramp influence area,     S  = 57.2    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 57.2    mph
_______________________________________________________________________________
```

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	AM Peak
Freeway/Direction:	US 101 NB
From/To:	s/o Prado
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	2756	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	749	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1573	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1573	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	64.6	mi/h
Number of lanes, N	2	
Density, D	24.4	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.1

Phone:	Fax:
E-mail:	

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	PM Peak
Freeway/Direction:	US 101 NB
From/To:	s/o Prado
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	2391	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	650	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1364	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1364	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	65.0	mi/h
Number of lanes, N	2	
Density, D	21.0	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	PRADO NB OFF
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2756	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	311	vph
Length of first accel/decel lane	175	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	221	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	4200	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	2756		311		221	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	749		85		60	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

```
Heavy vehicle adjustment, fHV          0.952       0.952       0.952
Driver population factor, fP           1.00        1.00        1.00
Flow rate, vp                          3145        355         252       pcph

_________________________Estimation of V12 Diverge Areas_______________________

                  L  =            (Equation 13-12 or 13-13)
                   EQ
                  P  =    1.000   Using Equation  0
                   FD
                  v  = v  + (v - v ) P  =  3145   pc/h
                   12   R     F   R   FD

_______________________________Capacity Checks_________________________________

                           Actual        Maximum         LOS F?
     v  = v                3145          4700            No
      Fi   F
     v  = v - v            2790          4700            No
      FO   F   R
     v                     355           2000            No
      R
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34        12
If yes, v    = 3145                   (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

______________________Flow Entering Diverge Influence Area_____________________
                      Actual        Max Desirable         Violation?
     v                3145          4400                  No
      12
_________________Level of Service Determination (if not F)_____________________

Density,               D = 4.252 + 0.0086 v  - 0.009  L   =   29.7    pc/mi/ln
                        R                   12         D
Level of service for ramp-freeway junction areas of influence D

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                 D  = 0.460
                                              S
Space mean speed in ramp influence area,     S  = 54.4    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 54.4    mph
_______________________________________________________________________________
```

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	PRADO NB OFF
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2391	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	135	vph
Length of first accel/decel lane	175	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	494	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	4200	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	2391		135		494	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	650		37		134	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

```
Heavy vehicle adjustment, fHV            0.952        0.952        0.952
Driver population factor, fP             1.00         1.00         1.00
Flow rate, vp                            2729         154          564        pcph

_________________________Estimation of V12 Diverge Areas_______________________

                  L  =             (Equation 13-12 or 13-13)
                   EQ
                  P  =    1.000   Using Equation  0
                   FD
                  v  = v  + (v - v ) P  =  2729   pc/h
                   12   R     F   R   FD

_______________________________Capacity Checks_________________________________

                             Actual        Maximum         LOS F?
     v  = v                  2729          4700            No
      Fi   F
     v  = v - v              2575          4700            No
      FO   F   R
     v                       154           2000            No
      R
     v  or v                 0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?             No
      3     av34
Is   v  or v      > 1.5 v  /2              No
      3     av34        12
If yes, v    = 2729                     (Equation 13-15, 13-16, 13-18, or 13-19)
        12A

______________________Flow Entering Diverge Influence Area_____________________
                        Actual        Max Desirable         Violation?
     v                  2729          4400                  No
      12
_________________Level of Service Determination (if not F)_____________________

Density,                 D = 4.252 + 0.0086 v  - 0.009  L   =   26.1    pc/mi/ln
                          R                  12          D
Level of service for ramp-freeway junction areas of influence C

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                 D  = 0.442
                                              S
Space mean speed in ramp influence area,     S  = 54.8    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 54.8    mph
_______________________________________________________________________________
```

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:

E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	US 101 NB
Weaving Location:	Prado-Madonna
Analysis Year:	2025 Near Term
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	2	ln
Weaving segment length, LS	2140	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2246	261	199	65	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	597	69	53	17	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2509	292	222	73	pc/h
Volume ratio, VR		0.166			

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	67	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	1307	lc/h
Total lane changes, LCALL	1374	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.159

```
Average weaving speed, SW                    58.1        mi/h
Average non-weaving speed, SNW               57.6        mi/h

_________Weaving Segment Speed, Density, Level of Service and Capacity_________
Weaving segment speed, S                     57.7        mi/h
Weaving segment density, D                   26.8        pc/mi/ln
Level of service, LOS                        C
Weaving segment v/c ratio                    0.706
Weaving segment flow rate, v                 3096        pc/h
Weaving segment capacity, cW                 4177        veh/h

_______________________Limitations on Weaving Segments_________________________
If limit reached, see note.

                          Minimum       Maximum       Actual       Note
Weaving length (ft)          300           4192         2140        a,b
                                        Maximum       Analyzed
Density-based capacty,                     2350         2193         c
cIWL (pc/h/ln)
                                        Maximum       Analyzed
v/c ratio                                  1.00         0.706        d

Notes:
a.  In weaving segments shorter than 300 ft, weaving vehicles are assumed to
    make only necessary lane changes.
b.  Weaving segments longer than the calculated maximum length should be
    treated as isolated merge and diverge areas using the procedures of
    Chapter 13, "Freeway Merge and Diverge Segments."
c.  The density-based capacity exceeds the capacity of a basic freeway segment,
    under equivalent ideal conditions.
d.  Volumes exceed the weaving segment capacity. The level of service is F.

 ______________________________________________________________________________
```

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Weaving Location:	Prado-Madonna
Analysis Year:	2025 Near Term
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	2	ln
Weaving segment length, LS	2140	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2108	425	148	106	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	561	113	39	28	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2355	475	165	118	pc/h
Volume ratio, VR		0.206			

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	67	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	1284	lc/h
Total lane changes, LCALL	1351	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.157

Average weaving speed, SW	58.2	mi/h
Average non-weaving speed, SNW	57.5	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	57.7	mi/h
Weaving segment density, D	27.0	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.720	
Weaving segment flow rate, v	3113	pc/h
Weaving segment capacity, cW	4118	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4593	2140	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	2162	c
		Maximum	Analyzed	
v/c ratio		1.00	0.720	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	US 101 NB
Weaving Location:	Madonna-Marsh
Analysis Year:	2025 Near Term
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	1330	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2281	469	226	125	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	607	125	60	33	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2548	524	252	140	pc/h

Volume ratio, VR 0.224

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	113	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	697	lc/h
Total lane changes, LCALL	810	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.153

Average weaving speed, SW	58.4	mi/h
Average non-weaving speed, SNW	59.5	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	59.2	mi/h
Weaving segment density, D	19.5	pc/mi/ln
Level of service, LOS	B	
Weaving segment v/c ratio	0.554	
Weaving segment flow rate, v	3464	pc/h
Weaving segment capacity, cW	5960	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4783	1330	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	2086	c
		Maximum	Analyzed	
v/c ratio		1.00	0.554	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:

E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Weaving Location:	Madonna-Marsh
Analysis Year:	2025 Near Term
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	1330	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2287	640	246	103	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	608	170	65	27	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2555	715	275	115	pc/h

Volume ratio, VR 0.270

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	113	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	693	lc/h
Total lane changes, LCALL	806	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.152

Average weaving speed, SW	58.4	mi/h
Average non-weaving speed, SNW	59.1	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	58.9	mi/h
Weaving segment density, D	20.7	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.595	
Weaving segment flow rate, v	3660	pc/h
Weaving segment capacity, cW	5854	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	5270	1330	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	2049	c
		Maximum	Analyzed	
v/c ratio		1.00	0.595	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	US 101 SB
Weaving Location:	Marsh-Madonna
Analysis Year:	2025 Near Term
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	2065	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	1421	219	753	54	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	378	58	200	14	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	1587	245	841	60	pc/h
Volume ratio, VR		0.397			

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	147	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	881	lc/h
Total lane changes, LCALL	1028	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.130

Average weaving speed, SW	59.2	mi/h
Average non-weaving speed, SNW	60.6	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	60.1	mi/h
Weaving segment density, D	15.2	pc/mi/ln
Level of service, LOS	B	
Weaving segment v/c ratio	0.456	
Weaving segment flow rate, v	2733	pc/h
Weaving segment capacity, cW	5711	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	6652	2065	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	1999	c
		Maximum	Analyzed	
v/c ratio		1.00	0.456	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:

E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	US 101 SB
Weaving Location:	Marsh-Madonna
Analysis Year:	2025 Near Term
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	Two-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	2065	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2416	427	715	108	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	643	114	190	29	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2699	477	799	121	pc/h
Volume ratio, VR		0.030			

Configuration Characteristics

Number of maneuver lanes, NWL	0	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF		lc/pc
Minimum FR lane changes, LCFR		lc/pc
Minimum RR lane changes, LCRR	3	lc/pc
Minimum weaving lane changes, LCMIN	363	lc/h
Weaving lane changes, LCW	510	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	1360	lc/h
Total lane changes, LCALL	1870	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.209

Average weaving speed, SW	56.4	mi/h
Average non-weaving speed, SNW	55.8	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	55.8	mi/h
Weaving segment density, D	24.4	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.666	
Weaving segment flow rate, v	4096	pc/h
Weaving segment capacity, cW	5854	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	6001	2065	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	2049	c
		Maximum	Analyzed	
v/c ratio		1.00	0.666	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 SB
Junction:	MADONNA SB ON
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	1640	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	219	vph
Length of first accel/decel lane	900	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1640	219		vph
Peak-hour factor, PHF	0.92	0.92		
Peak 15-min volume, v15	446	60		v
Trucks and buses	10	10		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.952	0.952	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	1872	250	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 Using Equation 0

$v_{12} = v_F (P_{FM})$ = 1872 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	2122	4700	No

v_3 or v_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12}/2 No

If yes, v_{12A} = 1872 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2122	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$ = 16.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.291		
Space mean speed in ramp influence area,	S_R = 58.3	mph	
Space mean speed in outer lanes,	S_0 = N/A	mph	
Space mean speed for all vehicles,	S = 58.3	mph	

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 SB
Junction:	MADONNA SB ON
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2843	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	390	vph
Length of first accel/decel lane	900	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2843	390		vph
Peak-hour factor, PHF	0.92	0.92		
Peak 15-min volume, v15	773	106		v
Trucks and buses	10	10		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

```
Heavy vehicle adjustment, fHV          0.952       0.952
Driver population factor, fP           1.00        1.00
Flow rate, vp                          3245        445                  pcph

_________________________Estimation of V12 Merge Areas__________________________

                  L  =            (Equation 13-6 or 13-7)
                   EQ
                  P  =    1.000   Using Equation  0
                   FM
                  v  = v  (P  ) =  3245   pc/h
                   12   F   FM

_______________________________Capacity Checks__________________________________

                           Actual        Maximum         LOS F?
     v                     3690          4700            No
      FO
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34         12
If yes, v    = 3245                   (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

________________________Flow Entering Merge Influence Area_____________________
                      Actual        Max Desirable         Violation?
     v                3690          4600                  No
      R12
_________________Level of Service Determination (if not F)_____________________

Density, D = 5.475 + 0.00734 v  + 0.0078 v   - 0.00627 L   =   28.4    pc/mi/ln
          R                   R           12            A
Level of service for ramp-freeway junction areas of influence  D

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                 M  = 0.414
                                              S
Space mean speed in ramp influence area,     S  = 55.5    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 55.5    mph
________________________________________________________________________________
```

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	AM Peak
Freeway/Direction:	US 101 SB
From/To:	s/o Madonna
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	1859	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	505	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1061	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1061	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	65.0	mi/h
Number of lanes, N	2	
Density, D	16.3	pc/mi/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	PM Peak
Freeway/Direction:	US 101 SB
From/To:	s/o Madonna
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	3233	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	879	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1845	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1845	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	62.2	mi/h
Number of lanes, N	2	
Density, D	29.7	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 SB
Junction:	LOVR SB OFF
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	1859	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	670	vph
Length of first accel/decel lane	530	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	400	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1650	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	1859		670		400	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	505		182		109	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

```
Heavy vehicle adjustment, fHV          0.952       0.952       0.952
Driver population factor, fP           1.00        1.00        1.00
Flow rate, vp                          2122        765         457       pcph

_________________________Estimation of V12 Diverge Areas_______________________

                  L  =            (Equation 13-12 or 13-13)
                   EQ
                  P  =    1.000   Using Equation  0
                   FD
                  v  = v  + (v - v ) P  =  2122   pc/h
                   12   R     F   R   FD

_______________________________Capacity Checks_________________________________

                           Actual        Maximum         LOS F?
     v  = v                2122          4700            No
      Fi   F
     v  = v - v            1357          4700            No
      FO   F   R
     v                     765           2000            No
      R
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34        12
If yes, v    = 2122                   (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

______________________Flow Entering Diverge Influence Area_____________________
                      Actual        Max Desirable        Violation?
     v                2122          4400                 No
      12
_________________Level of Service Determination (if not F)_____________________

Density,               D = 4.252 + 0.0086 v  - 0.009  L   =   17.7    pc/mi/ln
                        R                  12          D
Level of service for ramp-freeway junction areas of influence B

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                 D  = 0.497
                                              S
Space mean speed in ramp influence area,     S  = 53.6    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 53.6    mph
_______________________________________________________________________________
```

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means
Date performed:	3/14/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 SB
Junction:	LOVR SB OFF
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	3233	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	565	vph
Length of first accel/decel lane	530	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	810	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1650	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	3233		565		810	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	879		154		220	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

```
Heavy vehicle adjustment, fHV          0.952       0.952       0.952
Driver population factor, fP           1.00        1.00        1.00
Flow rate, vp                          3690        645         924        pcph

_________________________Estimation of V12 Diverge Areas_______________________

                  L  =            (Equation 13-12 or 13-13)
                   EQ
                  P  =    1.000   Using Equation  0
                   FD
                  v  = v  + (v - v ) P  =  3690   pc/h
                   12   R     F   R   FD

_______________________________Capacity Checks_________________________________

                           Actual        Maximum         LOS F?
     v  = v                3690          4700            No
      Fi   F
     v  = v - v            3045          4700            No
      FO   F   R
     v                     645           2000            No
      R
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34         12
If yes, v    = 3690                   (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

______________________Flow Entering Diverge Influence Area_____________________
                      Actual        Max Desirable        Violation?
     v                3690          4400                 No
      12
_________________Level of Service Determination (if not F)____________________

Density,               D = 4.252 + 0.0086 v  - 0.009  L   =   31.2    pc/mi/ln
                        R                  12          D
Level of service for ramp-freeway junction areas of influence D

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                D  = 0.486
                                             S
Space mean speed in ramp influence area,    S  = 53.8    mph
                                             R
Space mean speed in outer lanes,            S  =  N/A    mph
                                             0
Space mean speed for all vehicles,          S  = 53.8    mph
_______________________________________________________________________________
```

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 SB
Junction:	LOVR SB ON
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	1189	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	400	vph
Length of first accel/decel lane	400	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	670	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1650	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1189	400	670	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	323	109	182	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

```
Heavy vehicle adjustment, fHV          0.952       0.952       0.952
Driver population factor, fP           1.00        1.00        1.00
Flow rate, vp                          1357        457         765       pcph

_________________________Estimation of V12 Merge Areas_________________________

                  L  =            (Equation 13-6 or 13-7)
                   EQ
                  P  =    1.000   Using Equation  0
                   FM
                  v  = v  (P  ) =  1357   pc/h
                   12   F   FM

_______________________________Capacity Checks_________________________________

                           Actual        Maximum         LOS F?
     v                     1814          4700            No
      FO
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34         12
If yes, v    = 1357                   (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

________________________Flow Entering Merge Influence Area_____________________
                      Actual        Max Desirable         Violation?
     v                1814          4600                  No
      R12
_________________Level of Service Determination (if not F)_____________________

Density, D = 5.475 + 0.00734 v  + 0.0078 v   - 0.00627 L   =   16.9    pc/mi/ln
          R                   R           12             A
Level of service for ramp-freeway junction areas of influence  B

______________________________Speed Estimation__________________________________

Intermediate speed variable,                 M  = 0.317
                                              S
Space mean speed in ramp influence area,     S  = 57.7    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 57.7    mph
________________________________________________________________________________
```

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 SB
Junction:	LOVR SB ON
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2668	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	810	vph
Length of first accel/decel lane	400	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	565	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1650	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	2668		810		565	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	725		220		154	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade		%		%		%
Length		mi		mi		mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

```
Heavy vehicle adjustment, fHV          0.952        0.952        0.952
Driver population factor, fP           1.00         1.00         1.00
Flow rate, vp                          3045         924          645        pcph

_________________________Estimation of V12 Merge Areas_________________________

                  L  =            (Equation 13-6 or 13-7)
                   EQ
                  P  =    1.000   Using Equation  0
                   FM
                  v  = v  (P  ) =  3045   pc/h
                   12   F   FM

_______________________________Capacity Checks_________________________________

                             Actual        Maximum         LOS F?
     v                       3969          4700            No
      FO
     v  or v                 0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?             No
      3     av34
Is   v  or v      > 1.5 v  /2              No
      3     av34         12
If yes, v    = 3045                    (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

________________________Flow Entering Merge Influence Area_____________________
                        Actual        Max Desirable        Violation?
     v                  3969          4600                 No
      R12
_________________Level of Service Determination (if not F)_____________________

Density, D = 5.475 + 0.00734 v  + 0.0078 v   - 0.00627 L   =   33.5    pc/mi/ln
          R                   R           12            A
Level of service for ramp-freeway junction areas of influence  D

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                 M  = 0.499
                                              S
Space mean speed in ramp influence area,     S  = 53.5    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 53.5    mph
_______________________________________________________________________________
```

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	AM Peak
Freeway/Direction:	US 101 SB
From/To:	s/o LOVR
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	1589	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	432	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	907	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	907	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	65.0	mi/h
Number of lanes, N	2	
Density, D	14.0	pc/mi/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	PM Peak
Freeway/Direction:	US 101 SB
From/To:	s/o LOVR
Jurisdiction:	SLO
Analysis Year:	2025 Near Term

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	3478	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	945	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1985	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

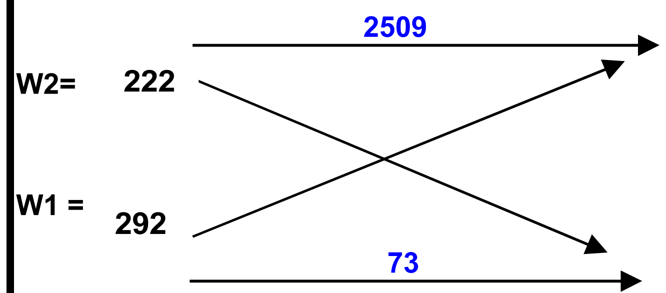
LOS and Performance Measures

Flow rate, vp	1985	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	60.1	mi/h
Number of lanes, N	2	
Density, D	33.0	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Year 2025 Near Term Conditions

Leisch Method Worksheets



LOS weave = A

Compo. LOS = E

V = 3096 pcph

L = 2140 feet

W1 = 292 pcph

W2 = 222 pcph

V_w = 514 pcph

R = 0.43

Direction : North

Project: 2025 Near Term

Year: 2025 Peak Hour: AM Peak

On Ramp: Prado Rd

Off Ramp: Madonna Rd

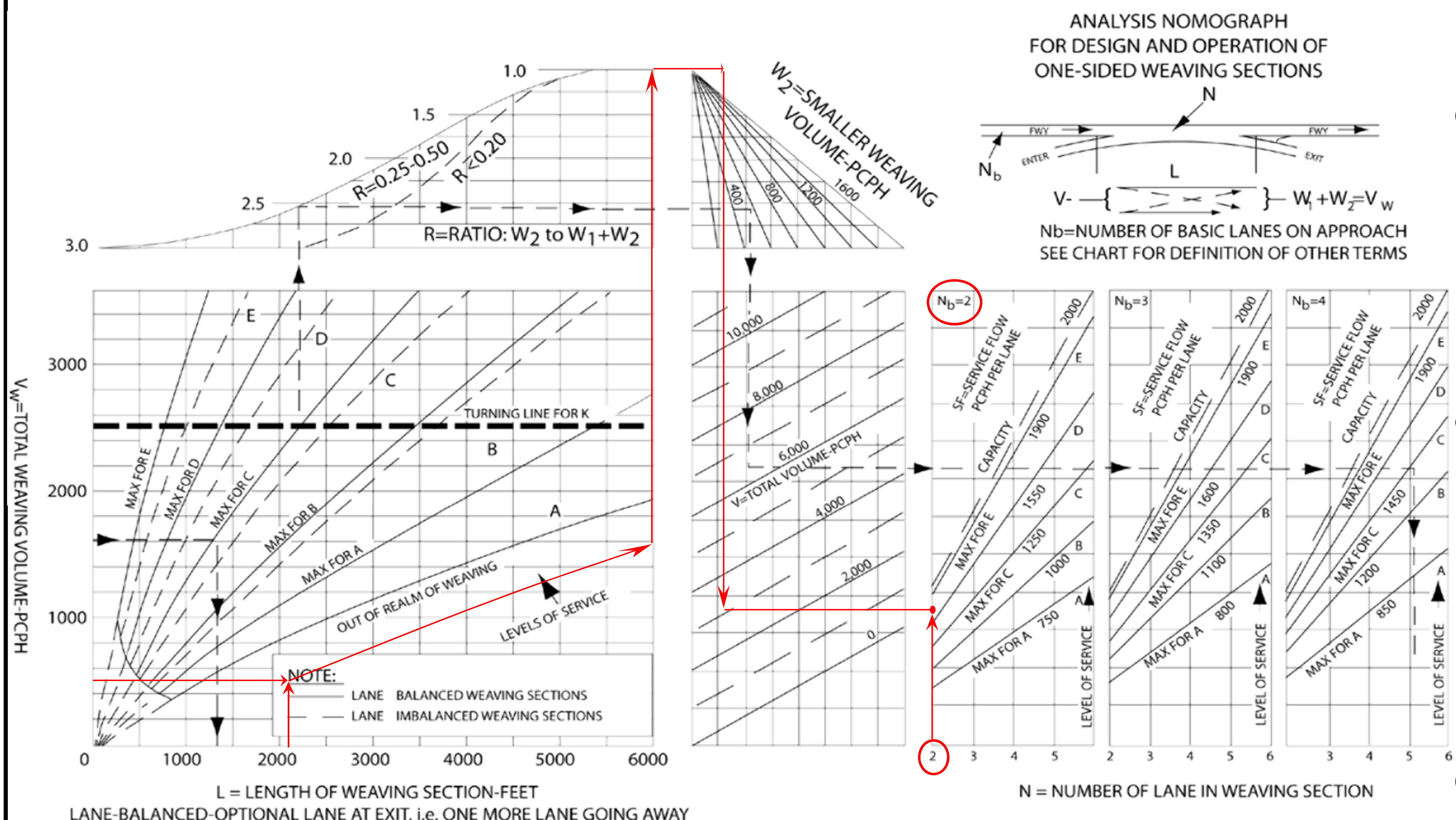
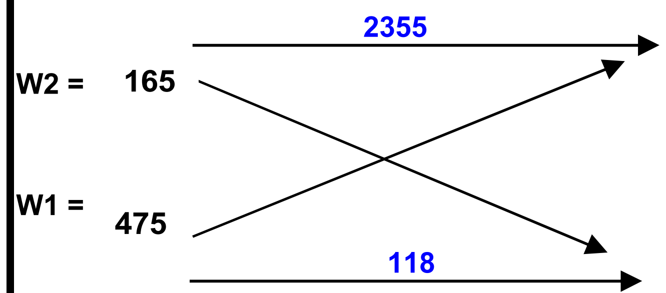


Figure 504.7A

Design Curve for Freeway and Collector Weaving



LOS weave = A

Compo. LOS = E

V = 3113 pcph

L = 2140 feet

W1 = 475 pcph

W2 = 165 pcph

V_w = 640 pcph

R = 0.26

Direction : North

Project: 2025 Near Term

Year: 2025 Peak Hour: PM Peak

On Ramp: Prado Rd

Off Ramp: Madonna Rd

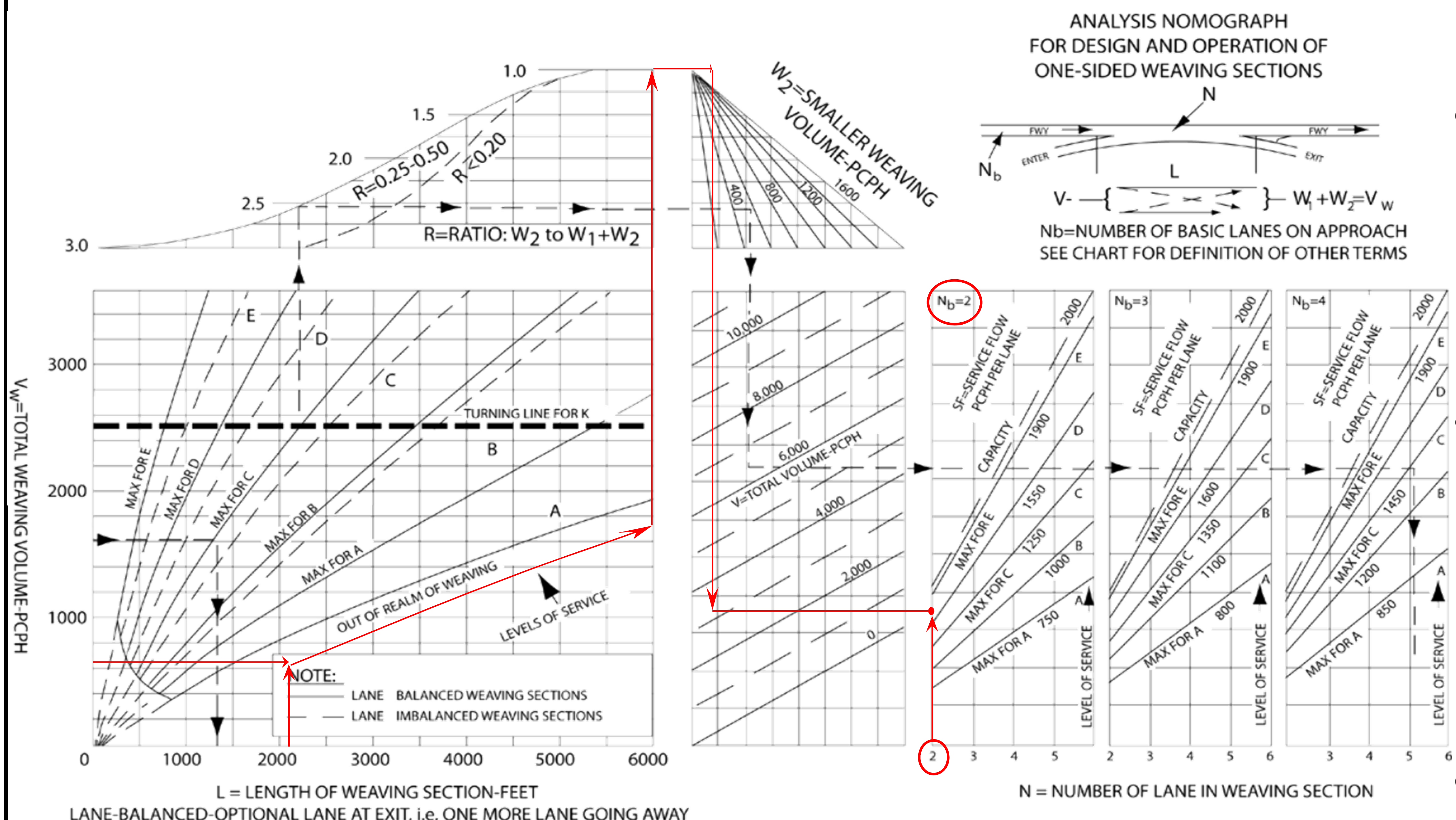
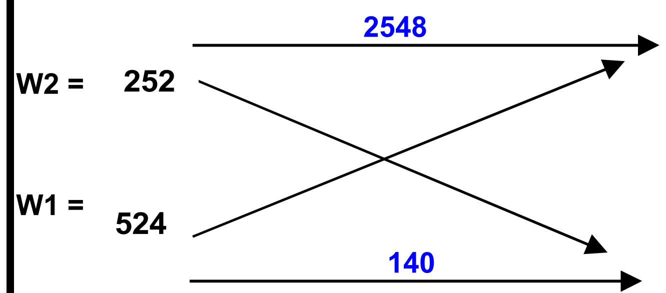


Figure 504.7A
Design Curve for Freeway and Collector Weaving



LOS weave = A/B

Compo. LOS = C/D

V = 3464 pcph

L = 1330 feet

W1 = 524 pcph

W2 = 252 pcph

V_w = 776 pcph

R = 0.32

Direction : North

Project: 2025 Near Term

Year: 2025 Peak Hour: AM Peak

On Ramp: Madonna Rd

Off Ramp: Marsh St

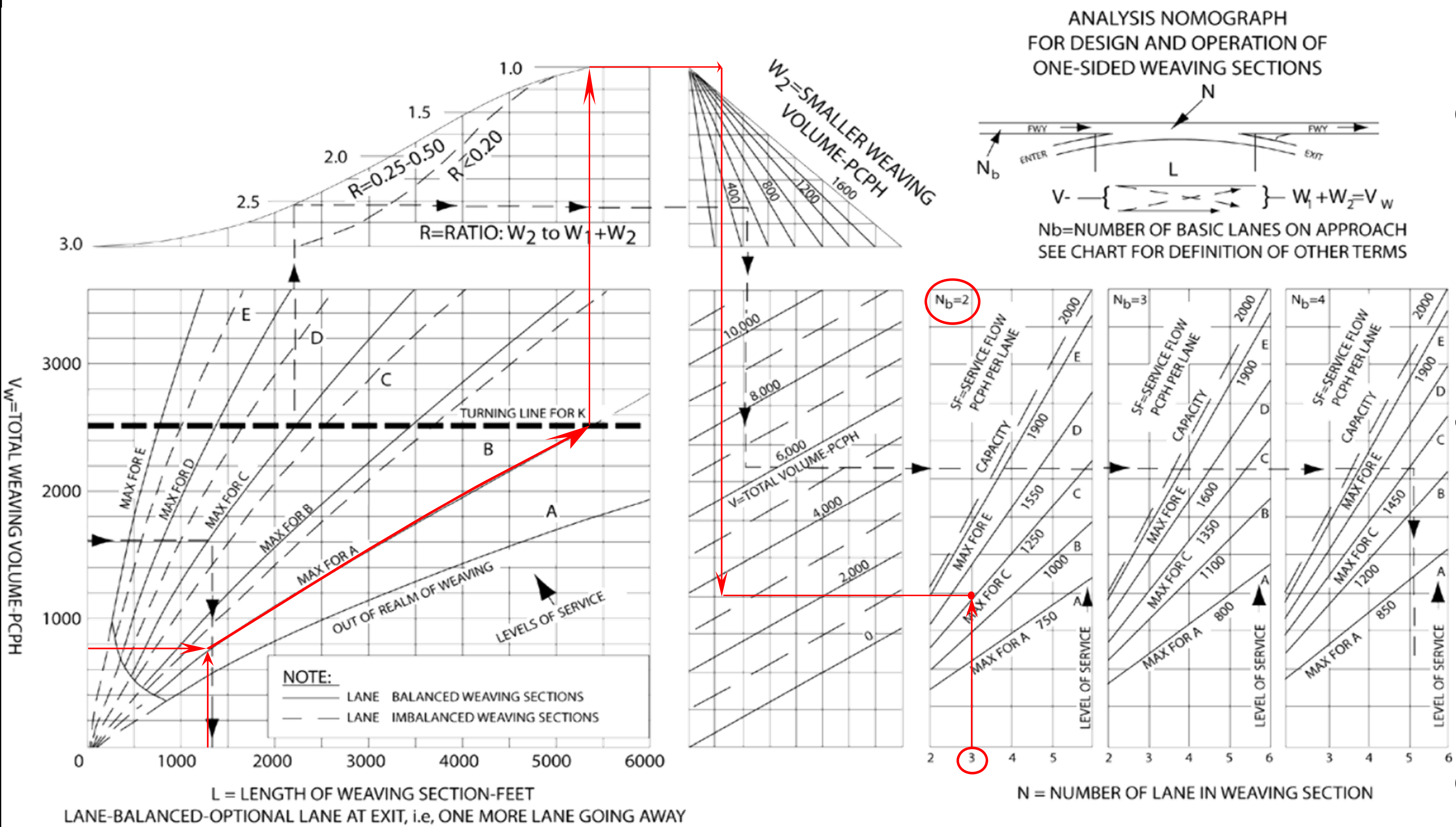


Figure 504.7A

Design Curve for Freeway and Collector Weaving

W2 = 275

W1 = 715

2555

115

LOS weave = B

Compo. LOS = D

V = 3660 pcph

L = 1330 feet

W1 = 715 pcph

W2 = 275 pcph

V_w = 990 pcph

R = 0.28

Direction : North

Project: 2025 Near Term

Year: *2025* Peak Hour: PM Peak

On Ramp: Madonna Rd

Off Ramp: Marsh St

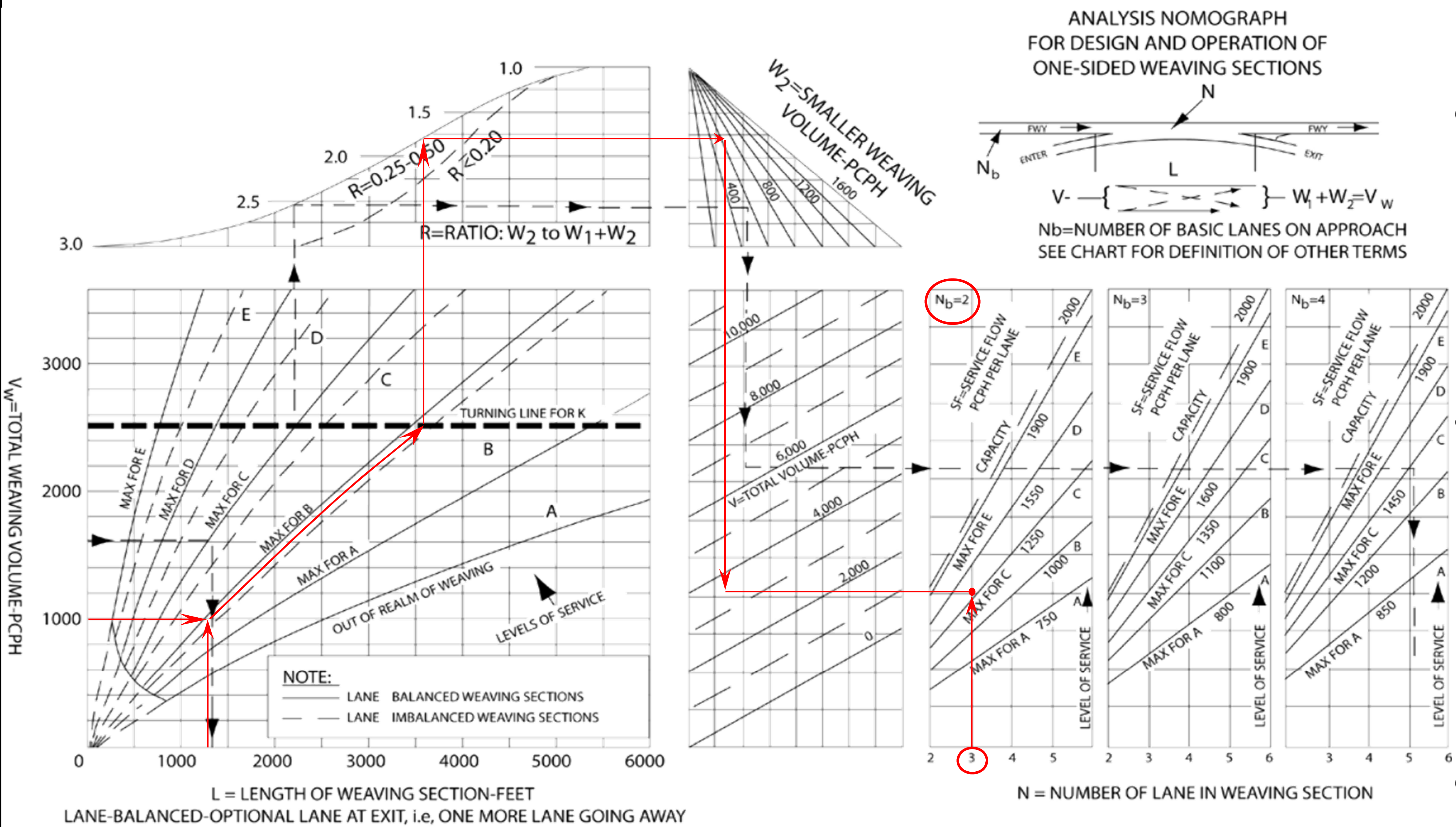
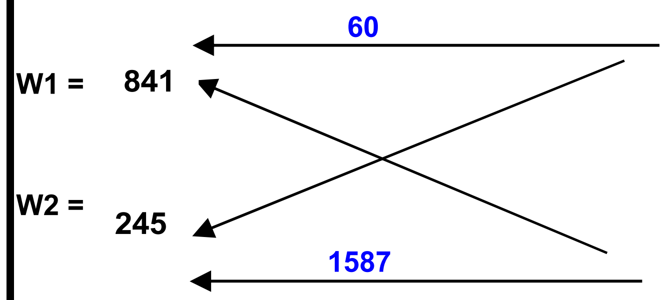


Figure 504.7A
Design Curve for Freeway and Collector Weaving



LOS weave = A

Compo. LOS = B/C

V = 2733 pcph

L = 2065 feet

W1 = 841 pcph

W2 = 245 pcph

V_w = 1086 pcph

R = 0.23

Direction : South

Project: 2025 Near Term

Year: 2025 Peak Hour: AM Peak

On Ramp: Marsh St

Off Ramp: Madonna Rd

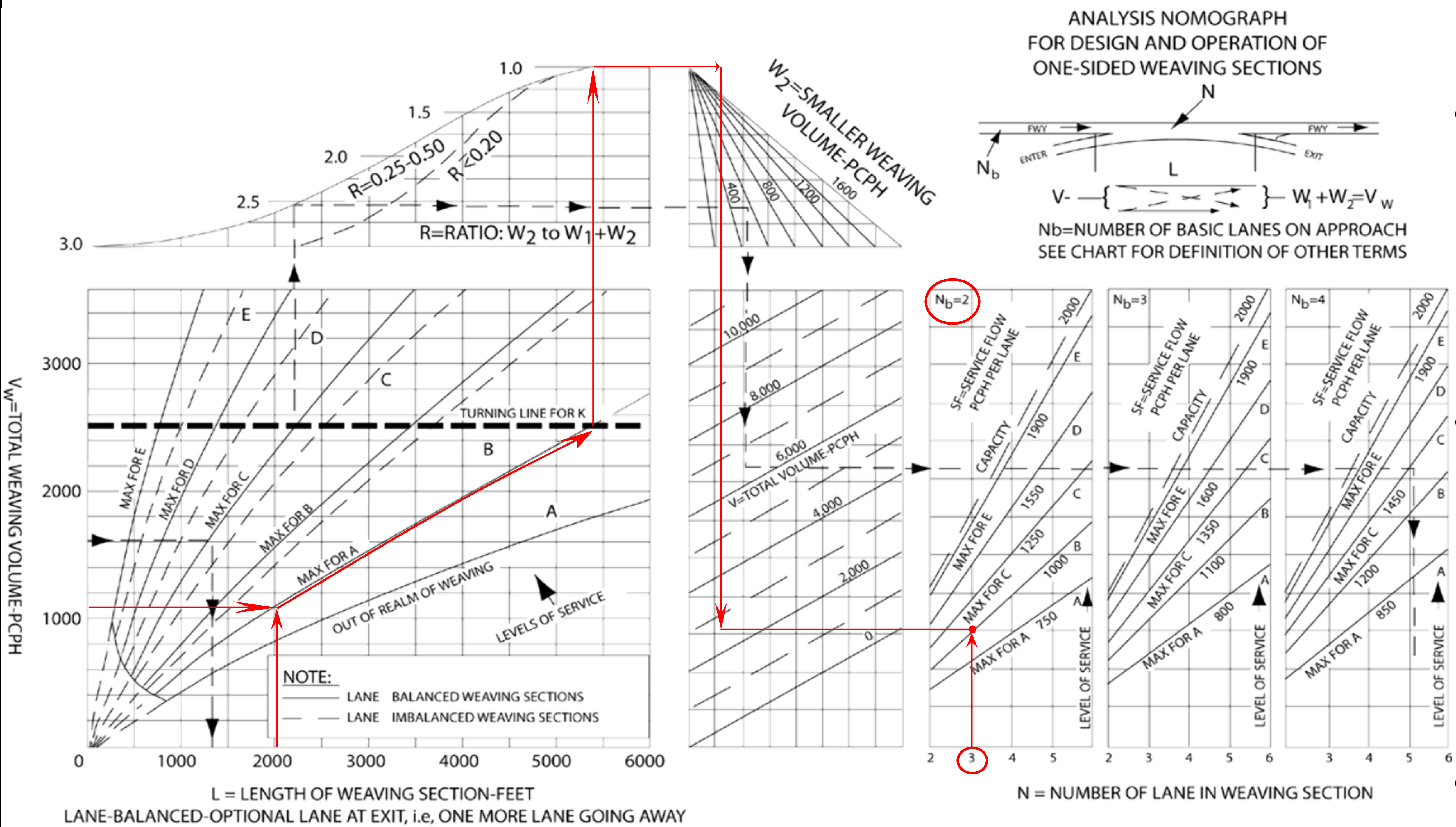
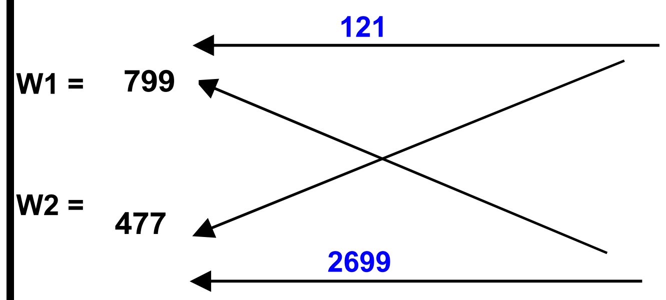


Figure 504.7A
Design Curve for Freeway and Collector Weaving



V = 4096 pcph

L = 2065 feet

W1 = 799 pcph

W2 = 477 pcph

V_w = 1276 pcph

R = 0.37

Direction : South

Project: 2025 Near Term

Year: 2025 Peak Hour: PM Peak

On Ramp: Marsh St

Off Ramp: Madonna Rd

LOS weave = B

Compo. LOS = E

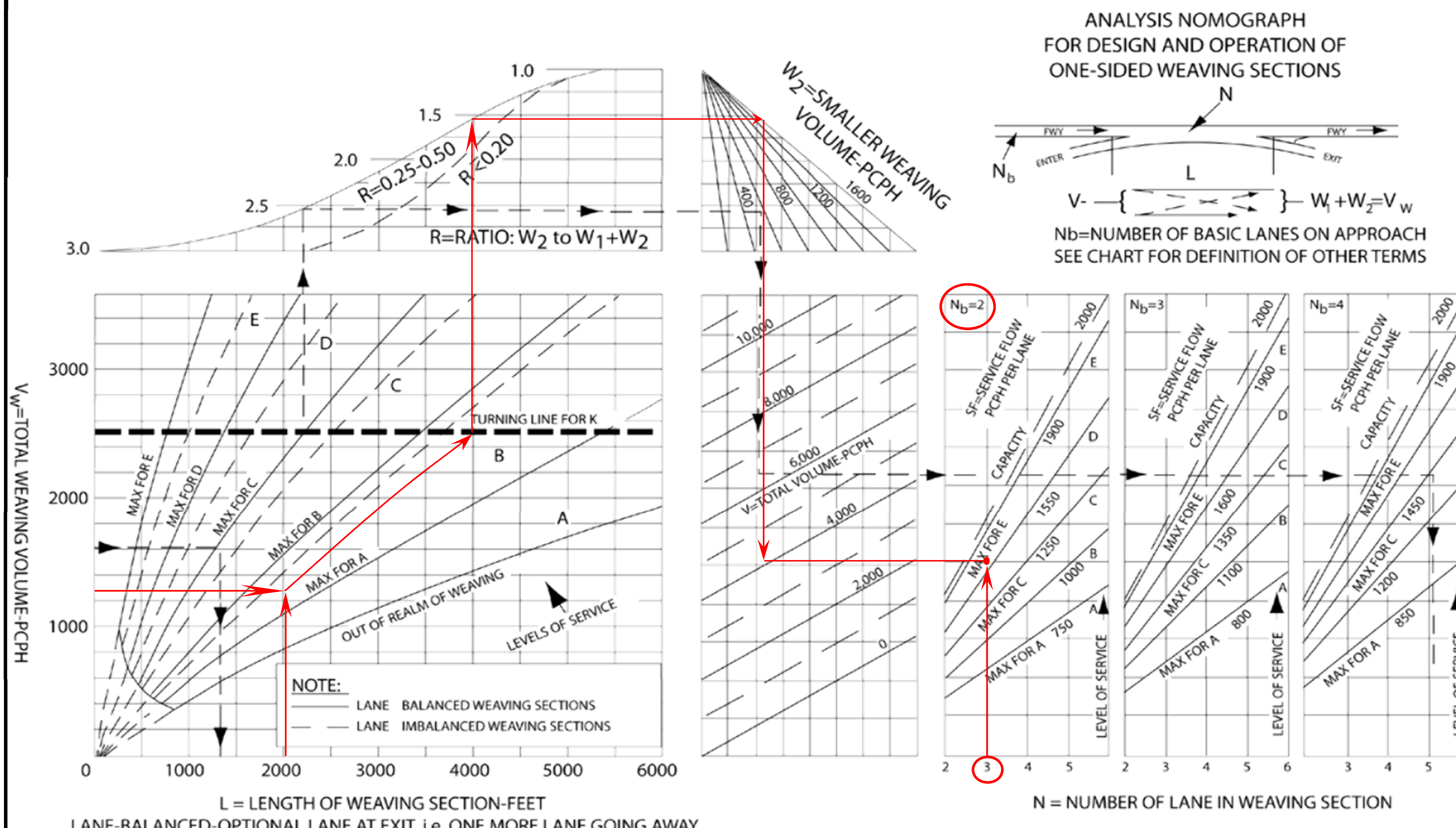


Figure 504.7A
Design Curve for Freeway and Collector Weaving

Year 2025 Near Term Plus Project Conditions

- US 101 Mainline, Merge/Diverge and Weaving Section LOS Worksheets
- Leisch Method Worksheets

Year 2025 Near Term Plus Project Conditions

US 101 Mainline, Merge/Diverge and Weaving Section LOS Worksheets

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	AM Peak
Freeway/Direction:	US 101 NB
From/To:	s/o LOVR
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	3186	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	866	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1818	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1818	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	62.5	mi/h
Number of lanes, N	2	
Density, D	29.1	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	PM Peak
Freeway/Direction:	US 101 NB
From/To:	s/o LOVR
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	2538	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	690	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1448	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1448	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	65.0	mi/h
Number of lanes, N	2	
Density, D	22.3	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	LOVR NB OFF
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	3186	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	643	vph
Length of first accel/decel lane	230	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	227	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1545	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	3186		643		227	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	866		175		62	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3636	734	259	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 Using Equation 0

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3636 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3636	4700	No
$v_{FO} = v_F - v_R$	2902	4700	No
v_R	734	2000	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12}/2 No

If yes, v_{12A} = 3636 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3636	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 33.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.494

Space mean speed in ramp influence area, S_R = 53.6 mph

Space mean speed in outer lanes, S_0 = N/A mph

Space mean speed for all vehicles, S = 53.6 mph

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	LOVR OFF RAMP
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2538	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	620	vph
Length of first accel/decel lane	230	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	502	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1545	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	2538		620		502	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	690		168		136	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

```
Heavy vehicle adjustment, fHV           0.952       0.952       0.952
Driver population factor, fP            1.00        1.00        1.00
Flow rate, vp                           2897        708         573       pcph

_________________________Estimation of V12 Diverge Areas________________________

                  L  =            (Equation 13-12 or 13-13)
                   EQ
                  P  =    1.000   Using Equation  0
                   FD
                  v  = v  + (v - v ) P  =  2897   pc/h
                   12   R     F   R   FD

_______________________________Capacity Checks__________________________________

                             Actual        Maximum         LOS F?
     v  = v                  2897          4700            No
      Fi   F
     v  = v - v              2189          4700            No
      FO   F   R
     v                       708           2000            No
      R
     v  or v                 0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?             No
      3     av34
Is   v  or v      > 1.5 v  /2              No
      3     av34         12
If yes, v    = 2897                     (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

______________________Flow Entering Diverge Influence Area______________________
                        Actual        Max Desirable         Violation?
     v                  2897          4400                  No
      12
_________________Level of Service Determination (if not F)______________________

Density,                 D = 4.252 + 0.0086 v  - 0.009  L   =   27.1    pc/mi/ln
                          R                  12          D
Level of service for ramp-freeway junction areas of influence C

_____________________________Speed Estimation___________________________________

Intermediate speed variable,                 D  = 0.492
                                              S
Space mean speed in ramp influence area,     S  = 53.7    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 53.7    mph
________________________________________________________________________________
```

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	LOVR NB ON
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2543	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	227	vph
Length of first accel/decel lane	620	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	643	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1545	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2543	227	643	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	691	62	175	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2902	259	734	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 Using Equation 0

$v_{12} = v_F (P_{FM})$ = 2902 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3161	4700	No

v_3 or v_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12}/2 No

If yes, v_{12A} = 2902 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3161	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\, v_R + 0.0078\, v_{12} - 0.00627\, L_A$ = 26.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.370	
Space mean speed in ramp influence area,	S_R = 56.5	mph
Space mean speed in outer lanes,	S_0 = N/A	mph
Space mean speed for all vehicles,	S = 56.5	mph

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	LOVR NB ON
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	1918	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	502	vph
Length of first accel/decel lane	620	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	620	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1545	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	1918		502		620	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	521		136		168	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade		%		%		%
Length		mi		mi		mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2189	573	708	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 Using Equation 0

$v_{12} = v_F (P_{FM})$ = 2189 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	2762	4700	No

v_3 or v_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12}/2 No

If yes, v_{12A} = 2189 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	2762	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\, v_R + 0.0078\, v_{12} - 0.00627\, L_A$ = 22.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, M_S = 0.339

Space mean speed in ramp influence area, S_R = 57.2 mph

Space mean speed in outer lanes, S_0 = N/A mph

Space mean speed for all vehicles, S = 57.2 mph

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	AM Peak
Freeway/Direction:	US 101 NB
From/To:	s/o Prado
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	2770	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	753	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1581	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1581	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	64.5	mi/h
Number of lanes, N	2	
Density, D	24.5	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	PM Peak
Freeway/Direction:	US 101 NB
From/To:	s/o Prado
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	2420	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	658	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1381	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1381	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	65.0	mi/h
Number of lanes, N	2	
Density, D	21.2	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	PRADO NB OFF
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2770	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	311	vph
Length of first accel/decel lane	175	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	227	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	4200	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	2770		311		227	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	753		85		62	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

```
Heavy vehicle adjustment, fHV          0.952       0.952       0.952
Driver population factor, fP           1.00        1.00        1.00
Flow rate, vp                          3161        355         259       pcph

_________________________Estimation of V12 Diverge Areas________________________

                  L  =            (Equation 13-12 or 13-13)
                   EQ
                  P  =    1.000   Using Equation  0
                   FD
                  v  = v  + (v - v ) P  =  3161   pc/h
                   12   R     F   R   FD

_______________________________Capacity Checks_________________________________

                           Actual        Maximum         LOS F?
     v  = v                3161          4700            No
      Fi   F
     v  = v - v            2806          4700            No
      FO   F   R
     v                     355           2000            No
      R
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34        12
If yes, v    = 3161                    (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

______________________Flow Entering Diverge Influence Area_____________________
                      Actual        Max Desirable        Violation?
     v                3161          4400                 No
      12
_________________Level of Service Determination (if not F)_____________________

Density,               D = 4.252 + 0.0086 v  - 0.009  L   =   29.9    pc/mi/ln
                        R                   12         D
Level of service for ramp-freeway junction areas of influence D

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                 D  = 0.460
                                              S
Space mean speed in ramp influence area,     S  = 54.4    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 54.4    mph
_______________________________________________________________________________
```

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	PRADO NB OFF
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2420	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	145	vph
Length of first accel/decel lane	175	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	502	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	4200	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	2420		145		502	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	658		39		136	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

```
Heavy vehicle adjustment, fHV          0.952       0.952       0.952
Driver population factor, fP           1.00        1.00        1.00
Flow rate, vp                          2762        165         573       pcph

_________________________Estimation of V12 Diverge Areas______________________

                  L  =            (Equation 13-12 or 13-13)
                   EQ
                  P  =    1.000   Using Equation  0
                   FD
                  v  = v  + (v - v ) P  =  2762   pc/h
                   12   R      F   R   FD

_______________________________Capacity Checks_________________________________

                             Actual        Maximum         LOS F?
     v  = v                  2762          4700            No
      Fi   F
     v  = v - v              2597          4700            No
      FO   F   R
     v                       165           2000            No
      R
     v  or v                 0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?             No
      3     av34
Is   v  or v      > 1.5 v  /2              No
      3     av34         12
If yes, v    = 2762                     (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

______________________Flow Entering Diverge Influence Area_____________________
                        Actual        Max Desirable          Violation?
     v                  2762          4400                   No
      12
_________________Level of Service Determination (if not F)_____________________

Density,                 D = 4.252 + 0.0086 v  - 0.009  L   =   26.4    pc/mi/ln
                          R                  12          D
Level of service for ramp-freeway junction areas of influence C

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                 D  = 0.443
                                              S
Space mean speed in ramp influence area,     S  = 54.8    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 54.8    mph
_______________________________________________________________________________
```

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	US 101 NB
Weaving Location:	Prado-Madonna
Analysis Year:	2025 Near Term Plus Project
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	2	ln
Weaving segment length, LS	2140	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2246	261	213	65	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	597	69	57	17	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2509	292	238	73	pc/h
Volume ratio, VR		0.170			

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	67	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	1307	lc/h
Total lane changes, LCALL	1374	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.159

Average weaving speed, SW	58.1	mi/h
Average non-weaving speed, SNW	57.5	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	57.6	mi/h
Weaving segment density, D	27.0	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.711	
Weaving segment flow rate, v	3112	pc/h
Weaving segment capacity, cW	4171	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4235	2140	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	2190	c
		Maximum	Analyzed	
v/c ratio		1.00	0.711	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Weaving Location:	Prado-Madonna
Analysis Year:	2025 Near Term Plus Project
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	2	ln
Weaving segment length, LS	2140	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2110	433	165	108	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	561	115	44	29	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2357	484	184	121	pc/h
Volume ratio, VR		0.212			

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	67	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	1285	lc/h
Total lane changes, LCALL	1352	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.157

Average weaving speed, SW	58.2	mi/h
Average non-weaving speed, SNW	57.4	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	57.6	mi/h
Weaving segment density, D	27.3	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.729	
Weaving segment flow rate, v	3146	pc/h
Weaving segment capacity, cW	4109	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4663	2140	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	2157	c
		Maximum	Analyzed	
v/c ratio		1.00	0.729	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:

E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	US 101 NB
Weaving Location:	Madonna-Marsh
Analysis Year:	2025 Near Term Plus Project
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	1330	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2282	511	225	136	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	607	136	60	36	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2549	571	251	152	pc/h

Volume ratio, VR 0.233

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	113	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	699	lc/h
Total lane changes, LCALL	812	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.153

Average weaving speed, SW	58.4	mi/h
Average non-weaving speed, SNW	59.4	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	59.1	mi/h
Weaving segment density, D	19.9	pc/mi/ln
Level of service, LOS	B	
Weaving segment v/c ratio	0.565	
Weaving segment flow rate, v	3523	pc/h
Weaving segment capacity, cW	5937	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4880	1330	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	2078	c
		Maximum	Analyzed	
v/c ratio		1.00	0.565	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Weaving Location:	Madonna-Marsh
Analysis Year:	2025 Near Term Plus Project
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	1330	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2293	705	250	113	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	610	188	66	30	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2561	788	279	126	pc/h

Volume ratio, VR 0.284

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	113	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	697	lc/h
Total lane changes, LCALL	810	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.153

Average weaving speed, SW	58.4	mi/h
Average non-weaving speed, SNW	59.0	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	58.8	mi/h
Weaving segment density, D	21.3	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.614	
Weaving segment flow rate, v	3754	pc/h
Weaving segment capacity, cW	5820	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	5415	1330	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	2037	c
		Maximum	Analyzed	
v/c ratio		1.00	0.614	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	US 101 SB
Weaving Location:	Marsh-Madonna
Analysis Year:	2025 Near Term Plus Project
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	2065	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	1422	227	805	56	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	378	60	214	15	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	1588	254	899	63	pc/h

Volume ratio, VR 0.411

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	147	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	882	lc/h
Total lane changes, LCALL	1029	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.130

Average weaving speed, SW	59.2	mi/h
Average non-weaving speed, SNW	60.5	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	60.0	mi/h
Weaving segment density, D	15.6	pc/mi/ln
Level of service, LOS	B	
Weaving segment v/c ratio	0.480	
Weaving segment flow rate, v	2804	pc/h
Weaving segment capacity, cW	5559	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	6807	2065	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	1987	c
		Maximum	Analyzed	
v/c ratio		1.00	0.480	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	US 101 SB
Weaving Location:	Marsh-Madonna
Analysis Year:	2025 Near Term Plus Project
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	2065	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2413	439	784	110	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	642	117	209	29	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2695	490	876	123	pc/h

Volume ratio, VR 0.326

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	147	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	1122	lc/h
Total lane changes, LCALL	1269	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.154

Average weaving speed, SW	58.3	mi/h
Average non-weaving speed, SNW	58.3	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	58.3	mi/h
Weaving segment density, D	23.9	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.677	
Weaving segment flow rate, v	4184	pc/h
Weaving segment capacity, cW	5883	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	5870	2065	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	2059	c
		Maximum	Analyzed	
v/c ratio		1.00	0.677	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst: JAV
Agency/Co.: Omni-Means, a GHD Company
Date performed: 3/14/2018
Analysis time period: AM Peak
Freeway/Dir of Travel: US 101 SB
Junction: MADONNA SB ON
Jurisdiction: SLO
Analysis Year: 2025 Near Term Plus Project
Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	1649	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	232	vph
Length of first accel/decel lane	900	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1649	232		vph
Peak-hour factor, PHF	0.92	0.92		
Peak 15-min volume, v15	448	63		v
Trucks and buses	10	10		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

```
Heavy vehicle adjustment, fHV           0.952       0.952
Driver population factor, fP            1.00        1.00
Flow rate, vp                           1882        265                   pcph

_________________________Estimation of V12 Merge Areas_________________________

                  L  =            (Equation 13-6 or 13-7)
                   EQ
                  P  =    1.000   Using Equation  0
                   FM
                  v  = v  (P  ) =  1882   pc/h
                   12   F   FM

_______________________________Capacity Checks_________________________________

                           Actual        Maximum         LOS F?
     v                     2147          4700            No
      FO
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34         12
If yes, v    = 1882                   (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

________________________Flow Entering Merge Influence Area_____________________
                      Actual        Max Desirable        Violation?
     v                2147          4600                 No
      R12
_________________Level of Service Determination (if not F)_____________________

Density, D = 5.475 + 0.00734 v  + 0.0078 v   - 0.00627 L   =   16.5    pc/mi/ln
          R                   R           12             A
Level of service for ramp-freeway junction areas of influence  B

______________________________Speed Estimation__________________________________

Intermediate speed variable,                 M  = 0.291
                                              S
Space mean speed in ramp influence area,     S  = 58.3    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 58.3    mph
_______________________________________________________________________________
```

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 SB
Junction:	MADONNA SB ON
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2852	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	409	vph
Length of first accel/decel lane	900	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2852	409		vph
Peak-hour factor, PHF	0.92	0.92		
Peak 15-min volume, v15	775	111		v
Trucks and buses	10	10		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

```
Heavy vehicle adjustment, fHV          0.952       0.952
Driver population factor, fP           1.00        1.00
Flow rate, vp                          3255        467                    pcph

_________________________Estimation of V12 Merge Areas_________________________

                  L  =            (Equation 13-6 or 13-7)
                   EQ
                  P  =    1.000   Using Equation  0
                   FM
                  v  = v  (P  ) =  3255   pc/h
                   12   F   FM

_______________________________Capacity Checks_________________________________

                           Actual        Maximum         LOS F?
     v                     3722          4700            No
      FO
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34         12
If yes, v    = 3255                   (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

________________________Flow Entering Merge Influence Area_____________________
                      Actual        Max Desirable        Violation?
     v                3722          4600                 No
      R12
_________________Level of Service Determination (if not F)_____________________

Density, D = 5.475 + 0.00734 v  + 0.0078 v   - 0.00627 L   =   28.6    pc/mi/ln
          R                   R           12             A
Level of service for ramp-freeway junction areas of influence  D

______________________________Speed Estimation__________________________________

Intermediate speed variable,                M  = 0.419
                                             S
Space mean speed in ramp influence area,    S  = 55.4    mph
                                             R
Space mean speed in outer lanes,            S  =  N/A    mph
                                             0
Space mean speed for all vehicles,          S  = 55.4    mph
_______________________________________________________________________________
```

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	AM Peak
Freeway/Direction:	US 101 SB
From/To:	s/o Madonna
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	1881	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	511	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1073	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1073	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	65.0	mi/h
Number of lanes, N	2	
Density, D	16.5	pc/mi/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	PM Peak
Freeway/Direction:	US 101 SB
From/To:	s/o Madonna
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	3261	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	886	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1861	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1861	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	62.0	mi/h
Number of lanes, N	2	
Density, D	30.0	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 SB
Junction:	LOVR SB OFF
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	1881	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	676	vph
Length of first accel/decel lane	530	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	413	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1650	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	1881		676		413	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	511		184		112	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

```
Heavy vehicle adjustment, fHV          0.952       0.952       0.952
Driver population factor, fP           1.00        1.00        1.00
Flow rate, vp                          2147        772         471       pcph

_________________________Estimation of V12 Diverge Areas________________________

                  L  =            (Equation 13-12 or 13-13)
                   EQ
                  P  =    1.000   Using Equation  0
                   FD
                  v  = v  + (v - v ) P  =  2147   pc/h
                   12   R     F   R   FD

_______________________________Capacity Checks__________________________________

                           Actual        Maximum         LOS F?
     v  = v                2147          4700            No
      Fi   F
     v  = v - v            1375          4700            No
      FO   F   R
     v                     772           2000            No
      R
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34         12
If yes, v    = 2147                   (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

______________________Flow Entering Diverge Influence Area______________________
                      Actual        Max Desirable        Violation?
     v                2147          4400                 No
      12
_________________Level of Service Determination (if not F)______________________

Density,               D = 4.252 + 0.0086 v  - 0.009  L   =   17.9    pc/mi/ln
                        R                  12          D
Level of service for ramp-freeway junction areas of influence B

_____________________________Speed Estimation___________________________________

Intermediate speed variable,                 D  = 0.497
                                              S
Space mean speed in ramp influence area,     S  = 53.6    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 53.6    mph
________________________________________________________________________________
```

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst: JAV
Agency/Co.: Omni-Means, a GHD Company
Date performed: 3/14/2018
Analysis time period: PM Peak
Freeway/Dir of Travel: US 101 SB
Junction: LOVR SB OFF
Jurisdiction: SLO
Analysis Year: 2025 Near Term Plus Project
Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	3261	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	573	vph
Length of first accel/decel lane	530	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	829	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1650	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	3261		573		829	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	886		156		225	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

```
Heavy vehicle adjustment, fHV          0.952        0.952        0.952
Driver population factor, fP           1.00         1.00         1.00
Flow rate, vp                          3722         654          946         pcph

_________________________Estimation of V12 Diverge Areas_______________________

                  L  =            (Equation 13-12 or 13-13)
                   EQ
                  P  =    1.000   Using Equation  0
                   FD
                  v  = v  + (v - v ) P  =  3722   pc/h
                   12   R     F   R   FD

_______________________________Capacity Checks_________________________________

                           Actual        Maximum          LOS F?
     v  = v                3722          4700             No
      Fi   F
     v  = v - v            3068          4700             No
      FO   F   R
     v                     654           2000             No
      R
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34         12
If yes, v    = 3722                   (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

______________________Flow Entering Diverge Influence Area_____________________
                      Actual        Max Desirable        Violation?
     v                3722          4400                 No
      12
_________________Level of Service Determination (if not F)_____________________

Density,               D = 4.252 + 0.0086 v  - 0.009  L   =   31.5    pc/mi/ln
                        R                  12          D
Level of service for ramp-freeway junction areas of influence D

_____________________________Speed Estimation__________________________________

Intermediate speed variable,              D  = 0.487
                                           S
Space mean speed in ramp influence area,  S  = 53.8    mph
                                           R
Space mean speed in outer lanes,          S  =  N/A    mph
                                           0
Space mean speed for all vehicles,        S  = 53.8    mph
_______________________________________________________________________________
```

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 SB
Junction:	LOVR SB ON
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	1205	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	413	vph
Length of first accel/decel lane	400	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	676	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1650	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1205	413	676	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	327	112	184	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	1375	471	772	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 Using Equation 0

$v_{12} = v_F (P_{FM})$ = 1375 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	1846	4700	No

v_3 or v_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12}/2 No

If yes, v_{12A} = 1375 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1846	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\, v_R + 0.0078\, v_{12} - 0.00627\, L_A$ = 17.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable,	M_S = 0.318	
Space mean speed in ramp influence area,	S_R = 57.7	mph
Space mean speed in outer lanes,	S_0 = N/A	mph
Space mean speed for all vehicles,	S = 57.7	mph

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/14/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 SB
Junction:	LOVR SB ON
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2688	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	829	vph
Length of first accel/decel lane	400	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	573	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1650	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2688	829	573	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	730	225	156	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

```
Heavy vehicle adjustment, fHV          0.952       0.952       0.952
Driver population factor, fP           1.00        1.00        1.00
Flow rate, vp                          3068        946         654       pcph

_________________________Estimation of V12 Merge Areas_________________________

                  L  =            (Equation 13-6 or 13-7)
                   EQ
                  P  =    1.000   Using Equation  0
                   FM
                  v  = v  (P  ) =  3068   pc/h
                   12   F   FM

_______________________________Capacity Checks_________________________________

                           Actual        Maximum         LOS F?
     v                     4014          4700            No
      FO
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34         12
If yes, v    = 3068                   (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

________________________Flow Entering Merge Influence Area_____________________
                      Actual        Max Desirable         Violation?
     v                4014          4600                  No
      R12
_________________Level of Service Determination (if not F)_____________________

Density, D = 5.475 + 0.00734 v  + 0.0078 v   - 0.00627 L   =   33.8    pc/mi/ln
          R                   R          12             A
Level of service for ramp-freeway junction areas of influence  D

______________________________Speed Estimation__________________________________

Intermediate speed variable,                 M  = 0.509
                                              S
Space mean speed in ramp influence area,     S  = 53.3    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 53.3    mph
________________________________________________________________________________
```

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	AM Peak
Freeway/Direction:	US 101 SB
From/To:	s/o LOVR
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	1618	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	440	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	923	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	923	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	65.0	mi/h
Number of lanes, N	2	
Density, D	14.2	pc/mi/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/14/2018
Analysis Time Period:	PM Peak
Freeway/Direction:	US 101 SB
From/To:	s/o LOVR
Jurisdiction:	SLO
Analysis Year:	2025 Near Term Plus Project

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	3517	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	956	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	2007	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

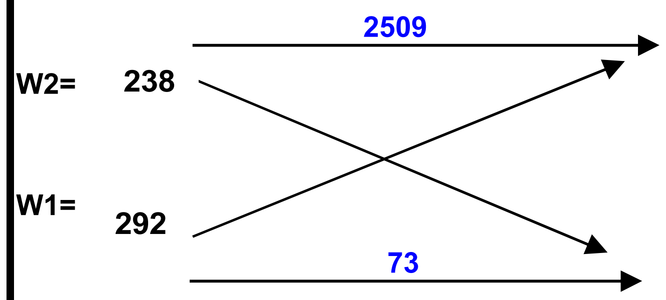
LOS and Performance Measures

Flow rate, vp	2007	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	59.8	mi/h
Number of lanes, N	2	
Density, D	33.6	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Year 2025 Near Term Plus Project Conditions

Leisch Method Worksheets



LOS weave = A

Compo. LOS = E

V = 3112 pcph

L = 2140 feet

W1 = 292 pcph

W2 = 238 pcph

V_w = 530 pcph

R = 0.45

Direction : North

Project: 2025 Near Term Plus Project

Year: 2025 Peak Hour: AM Peak

On Ramp: Prado Rd

Off Ramp: Madonna Rd

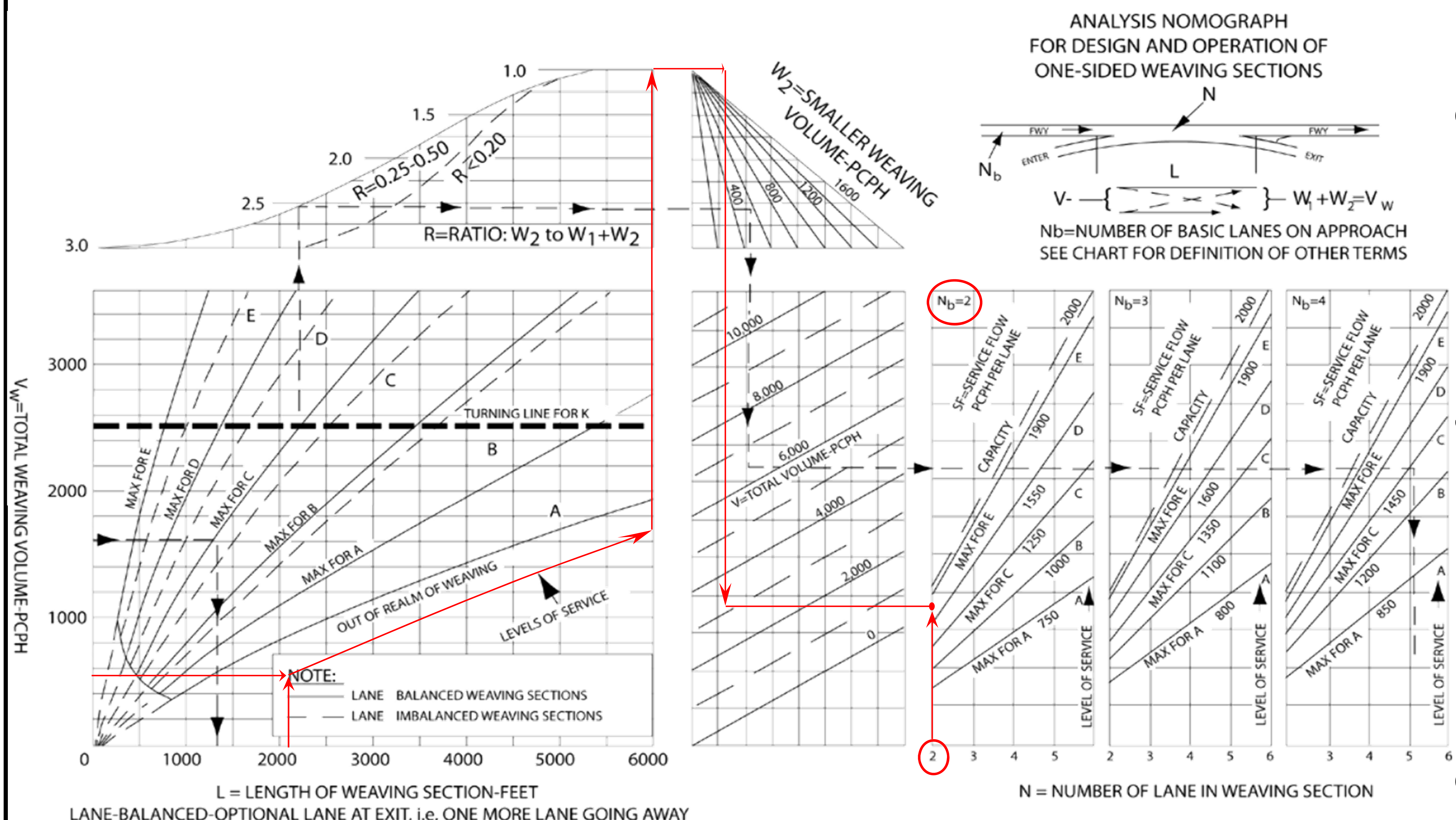


Figure 504.7A Design Curve for Freeway and Collector Weaving

W2 = 184

W1 = 484

2357

121

LOS weave = A

Compo. LOS = E

V = 3146 pcph

L = 2140 feet

W1 = 484 pcph

W2 = 184 pcph

V_w = 668 pcph

R = 0.28

Direction : North

Project: 2025 Near Term Plus Project

Year: *2025* Peak Hour: PM Peak

On Ramp: Prado Rd

Off Ramp: Madonna Rd

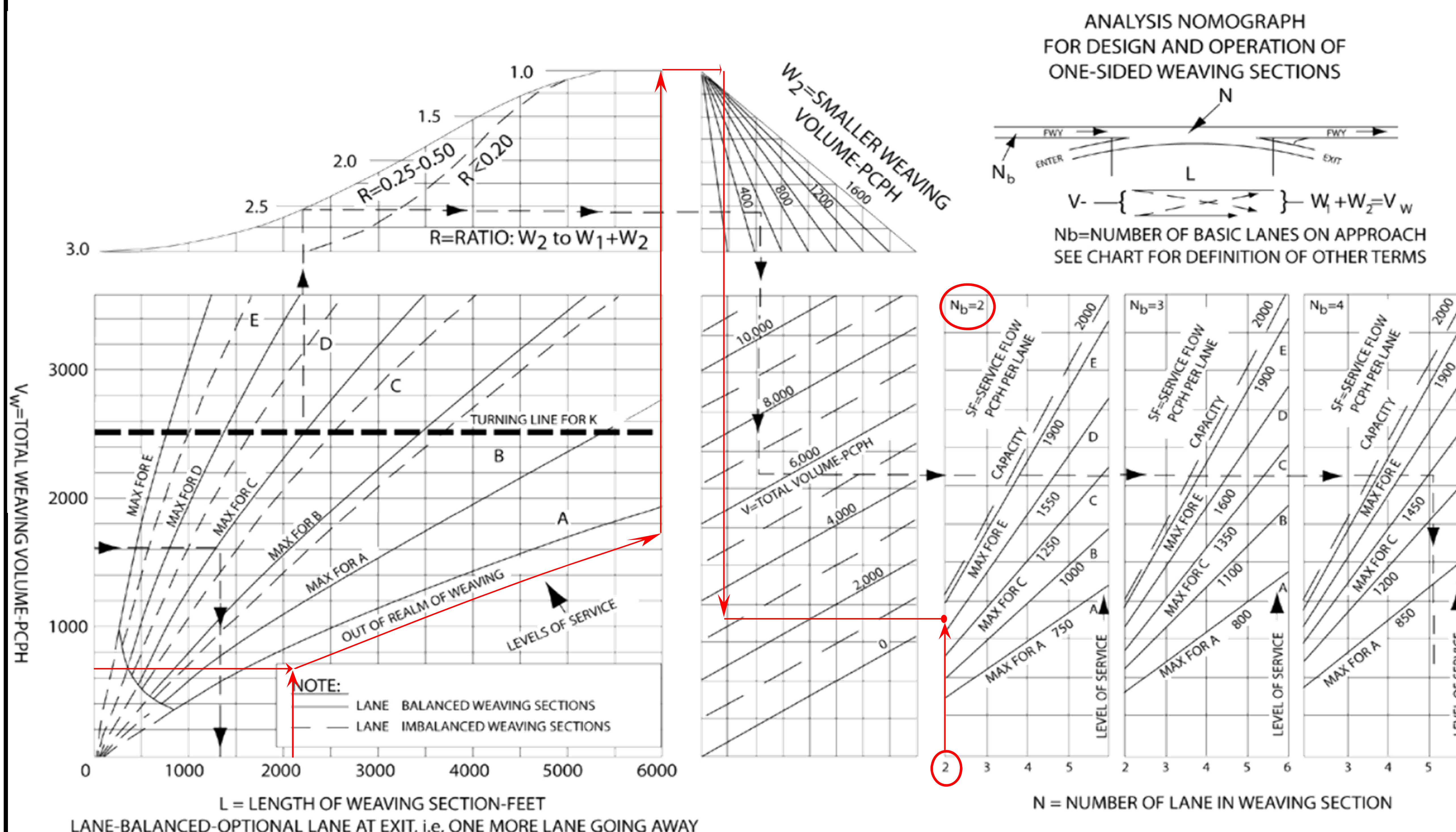
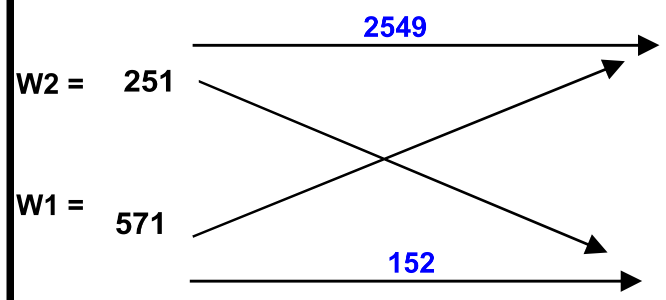


Figure 504.7A
Design Curve for Freeway and Collector Weaving



LOS weave = B

Compo. LOS = D

V = 3523 pcph

L = 1330 feet

W1 = 571 pcph

W2 = 251 pcph

V_w = 822 pcph

R = 0.31

Direction : North

Project: 2025 Near Term Plus Project

Year: 2025 Peak Hour: AM Peak

On Ramp: Madonna Rd

Off Ramp: Marsh St

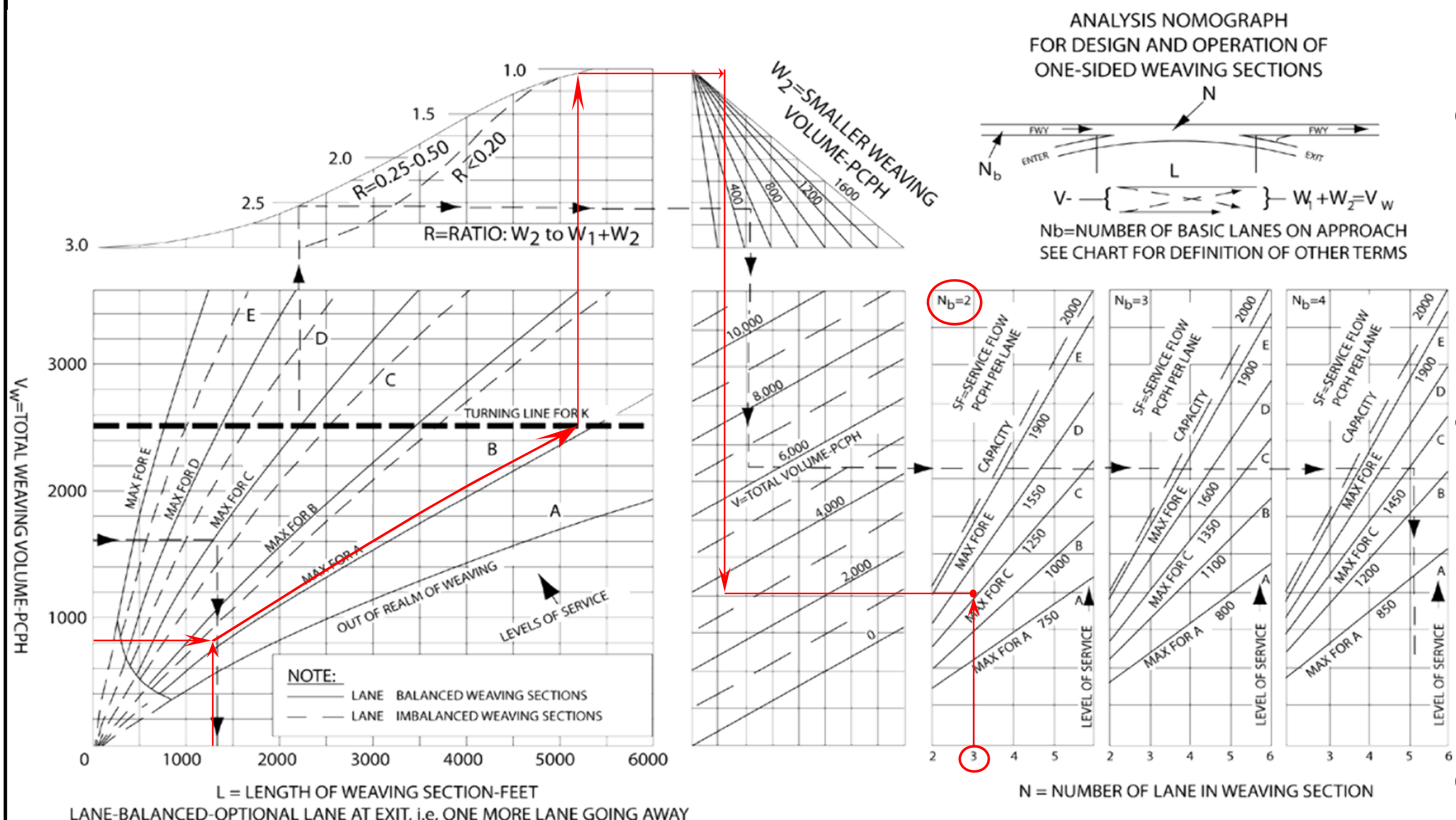


Figure 504.7A
Design Curve for Freeway and Collector Weaving

W2 = 279

W1 = 788

2561

126

LOS weave = B

Compo. LOS = D

V = 3754 pcph

L = 1330 feet

W1 = 788 pcph

W2 = 279 pcph

V_w = 1067 pcph

R = 0.26

Direction : North

Project: 2025 Near Term Plus Project

Year: 2025 Peak Hour: PM Peak

On Ramp: Madonna Rd

Off Ramp: Marsh St

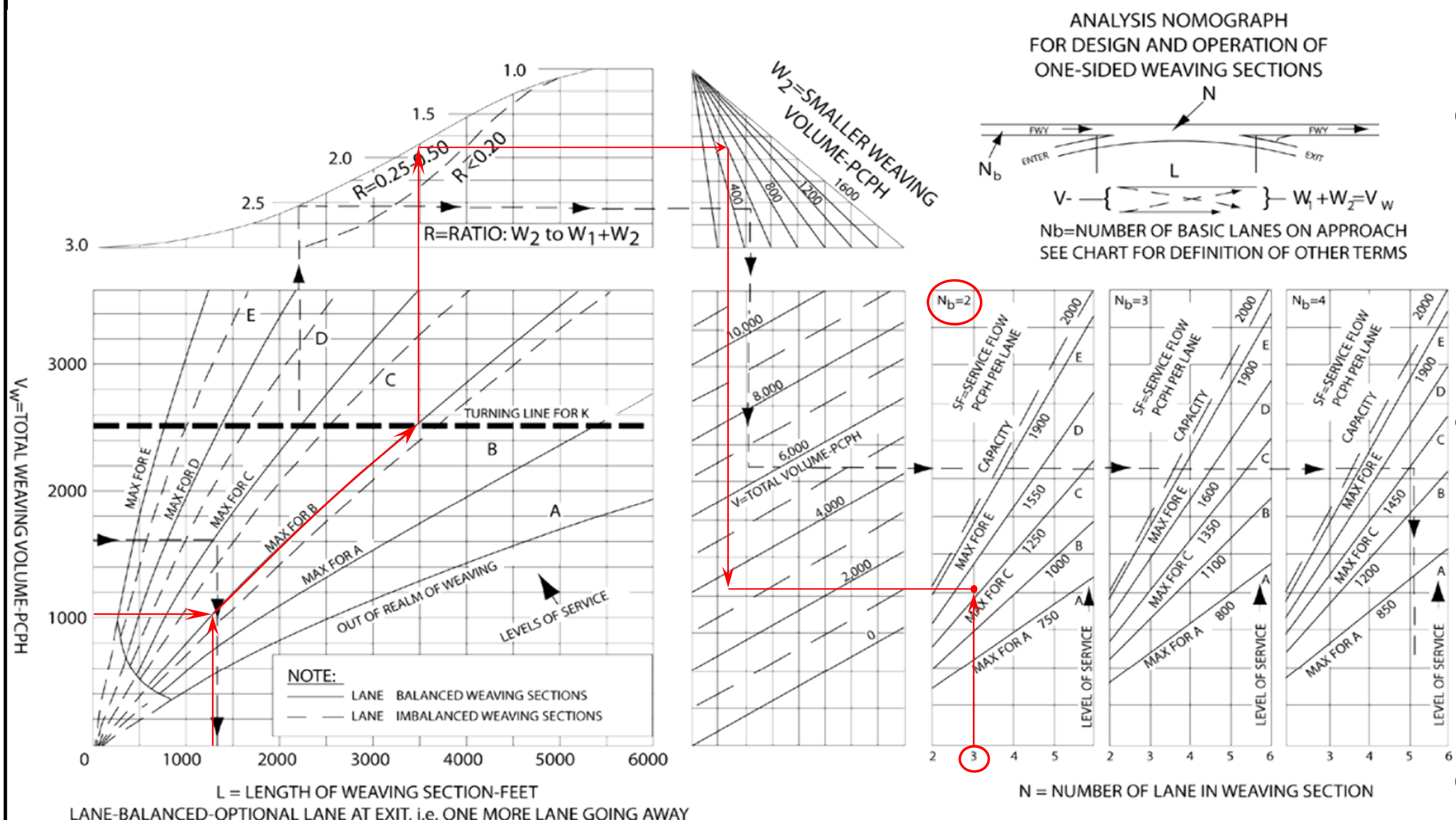
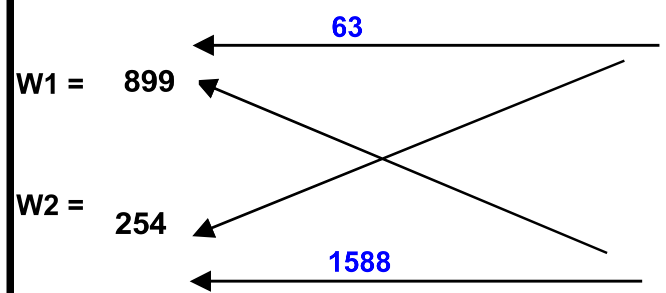


Figure 504.7A
Design Curve for Freeway and Collector Weaving

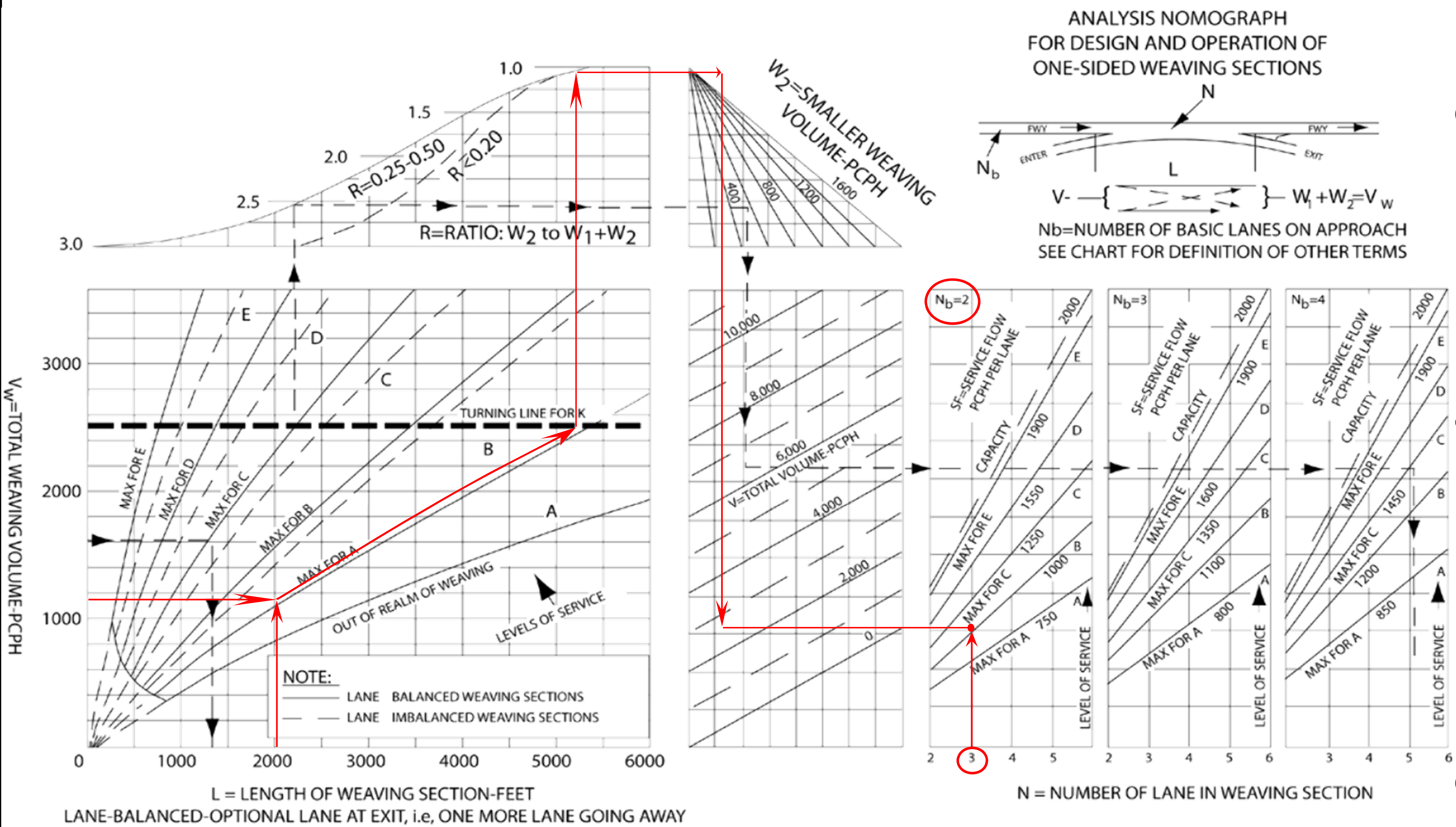
Figure 504.7A
Design Curve for Freeway and Collector Weaving

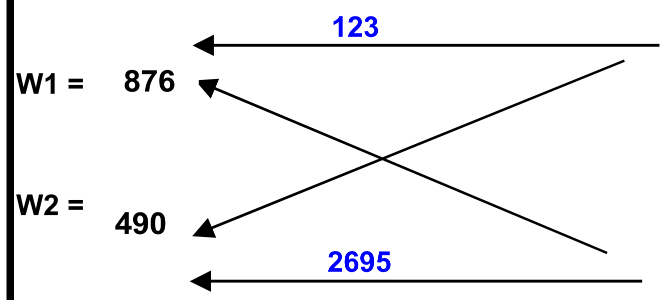


V = 2804 pcph	V_w = 1153 pcph	Project: 2025 Near Term Plus Project	
L = 2065 feet	R = 0.22	Year: 2025	Peak Hour: AM Peak
W1 = 899 pcph		On Ramp: Marsh St	
W2 = 254 pcph	Direction : South	Off Ramp: Madonna Rd	

LOS weave = B

Compo. LOS = C





LOS weave = B

Compo. LOS = E

V = 4184 pcph

L = 2065 feet

W1 = 876 pcph

W2 = 490 pcph

V_w = 1366 pcph

R = 0.36

Direction : South

Project: 2025 Near Term Plus Project

Year: 2025 Peak Hour: PM Peak

On Ramp: Marsh St

Off Ramp: Madonna Rd

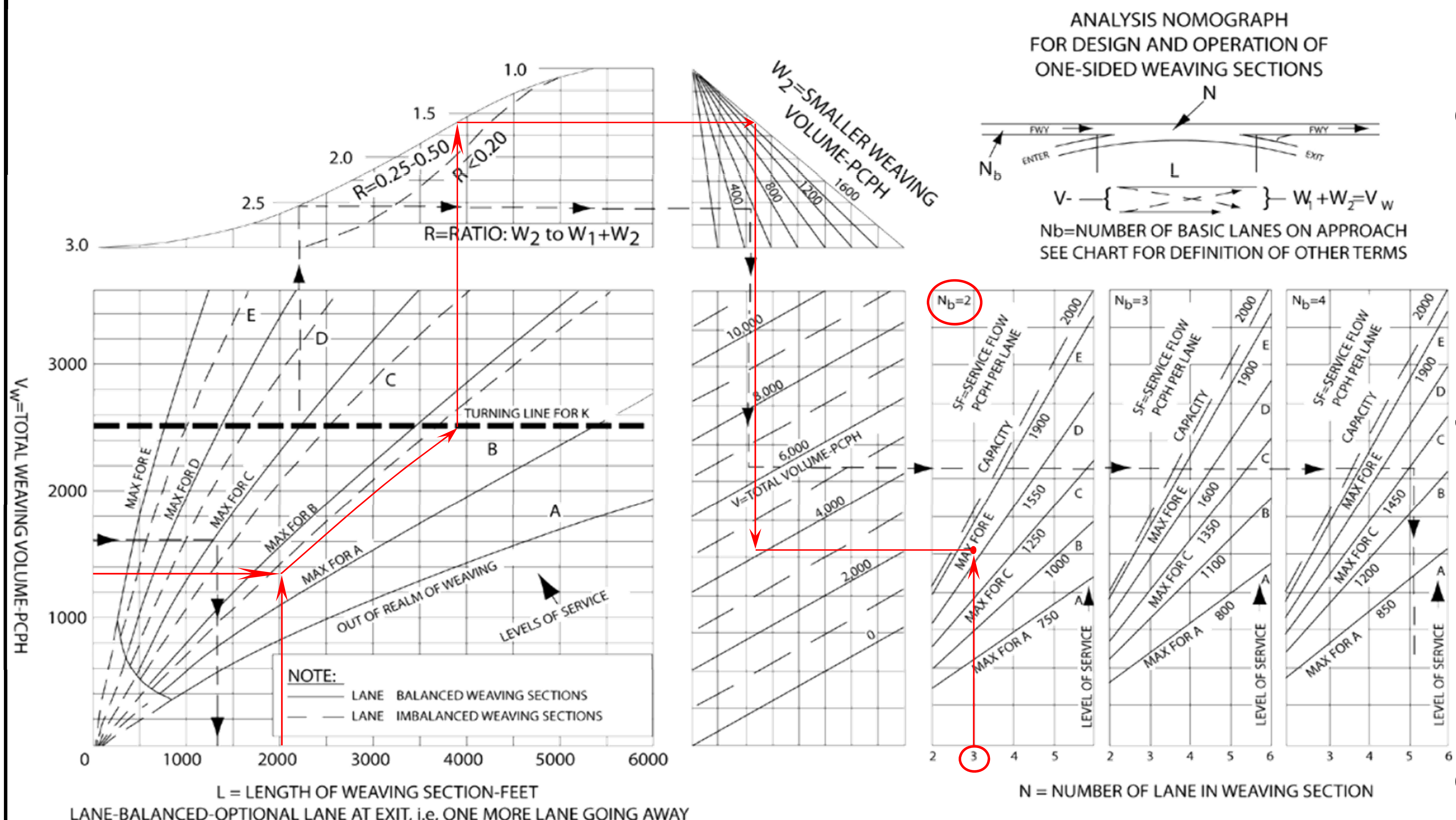


Figure 504.7A

Design Curve for Freeway and Collector Weaving

Year 2025 Near Term Plus Project Mitigation Conditions

- **US 101 Mainline, Merge/Diverge and Weaving Section LOS Worksheets**
- **Leisch Method Worksheets**

Year 2025 Near Term Plus Project Mitigation Conditions

US 101 Mainline, Merge/Diverge and Weaving Section LOS Worksheets

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	AM Peak
Freeway/Direction:	US 101 NB
From/To:	s/o LOVR
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	3186	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	866	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1818	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1818	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	62.5	mi/h
Number of lanes, N	2	
Density, D	29.1	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.1

Phone:	Fax:
E-mail:	

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	PM Peak
Freeway/Direction:	US 101 NB
From/To:	s/o LOVR
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	2538	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	690	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1448	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1448	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	65.0	mi/h
Number of lanes, N	2	
Density, D	22.3	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/17/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	LOVR NB OFF
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	3186	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	629	vph
Length of first accel/decel lane	230	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	189	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1545	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	3186		629		189	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	866		171		51	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3636	718	216	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 Using Equation 0

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3636 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3636	4700	No
$v_{FO} = v_F - v_R$	2918	4700	No
v_R	718	2000	No

v_3 or v_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12}/2 No

If yes, v_{12A} = 3636 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3636	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 33.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.493

Space mean speed in ramp influence area, S_R = 53.7 mph

Space mean speed in outer lanes, S_0 = N/A mph

Space mean speed for all vehicles, S = 53.7 mph

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/17/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	LOVR OFF RAMP
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2538	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	630	vph
Length of first accel/decel lane	230	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	495	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1545	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	2538		630		495	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	690		171		135	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2897	719	565	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 Using Equation 0

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 2897 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2897	4700	No
$v_{FO} = v_F - v_R$	2178	4700	No
v_R	719	2000	No

v_3 or v_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12}/2 No

If yes, v_{12A} = 2897 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2897	4400	No

Level of Service Determination (if not F)

Density, $D_R = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 27.1 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable, D_S = 0.493

Space mean speed in ramp influence area, S_R = 53.7 mph

Space mean speed in outer lanes, S_0 = N/A mph

Space mean speed for all vehicles, S = 53.7 mph

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/17/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	LOVR NB ON
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2557	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	189	vph
Length of first accel/decel lane	620	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	629	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1545	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2557	189	629	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	695	51	171	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2918	216	718	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 Using Equation 0

$v_{12} = v_F (P_{FM})$ = 2918 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3134	4700	No

v_3 or v_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12}/2 No

If yes, v_{12A} = 2918 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3134	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\ v_R + 0.0078\ v_{12} - 0.00627\ L_A$ = 25.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

Speed Estimation

Intermediate speed variable,	M_S = 0.367	
Space mean speed in ramp influence area,	S_R = 56.6	mph
Space mean speed in outer lanes,	S_0 = N/A	mph
Space mean speed for all vehicles,	S = 56.6	mph

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/17/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	LOVR NB ON
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	1908	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	495	vph
Length of first accel/decel lane	620	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	630	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1545	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1908	495	630	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	518	135	171	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

```
Heavy vehicle adjustment, fHV          0.952       0.952       0.952
Driver population factor, fP           1.00        1.00        1.00
Flow rate, vp                          2178        565         719        pcph

_________________________Estimation of V12 Merge Areas_________________________

                  L  =            (Equation 13-6 or 13-7)
                   EQ
                  P  =    1.000   Using Equation  0
                   FM
                  v  = v  (P  ) =  2178   pc/h
                   12   F   FM

_______________________________Capacity Checks_________________________________

                           Actual        Maximum         LOS F?
     v                     2743          4700            No
      FO
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34         12
If yes, v    = 2178                   (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

________________________Flow Entering Merge Influence Area_____________________
                      Actual       Max Desirable        Violation?
     v                2743         4600                 No
      R12
_________________Level of Service Determination (if not F)_____________________

Density, D = 5.475 + 0.00734 v  + 0.0078 v   - 0.00627 L   =   22.7    pc/mi/ln
          R                   R          12            A
Level of service for ramp-freeway junction areas of influence  C

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                 M  = 0.338
                                              S
Space mean speed in ramp influence area,     S  = 57.2    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 57.2    mph
_______________________________________________________________________________
```

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	AM Peak
Freeway/Direction:	US 101 NB
From/To:	s/o Prado
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	2746	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	746	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1567	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1567	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	64.6	mi/h
Number of lanes, N	2	
Density, D	24.3	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.1

Phone:	Fax:	
E-mail:		

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	PM Peak
Freeway/Direction:	US 101 NB
From/To:	s/o Prado
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	2403	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	653	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1371	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1371	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	65.0	mi/h
Number of lanes, N	2	
Density, D	21.1	pc/mi/ln
Level of service, LOS	C	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/17/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	PRADO NB OFF
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2746	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	371	vph
Length of first accel/decel lane	175	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	189	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	4200	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	2746		371		189	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	746		101		51	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3134	423	216	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 Using Equation 0

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3134 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3134	4700	No
$v_{FO} = v_F - v_R$	2711	4700	No
v_R	423	2000	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or v_{av34} > 2700 pc/h?		No	
Is v_3 or v_{av34} > 1.5 v_{12}/2		No	

If yes, v_{12A} = 3134 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3134	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 29.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, D_S = 0.466

Space mean speed in ramp influence area, S_R = 54.3 mph

Space mean speed in outer lanes, S_0 = N/A mph

Space mean speed for all vehicles, S = 54.3 mph

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/17/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Junction:	PRADO NB OFF
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2403	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	191	vph
Length of first accel/decel lane	175	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	495	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	4200	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	2403		191		495	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	653		52		135	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

```
Heavy vehicle adjustment, fHV          0.952       0.952       0.952
Driver population factor, fP           1.00        1.00        1.00
Flow rate, vp                          2743        218         565       pcph

_________________________Estimation of V12 Diverge Areas_______________________

                  L  =            (Equation 13-12 or 13-13)
                   EQ
                  P  =    1.000   Using Equation  0
                   FD
                  v  = v  + (v - v ) P  =  2743   pc/h
                   12   R     F   R   FD

_______________________________Capacity Checks_________________________________

                             Actual        Maximum         LOS F?
     v  = v                  2743          4700            No
      Fi   F
     v  = v - v              2525          4700            No
      FO   F   R
     v                       218           2000            No
      R
     v  or v                 0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?             No
      3     av34
Is   v  or v      > 1.5 v  /2              No
      3     av34         12
If yes, v    = 2743                      (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

______________________Flow Entering Diverge Influence Area_____________________
                        Actual        Max Desirable          Violation?
     v                  2743          4400                   No
      12
_________________Level of Service Determination (if not F)_____________________

Density,                 D = 4.252 + 0.0086 v  - 0.009  L   =   26.3    pc/mi/ln
                            R                  12          D
Level of service for ramp-freeway junction areas of influence C

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                 D  = 0.448
                                              S
Space mean speed in ramp influence area,     S  = 54.7    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 54.7    mph
_______________________________________________________________________________
```

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	US 101 NB
Weaving Location:	Prado-Madonna
Analysis Year:	2025 Plus Project Mitigation
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	940	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2149	416	226	0	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	572	111	60	0	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2400	465	252	0	pc/h

Volume ratio, VR 0.230

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	89	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	426	lc/h
Total lane changes, LCALL	515	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.141

Average weaving speed, SW	58.8	mi/h
Average non-weaving speed, SNW	60.0	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	59.7	mi/h
Weaving segment density, D	17.4	pc/mi/ln
Level of service, LOS	B	
Weaving segment v/c ratio	0.507	
Weaving segment flow rate, v	3117	pc/h
Weaving segment capacity, cW	5860	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4846	940	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	2051	c
		Maximum	Analyzed	
v/c ratio		1.00	0.507	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Weaving Location:	Prado-Madonna
Analysis Year:	2025 Plus Project Mitigation
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	940	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2044	596	168	0	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	544	159	45	0	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2283	666	188	0	pc/h

Volume ratio, VR 0.272

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	89	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	402	lc/h
Total lane changes, LCALL	491	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.135

Average weaving speed, SW	59.0	mi/h
Average non-weaving speed, SNW	60.0	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	59.7	mi/h
Weaving segment density, D	17.5	pc/mi/ln
Level of service, LOS	B	
Weaving segment v/c ratio	0.518	
Weaving segment flow rate, v	3137	pc/h
Weaving segment capacity, cW	5763	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	5288	940	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	2017	c
		Maximum	Analyzed	
v/c ratio		1.00	0.518	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:

E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	US 101 NB
Weaving Location:	Madonna-Marsh
Analysis Year:	2025 Plus Project Mitigation
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	1330	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2308	394	257	104	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	614	105	68	28	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2578	440	287	116	pc/h

Volume ratio, VR 0.213

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	113	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	698	lc/h
Total lane changes, LCALL	811	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.153

Average weaving speed, SW	58.4	mi/h
Average non-weaving speed, SNW	59.5	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	59.3	mi/h
Weaving segment density, D	19.2	pc/mi/ln
Level of service, LOS	B	
Weaving segment v/c ratio	0.544	
Weaving segment flow rate, v	3421	pc/h
Weaving segment capacity, cW	5986	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4665	1330	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	2095	c
		Maximum	Analyzed	
v/c ratio		1.00	0.544	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	US 101 NB
Weaving Location:	Madonna-Marsh
Analysis Year:	2025 Plus Project Mitigation
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	1330	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2382	653	258	105	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	634	174	69	28	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2661	729	288	117	pc/h
Volume ratio, VR		0.268			

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	113	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	715	lc/h
Total lane changes, LCALL	828	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.155

Average weaving speed, SW	58.3	mi/h
Average non-weaving speed, SNW	58.9	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	58.8	mi/h
Weaving segment density, D	21.5	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.617	
Weaving segment flow rate, v	3795	pc/h
Weaving segment capacity, cW	5860	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	5243	1330	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	2051	c
		Maximum	Analyzed	
v/c ratio		1.00	0.617	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	AM Peak
Freeway/Dir of Travel:	US 101 SB
Weaving Location:	Marsh-Madonna
Analysis Year:	2025 Plus Project Mitigation
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	2065	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	1422	227	805	56	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	378	60	214	15	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	1588	254	899	63	pc/h

Volume ratio, VR 0.411

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	147	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	882	lc/h
Total lane changes, LCALL	1029	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.130

Average weaving speed, SW	59.2	mi/h
Average non-weaving speed, SNW	60.5	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	60.0	mi/h
Weaving segment density, D	15.6	pc/mi/ln
Level of service, LOS	B	
Weaving segment v/c ratio	0.480	
Weaving segment flow rate, v	2804	pc/h
Weaving segment capacity, cW	5559	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	6807	2065	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	1987	c
		Maximum	Analyzed	
v/c ratio		1.00	0.480	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Weaving Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	PM Peak
Freeway/Dir of Travel:	US 101 SB
Weaving Location:	Marsh-Madonna
Analysis Year:	2025 Plus Project Mitigation
Description:	San Luis Ranch Specific Plan Multimodal TIS

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	2065	ft
Freeway free-flow speed, FFS	65	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2350	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2413	439	784	110	veh/h
Peak hour factor, PHF	0.94	0.94	0.94	0.94	
Peak 15-min volume, v15	642	117	209	29	
Trucks and buses	10	10	10	10	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.952	0.952	0.952	0.952	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2695	490	876	123	pc/h
Volume ratio, VR		0.326			

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	147	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	1122	lc/h
Total lane changes, LCALL	1269	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.154

Average weaving speed, SW	58.3	mi/h
Average non-weaving speed, SNW	58.3	mi/h

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	58.3	mi/h
Weaving segment density, D	23.9	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.677	
Weaving segment flow rate, v	4184	pc/h
Weaving segment capacity, cW	5883	veh/h

Limitations on Weaving Segments

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	5870	2065	a,b
		Maximum	Analyzed	
Density-based capacty, cIWL (pc/h/ln)		2350	2059	c
		Maximum	Analyzed	
v/c ratio		1.00	0.677	d

Notes:

a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.

b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."

c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.

d. Volumes exceed the weaving segment capacity. The level of service is F.

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst: JAV
Agency/Co.: Omni-Means, a GHD Company
Date performed: 3/17/2018
Analysis time period: AM Peak
Freeway/Dir of Travel: US 101 SB
Junction: MADONNA SB ON
Jurisdiction: SLO
Analysis Year: 2025 Plus Project Mitigation
Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	1649	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	232	vph
Length of first accel/decel lane	900	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1649	232		vph
Peak-hour factor, PHF	0.92	0.92		
Peak 15-min volume, v15	448	63		v
Trucks and buses	10	10		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

```
Heavy vehicle adjustment, fHV          0.952       0.952
Driver population factor, fP           1.00        1.00
Flow rate, vp                          1882        265                    pcph

_________________________Estimation of V12 Merge Areas_________________________

                  L  =            (Equation 13-6 or 13-7)
                   EQ
                  P  =    1.000   Using Equation  0
                   FM
                  v  = v  (P  ) =  1882   pc/h
                   12   F   FM

_______________________________Capacity Checks_________________________________

                             Actual        Maximum         LOS F?
     v                       2147          4700            No
      FO
     v  or v                 0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?             No
      3     av34
Is   v  or v      > 1.5 v  /2              No
      3     av34         12
If yes, v    = 1882                     (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

________________________Flow Entering Merge Influence Area_____________________
                        Actual        Max Desirable        Violation?
     v                  2147          4600                 No
      R12
_________________Level of Service Determination (if not F)_____________________

Density, D = 5.475 + 0.00734 v  + 0.0078 v   - 0.00627 L   =   16.5    pc/mi/ln
          R                   R           12             A
Level of service for ramp-freeway junction areas of influence  B

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                 M  = 0.291
                                              S
Space mean speed in ramp influence area,     S  = 58.3    mph
                                              R
Space mean speed in outer lanes,             S  =  N/A    mph
                                              0
Space mean speed for all vehicles,           S  = 58.3    mph
_______________________________________________________________________________
```

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst: JAV
Agency/Co.: Omni-Means, a GHD Company
Date performed: 3/17/2018
Analysis time period: PM Peak
Freeway/Dir of Travel: US 101 SB
Junction: MADONNA SB ON
Jurisdiction: SLO
Analysis Year: 2025 Plus Project Mitigation
Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2852	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	409	vph
Length of first accel/decel lane	900	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2852	409		vph
Peak-hour factor, PHF	0.92	0.92		
Peak 15-min volume, v15	775	111		v
Trucks and buses	10	10		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.952	0.952	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	3255	467	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 Using Equation 0

$v_{12} = v_F (P_{FM})$ = 3255 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	3722	4700	No

v_3 or v_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12}/2 No

If yes, v_{12A} = 3255 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	3722	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\, v_R + 0.0078\, v_{12} - 0.00627\, L_A$ = 28.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable, M_S = 0.419

Space mean speed in ramp influence area, S_R = 55.4 mph

Space mean speed in outer lanes, S_0 = N/A mph

Space mean speed for all vehicles, S = 55.4 mph

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	AM Peak
Freeway/Direction:	US 101 SB
From/To:	s/o Madonna
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	1881	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	511	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1073	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1073	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	65.0	mi/h
Number of lanes, N	2	
Density, D	16.5	pc/mi/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	PM Peak
Freeway/Direction:	US 101 SB
From/To:	s/o Madonna
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	3261	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	886	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	1861	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	1861	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	62.0	mi/h
Number of lanes, N	2	
Density, D	30.0	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/17/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 SB
Junction:	LOVR SB OFF
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	1881	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	655	vph
Length of first accel/decel lane	530	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	413	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1650	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	1881		655		413	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	511		178		112	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

```
Heavy vehicle adjustment, fHV            0.952        0.952        0.952
Driver population factor, fP             1.00         1.00         1.00
Flow rate, vp                            2147         748          471        pcph

________________________Estimation of V12 Diverge Areas_______________________

                  L  =            (Equation 13-12 or 13-13)
                   EQ
                  P  =    1.000   Using Equation  0
                   FD
                  v  = v  + (v - v ) P  =  2147   pc/h
                   12   R     F   R   FD

______________________________Capacity Checks_________________________________

                           Actual        Maximum         LOS F?
     v  = v                2147          4700            No
      Fi   F
     v  = v - v            1399          4700            No
      FO   F   R
     v                     748           2000            No
      R
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34         12
If yes, v    = 2147                  (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

_____________________Flow Entering Diverge Influence Area______________________
                      Actual       Max Desirable        Violation?
     v                2147         4400                 No
      12
_________________Level of Service Determination (if not F)____________________

Density,               D = 4.252 + 0.0086 v  - 0.009  L   =   17.9    pc/mi/ln
                         R                  12         D
Level of service for ramp-freeway junction areas of influence B

_____________________________Speed Estimation__________________________________

Intermediate speed variable,                D  = 0.495
                                             S
Space mean speed in ramp influence area,    S  = 53.6    mph
                                             R
Space mean speed in outer lanes,            S  =  N/A    mph
                                             0
Space mean speed for all vehicles,          S  = 53.6    mph
_______________________________________________________________________________
```

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Diverge Analysis

Analyst: JAV
Agency/Co.: Omni-Means, a GHD Company
Date performed: 3/17/2018
Analysis time period: PM Peak
Freeway/Dir of Travel: US 101 SB
Junction: LOVR SB OFF
Jurisdiction: SLO
Analysis Year: 2025 Plus Project Mitigation
Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	3261	vph

Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	573	vph
Length of first accel/decel lane	530	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	829	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1650	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	3261		573		829	vph
Peak-hour factor, PHF	0.92		0.92		0.92	
Peak 15-min volume, v15	886		156		225	v
Trucks and buses	10		10		10	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	3722	654	946	pcph

Estimation of V12 Diverge Areas

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 Using Equation 0

$v_{12} = v_R + (v_F - v_R) P_{FD}$ = 3722 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3722	4700	No
$v_{FO} = v_F - v_R$	3068	4700	No
v_R	654	2000	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or v_{av34} > 2700 pc/h?		No	
Is v_3 or v_{av34} > 1.5 v_{12}/2		No	

If yes, v_{12A} = 3722 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	3722	4400	No

Level of Service Determination (if not F)

Density, $D = 4.252 + 0.0086\, v_{12} - 0.009\, L_D$ = 31.5 pc/mi/ln

Level of service for ramp-freeway junction areas of influence D

Speed Estimation

Intermediate speed variable,	D_S = 0.487	
Space mean speed in ramp influence area,	S_R = 53.8	mph
Space mean speed in outer lanes,	S_0 = N/A	mph
Space mean speed for all vehicles,	S = 53.8	mph

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/17/2018
Analysis time period:	AM Peak
Freeway/Dir of Travel:	US 101 SB
Junction:	LOVR SB ON
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	1226	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	413	vph
Length of first accel/decel lane	400	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	655	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1650	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1226	413	655	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	333	112	178	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	0.952	0.952	0.952	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	1399	471	748	pcph

Estimation of V12 Merge Areas

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 Using Equation 0

$v_{12} = v_F (P_{FM})$ = 1399 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
v_{FO}	1870	4700	No

v_3 or v_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is v_3 or v_{av34} > 2700 pc/h? No

Is v_3 or v_{av34} > 1.5 v_{12}/2 No

If yes, v_{12A} = 1399 (Equation 13-15, 13-16, 13-18, or 13-19)

Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v_{R12}	1870	4600	No

Level of Service Determination (if not F)

Density, $D_R = 5.475 + 0.00734\, v_R + 0.0078\, v_{12} - 0.00627\, L_A$ = 17.3 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

Speed Estimation

Intermediate speed variable, M_S = 0.318

Space mean speed in ramp influence area, S_R = 57.7 mph

Space mean speed in outer lanes, S_0 = N/A mph

Space mean speed for all vehicles, S = 57.7 mph

HCS 2010: Freeway Merge and Diverge Segments Release 6.1

Phone: Fax:
E-mail:

Merge Analysis

Analyst:	JAV
Agency/Co.:	Omni-Means, a GHD Company
Date performed:	3/17/2018
Analysis time period:	PM Peak
Freeway/Dir of Travel:	US 101 SB
Junction:	LOVR SB ON
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Freeway Data

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	65.0	mph
Volume on freeway	2688	vph

On Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	829	vph
Length of first accel/decel lane	400	ft
Length of second accel/decel lane		ft

Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	573	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1650	ft

Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2688	829	573	vph
Peak-hour factor, PHF	0.92	0.92	0.92	
Peak 15-min volume, v15	730	225	156	v
Trucks and buses	10	10	10	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

```
Heavy vehicle adjustment, fHV           0.952       0.952       0.952
Driver population factor, fP            1.00        1.00        1.00
Flow rate, vp                           3068        946         654       pcph

_________________________Estimation of V12 Merge Areas_________________________

                  L  =            (Equation 13-6 or 13-7)
                   EQ
                  P  =    1.000   Using Equation  0
                   FM
                  v  = v  (P  ) =  3068   pc/h
                   12   F   FM

_______________________________Capacity Checks_________________________________

                           Actual        Maximum         LOS F?
     v                     4014          4700            No
      FO
     v  or v               0    pc/h     (Equation 13-14 or 13-17)
      3     av34
Is   v  or v      > 2700 pc/h?           No
      3     av34
Is   v  or v      > 1.5 v  /2            No
      3     av34         12
If yes, v    = 3068                   (Equation 13-15, 13-16, 13-18, or 13-19)
         12A

________________________Flow Entering Merge Influence Area_____________________
                      Actual        Max Desirable        Violation?
     v                4014          4600                 No
      R12
_________________Level of Service Determination (if not F)_____________________

Density, D = 5.475 + 0.00734 v  + 0.0078 v   - 0.00627 L   =   33.8    pc/mi/ln
          R                   R           12             A
Level of service for ramp-freeway junction areas of influence  D

______________________________Speed Estimation__________________________________

Intermediate speed variable,                  M  = 0.509
                                               S
Space mean speed in ramp influence area,      S  = 53.3    mph
                                               R
Space mean speed in outer lanes,              S  =  N/A    mph
                                               0
Space mean speed for all vehicles,            S  = 53.3    mph
_______________________________________________________________________________
```

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	AM Peak
Freeway/Direction:	US 101 SB
From/To:	s/o LOVR
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	1639	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	445	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	935	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	935	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	65.0	mi/h
Number of lanes, N	2	
Density, D	14.4	pc/mi/ln
Level of service, LOS	B	

Overall results are not computed when free-flow speed is less than 55 mph.

HCS 2010: Basic Freeway Segments Release 6.1

Phone: Fax:
E-mail:

Operational Analysis

Analyst:	JAV
Agency or Company:	Omni-Means, a GHD Company
Date Performed:	3/17/2018
Analysis Time Period:	PM Peak
Freeway/Direction:	US 101 SB
From/To:	s/o LOVR
Jurisdiction:	SLO
Analysis Year:	2025 Plus Project Mitigation

Description: San Luis Ranch Specific Plan Multimodal TIS

Flow Inputs and Adjustments

Volume, V	3517	veh/h
Peak-hour factor, PHF	0.92	
Peak 15-min volume, v15	956	v
Trucks and buses	10	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.952	
Driver population factor, fp	1.00	
Flow rate, vp	2007	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	65.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	65.0	mi/h

LOS and Performance Measures

Flow rate, vp	2007	pc/h/ln
Free-flow speed, FFS	65.0	mi/h
Average passenger-car speed, S	59.8	mi/h
Number of lanes, N	2	
Density, D	33.6	pc/mi/ln
Level of service, LOS	D	

Overall results are not computed when free-flow speed is less than 55 mph.

Year 2025 Near Term Plus Project Mitigation Conditions

Leisch Method Worksheets

W2= 252

W1= 465

2400

0

LOS weave = B

Compo. LOS = C

V = 3117 pcph

L = 940 feet

W1 = 465 pcph

W2 = 252 pcph

V_w = 717 pcph

R = 0.35

Direction : North

Project: 2025 Near Term Plus Project Mitigation

Year: 2025 Peak Hour: AM Peak

On Ramp: Prado Rd

Off Ramp: Madonna Rd

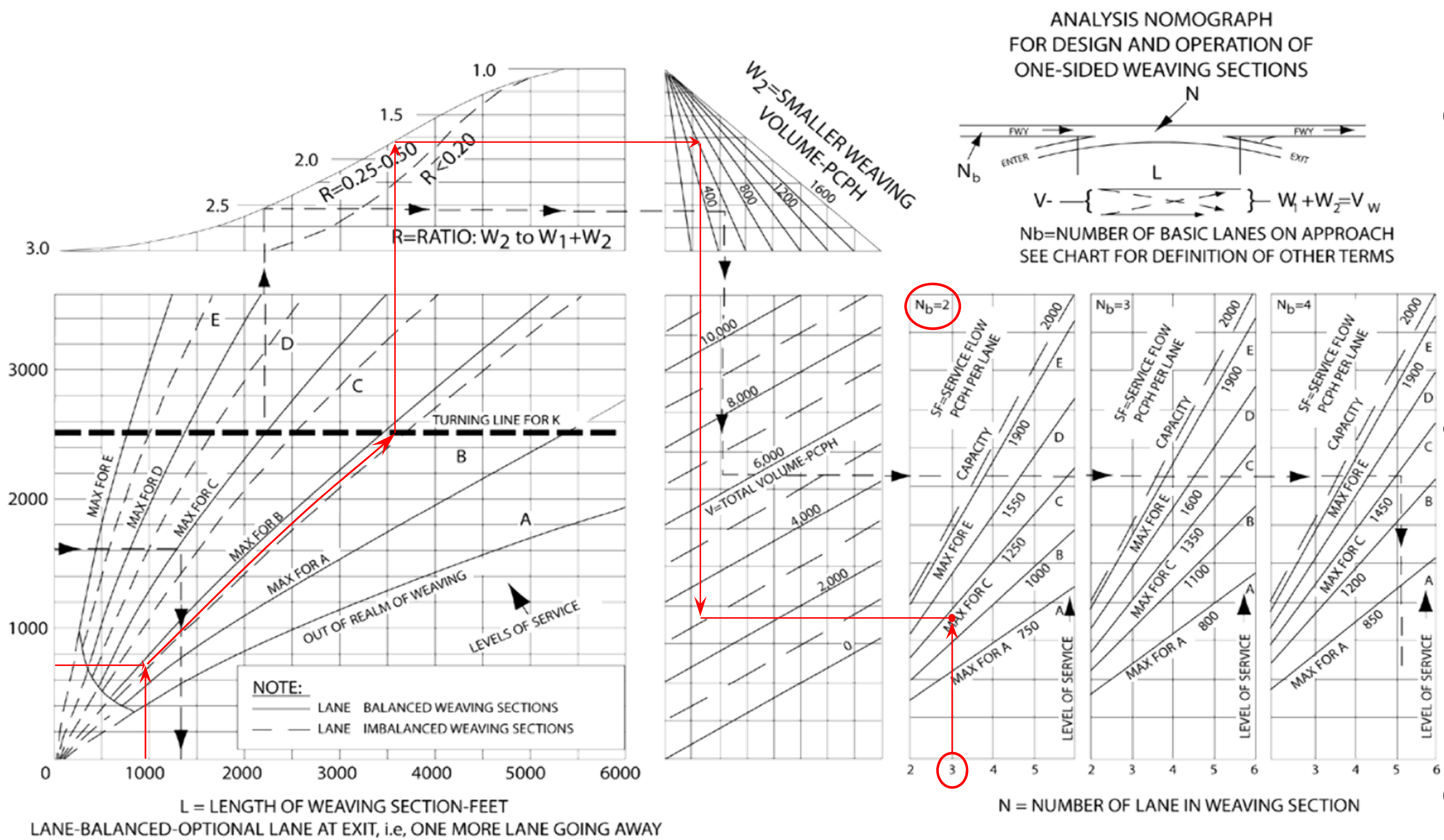


Figure 504.7A
Design Curve for Freeway and Collector Weaving

W2= 188

W1= 666

2283

0

LOS weave = C

Compo. LOS = C

V = 3137 pcph

L = 940 feet

W1 = 666 pcph

W2 = 188 pcph

V_w = 854 pcph

R = 0.22

Direction : North

Project: 2025 Near Term Plus Project Mitigation

Year: 2025 Peak Hour: PM Peak

On Ramp: Prado Rd

Off Ramp: Madonna Rd

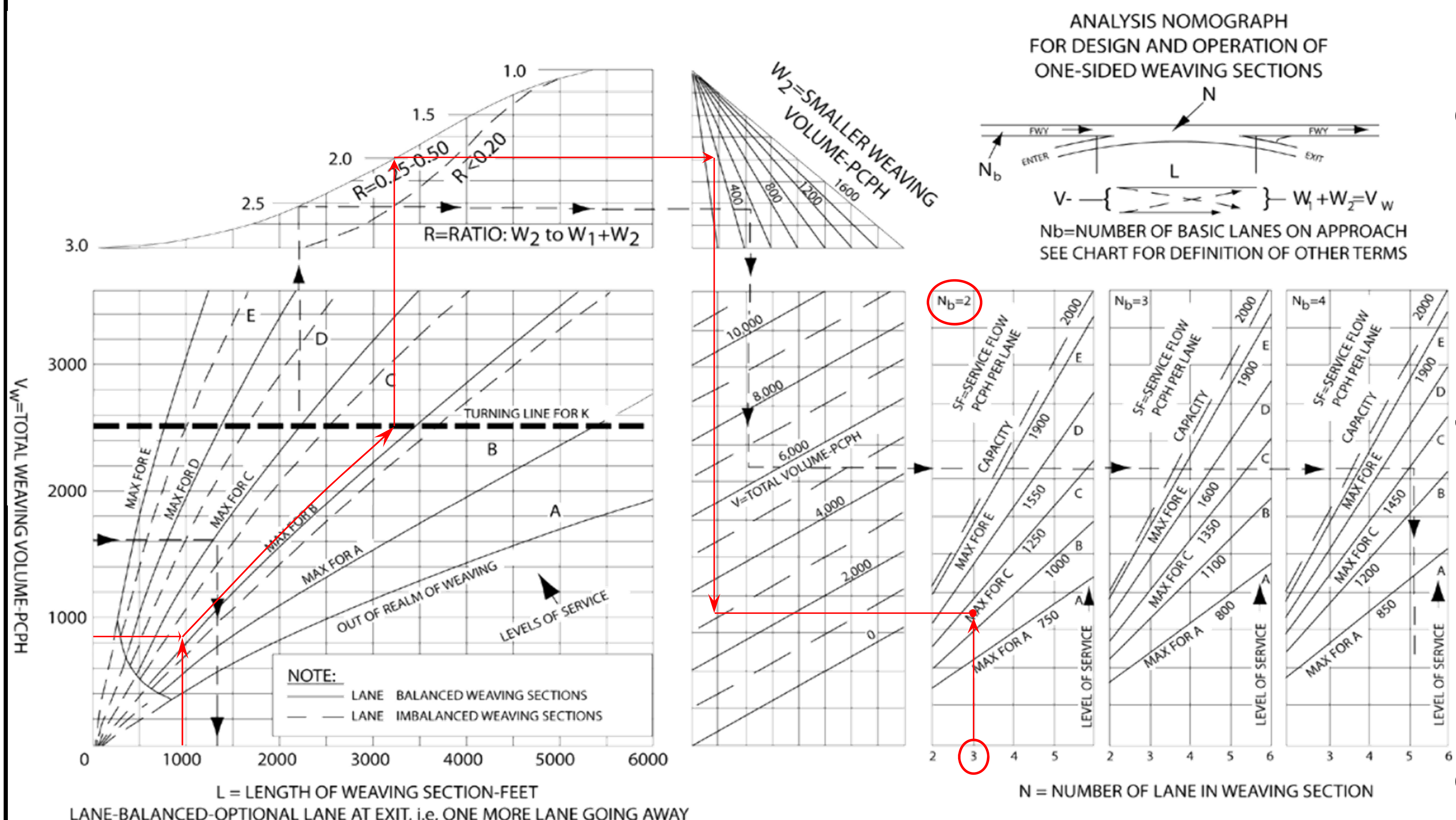


Figure 504.7A
Design Curve for Freeway and Collector Weaving

W2 = 287

W1 = 440

2578

116

LOS weave = A

Compo. LOS = C/D

V = 3421 pcph

L = 1330 feet

W1 = 440 pcph

W2 = 287 pcph

V_w = 727 pcph

R = 0.39

Direction : North

Project: 2025 Near Term Plus Project Mitigation

Year: 2025   Peak Hour: AM Peak

On Ramp: Madonna Rd

Off Ramp: Marsh St

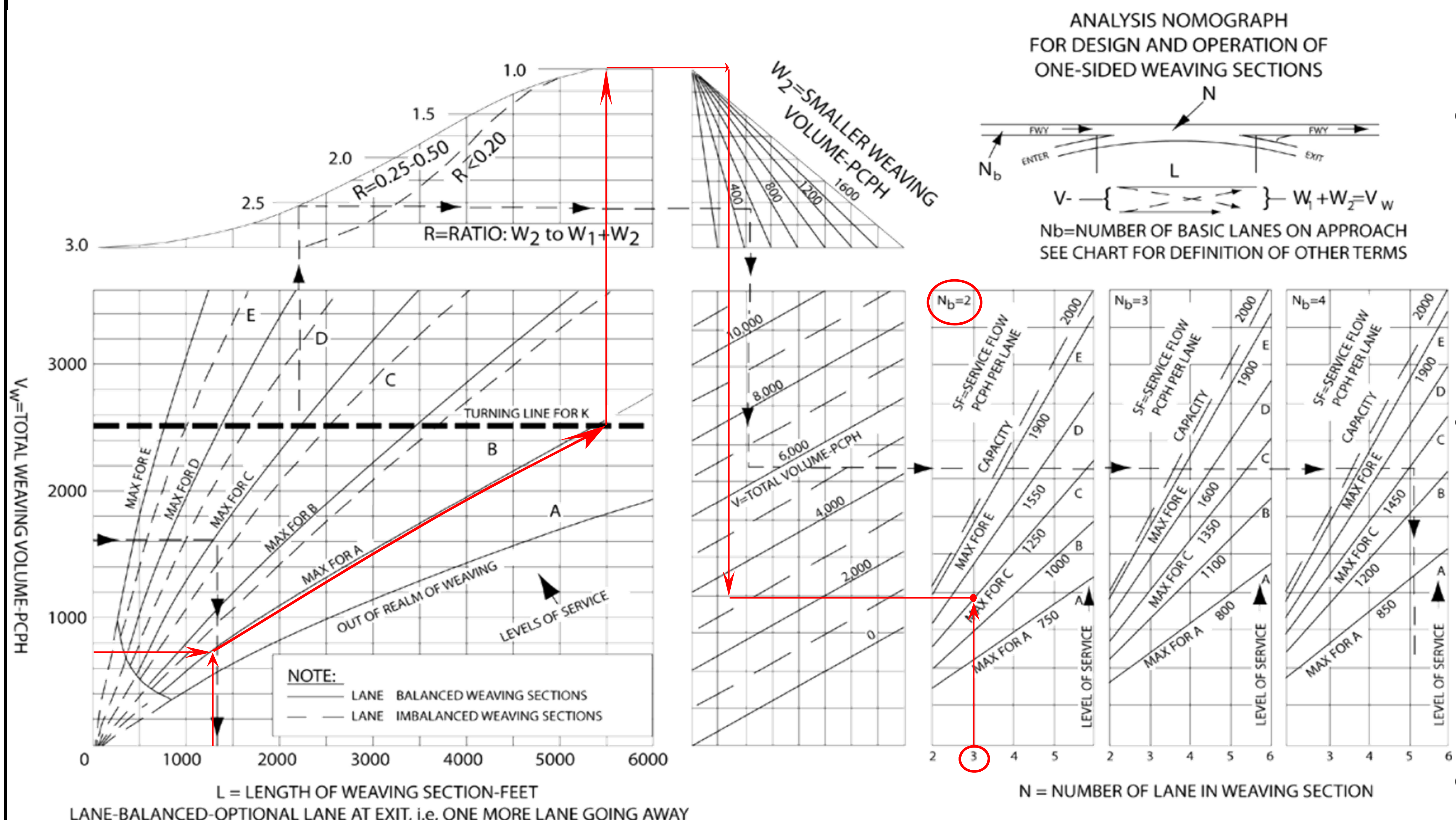
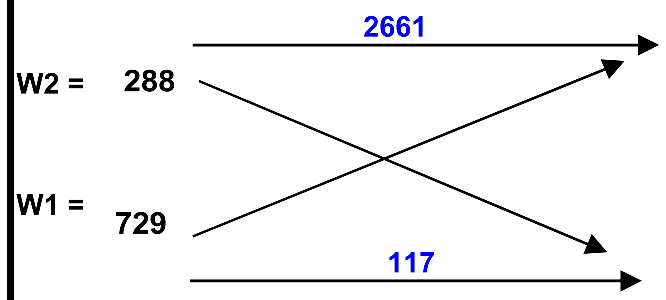


Figure 504.7A
Design Curve for Freeway and Collector Weaving



LOS weave = B

Compo. LOS = D

V = 3795 pcph

L = 1330 feet

W1 = 729 pcph

W2 = 288 pcph

V_w = 1017 pcph

R = 0.28

Direction : North

Project: 2025 Near Term Plus Project Mitigation

Year: 2025 Peak Hour: PM Peak

On Ramp: Madonna Rd

Off Ramp: Marsh St

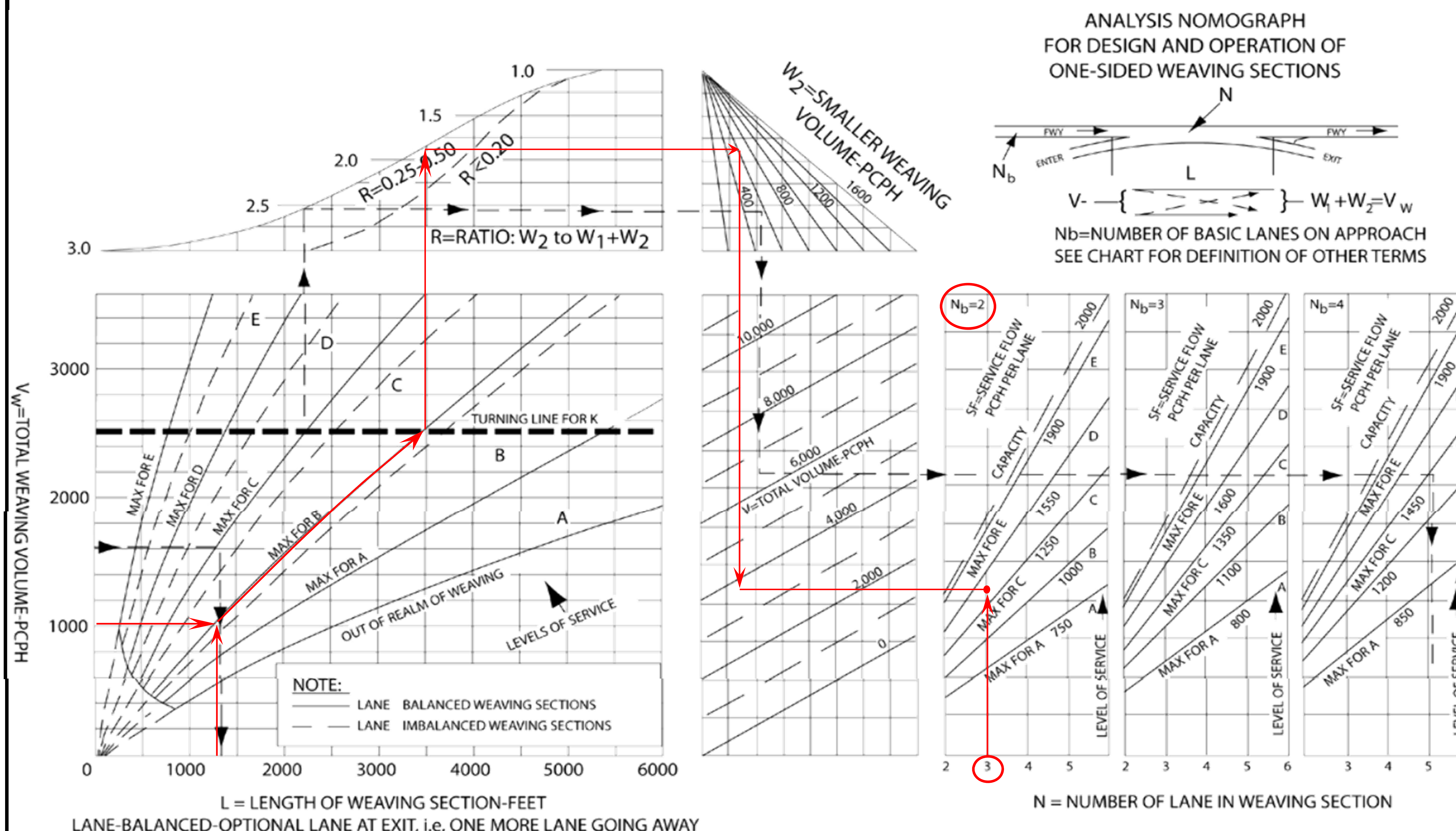
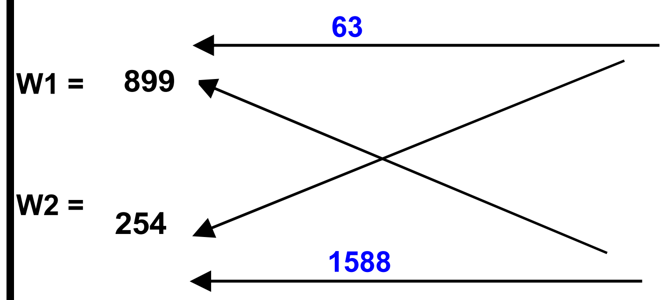


Figure 504.7A
Design Curve for Freeway and Collector Weaving



LOS weave = B

Compo. LOS = C

V = 2804 pcph

L = 2065 feet

W1 = 899 pcph

W2 = 254 pcph

V_w = 1153 pcph

R = 0.22

Direction : South

Project: 2025 Near Term Plus Project Mitigation

Year: 2025 Peak Hour: AM Peak

On Ramp: Marsh St

Off Ramp: Madonna Rd

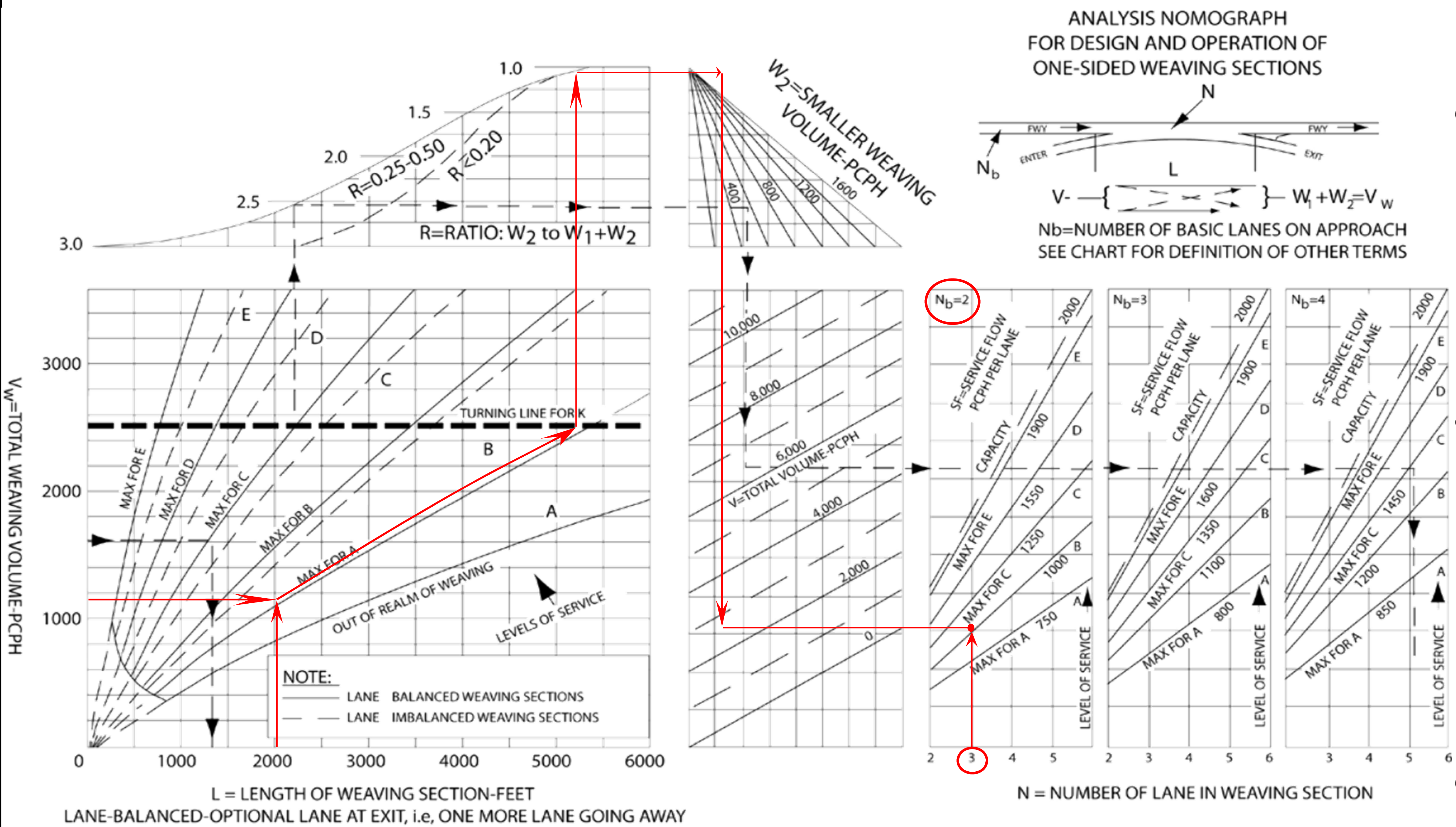
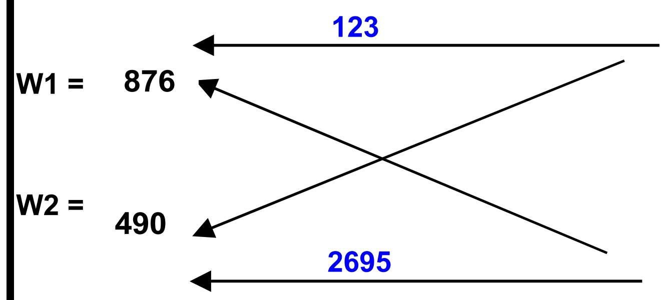


Figure 504.7A
Design Curve for Freeway and Collector Weaving



LOS weave = B

Compo. LOS = E

V = 4184 pcph

L = 2065 feet

W1 = 876 pcph

W2 = 490 pcph

V_w = 1366 pcph

R = 0.36

Direction : South

Project: 2025 Near Term Plus Project Mitigation

Year: *2025* Peak Hour: PM Peak

On Ramp: Marsh St

Off Ramp: Madonna Rd

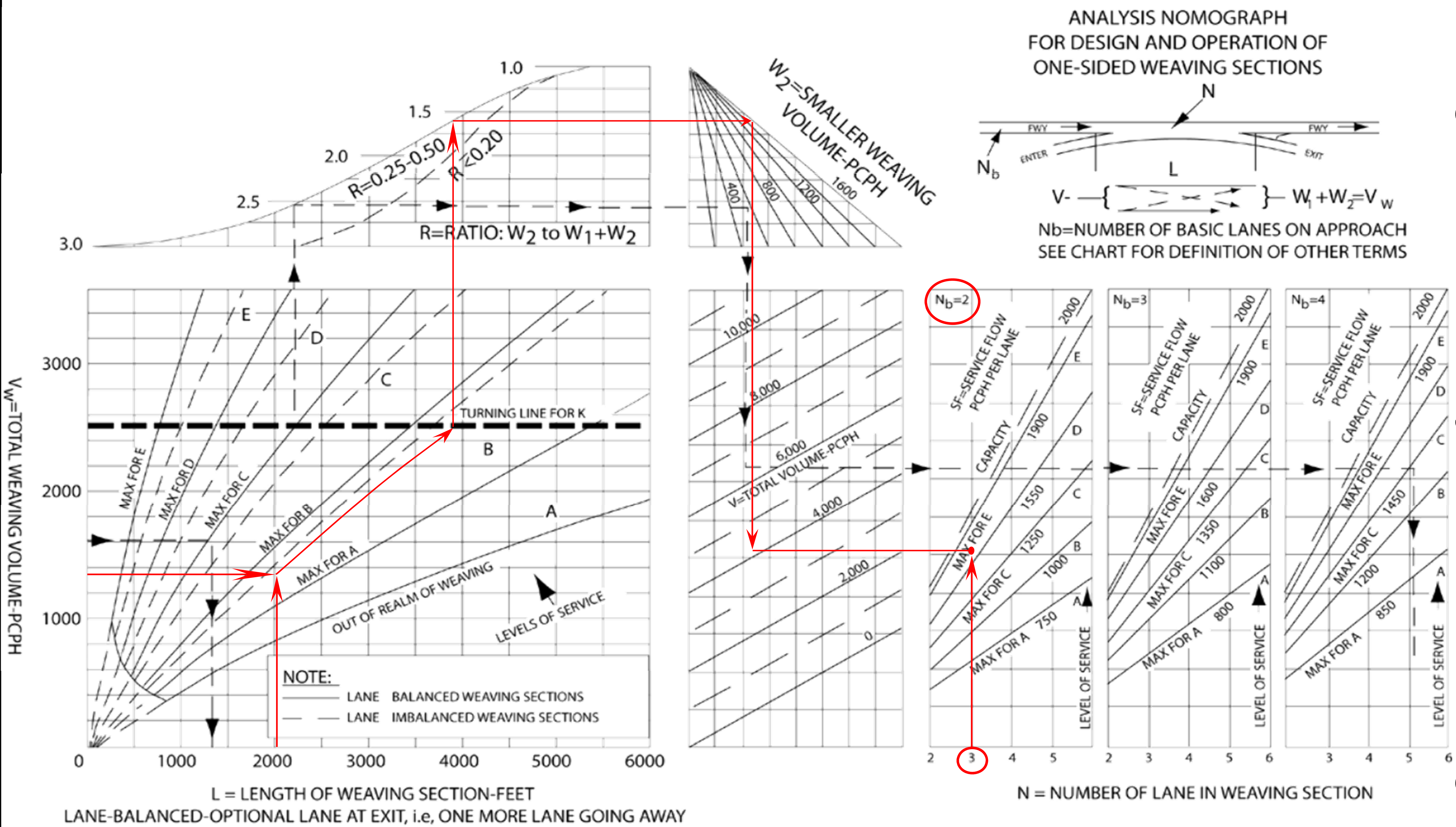


Figure 504.7A

Design Curve for Freeway and Collector Weaving

Appendix C

San Luis Ranch Near-Term Transportation Mitigations Supplement

Central Coast Transportation Consulting
Traffic Engineering & Transportation Planning

MEMORANDUM

Date: April 12, 2018

To: Jake Hudson, City of San Luis Obispo

From: Joe Fernandez and Travis Low, CCTC

Subject: San Luis Ranch Near Term Transportation Mitigations Supplement

This memorandum summarizes our supplemental analysis of near term (2025) mitigation measures for the San Luis Ranch project. The Transportation section of the San Luis Ranch Final Environmental Impact Report (FEIR) summarizes transportation impacts and mitigation measures. Many of the impacts are identified as being mitigated by construction of the Prado Road overcrossing and northbound US 101 ramps. The applicant proposes modification of the project description adjusting the phasing plan such that phases can develop in any order, and revising the mitigation measure monitoring program to allow occupancy of any phase prior to constructing the Prado Road overpass and northbound ramps.

The purpose of this supplemental analysis is to determine what measures, if any, would adequately mitigate project impacts under near term conditions with the San Luis Ranch project in place but without the Prado Road overcrossing.

This analysis focuses on eleven intersections and seven roadway segments where impacts were identified in the FEIR and where the construction of the Prado Road overcrossing was identified as a mitigation measure. Additionally, eleven freeway locations with unacceptable operations were analyzed. For each location, the intent of this work is to identify what alternative mitigation measures, if any, would preclude the need for the overcrossing for the near term (2025).

METHODOLOGY

Our analysis uses the Synchro analysis files provided by Omni-Means, who prepared the *San Luis Ranch Specific Plan Multimodal Transportation Impact Analysis Report* ('TIA', November 2016). No changes were made to the traffic volumes or the land use assumptions used to develop the volumes. Intersection level of service (LOS) was determined using Synchro 10 and queue lengths were determined using the companion SimTraffic microsimulation software by taking the average of five runs. Note that the TIA used the Synchro 9 software package, which has now been replaced by the Synchro 10 package. The TIA evaluated segment impacts using an in-house spreadsheet that was not available for use.

Freeway impacts had been previously evaluated using analysis results from HCS 2010. For weaving segments, the Leisch Method had additionally been used to evaluate impacts. In this memorandum, only weaving segment results using the Leisch Method are presented, since its LOS results were generally worse compared to HCS 2010.

(805) 316-0101
895 Napa Avenue, Suite A-6, Morro Bay, CA 93442

INTERSECTION ANALYSIS

Table 1 below summarizes intersection LOS under the near term, near term plus project, and mitigated near term plus project scenarios. Mitigation measures are identified for each intersection where project impacts to LOS are expected. Queue impacts are discussed in the next section. Some locations have queue impacts but not LOS impacts; in these cases the queue mitigation is also shown in Table 1 for consistency with Table 2. Synchro output sheets are provided in Appendix A.

Table 1: Intersection Level of Service Analysis

ID	Intersection	Peak Hour	Near Term V/C[1]	Near Term Delay[2]	Near Term LOS	Near Term+Project V/C[1]	Near Term+Project Delay[2]	Near Term+Project LOS	Mitigated Near Term+Project V/C[1]	Mitigated Near Term+Project Delay[2]	Mitigated Near Term+Project LOS	Mitigation
1	Madonna/LOVR	AM		25.9	C		27.9	C		27.9	C	Adjust corridor signal timing as needed for optimum operations. This will reduce but may not eliminate the impact.
		PM		51.8	D	**1.05**	**56.3**	**E**	**1.05**	**56.3**	**E**	
2	Madonna/Oceanaire	AM		21.1	C		21.3	C		21.3	C	Extend WBR turn pocket to 200'. This would require widening the bridge structure which is not a currently programmed project and may result in secondary environmental impacts. Therefore this improvement is considered infeasible now.
		PM		17.7	B		19.0	B		19.0	B	
3	Madonna/Dalidio	AM		9.7	A		47.0	D		19.1	B	Install second WBL turn pocket and extend both to 310'; Remove third WBT lane and third receiving lane on west leg; Install 100' EBR turn pocket; Provide split phase for NB and SB; Provide NBR overlap phase. This eliminates the impact but may be infeasible due to right-of-way needs.
		PM		42.0	D	**2.78**	**153.7**	**F**		31.5	C	
5	Madonna/US 101 SB Ramps	AM	**1.22**	**44.0**	**D**	**1.26**	**44.0**	**D**	**1.26**	**43.6**	**D**	Install 100' EBR turn pocket; Extend EBL turn pocket to 150'. Installing the EBR would require review and evaluation by Caltrans. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
		PM		25.0	C		24.9	C		23.9	C	
6	Madonna/US 101 NB Ramps	AM		18.3	B		19.4	B		19.5	B	Extend NBL turn pocket to 275'. This would require review and evaluation by Caltrans. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
		PM		21.0	C		22.2	C		22.8	C	
7	Madonna/Higuera	AM		32.7	C		33.3	C		35.7	D	Convert one NB through lane to left turn "trap" lane; Extend EBR turn pocket to 275'. Extending the EBR would require expansion into the Caltrans maintenance headquarters right-of-way. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
		PM		38.5	D		43.6	D		44.1	D	
10	LOVR/Auto Park	AM		0.6 (19.9)	- (C)		0.6 (20.8)	- (C)		3.1	A	Signalize intersection.
		PM	**0.57**	**1.6 (59.2)**	**- (F)**	**0.60**	**1.8 (65.6)**	**- (F)**		3.7	A	
11	LOVR/Calle Joaquin	AM		14.9	B		15.2	B		15.2	B	Extend SBR turn pocket to 200'. This is considered infeasible due to likely secondary impacts to sensitive wetland areas.
		PM		12.2	B		12.5	B		12.5	B	
13	LOVR/US 101 NB Ramps	AM		23.8	C		25.1	C		25.1	C	Extend SBR turn pocket to 325'. This would require bridge widening over US 101. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
		PM		24.2	C		23.6	C		23.6	C	
15	Higuera/Suburban	AM		8.3	A		8.4	A		8.0	A	Convert WBR turn pocket to shared WBL/R. This improvement was required as part of the Avila Ranch EIR.
		PM		19.9	B		20.2	C		15.0	B	
16	Higuera/Tank Farm	AM		37.5	D		37.8	D		37.8	D	Extend NBR turn pocket to 200'; Extend SBL turn pocket to 250'. Extending the NBR may be infeasible due to right-of-way needs.
		PM		24.7	C		25.0	C		25.0	C	

1. Volume to capacity ratio reported for worst movement, for unacceptable LOS only.
2. HCM 2010 average control delay in seconds per vehicle (HCM 2000 used for Intersections 2 and 13). For side-street-stop controlled intersections the worst approach's delay is reported in parentheses next to the overall intersection delay.
Note: Unacceptable operations shown in bold text.

Table 2 below summarizes queue lengths under each scenario. Mitigation measures are identified for each intersection where project impacts to queue lengths are expected. Some locations have LOS impacts but not queue impacts; in these cases the LOS mitigation is also shown in Table 2 for consistency with Table 1. SimTraffic output sheets are provided in Appendix B. Note that due to the stochastic (random) nature of microsimulation each run produces different results.

Table 2: Queue Analysis

ID	Intersection	Movement	Storage Length (ft)	Peak Hour	95th Percentile Queues (ft)[1] Near Term	Near Term +Project	Mitigated Near Term +Project	Mitigation
1	Madonna/LOVR	NBR	175	AM	105	106	124	Adjust corridor signal timing as needed for optimum operations. This will reduce but may not eliminate the impact.
				PM	**246**	**264**	**269**	
2	Madonna/Oceanaire	WBR	100	AM	45	62	45	Extend WBR turn pocket to 200'. This would require widening the bridge structure which is not a currently programmed project and may result in secondary environmental impacts. Therefore this improvement is considered infeasible now.
				PM	**163**	**122**	163	
3	Madonna/Dalidio	WBL	275	AM	51	177	110	Install second WBL turn pocket and extend both to 310'; Remove third WBT lane and third receiving lane on west leg; Install 100' EBR turn pocket; Provide split phase for NB and SB; Provide NBR overlap phase. This eliminates the impact but may be infeasible due to right-of-way needs.
				PM	127	**335**	213	
		WBT/R	570	AM	74	132	126	
				PM	309	**602**	317	
5	Madonna/US 101 SB Ramps	EBL	100	AM	80	84	120	Install 100' EBR turn pocket; Extend EBL turn pocket to 150'. Installing the EBR would require review and evaluation by Caltrans. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
				PM	96	**123**	120	
		WBL	260	AM	164	173	176	
				PM	**389**	**546**	232	
6	Madonna/US 101 NB Ramps	NBL	185	AM	147	150	158	Extend NBL turn pocket to 275'. This would require review and evaluation by Caltrans. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
				PM	164	**265**	174	
7	Madonna/Higuera	EBR	150	AM	**221**	**247**	158	Convert one NB through lane to left turn "trap" lane; Extend EBR turn pocket to 275'. Extending the EBR would require expansion into the Caltrans maintenance headquarters right-of-way. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
				PM	**186**	**265**	246	
		NBL	160	AM	155	**167**	98	
				PM	**349**	**372**	192	
		SBT/L	250	AM	163	162	159	
				PM	221	**414**	**262**	
		SBR	340	AM	-	-	-	
				PM	46	**585**	114	
10	LOVR/Auto Park	WBR	175	AM	25	26	23	Signalize intersection.
				PM	42	45	50	
11	LOVR/Calle Joaquin	SBR	115	AM	39	89	91	Extend SBR turn pocket to 200'. This is considered infeasible due to likely secondary impacts to sensitive wetland areas.
				PM	**134**	**133**	183	
13	LOVR/US 101 NB Ramps	SBR	135	AM	**181**	**204**	317	Extend SBR turn pocket to 325'. This would require bridge widening over US 101. Therefore this impact is considered unavoidable due to the uncertainties associated with the Caltrans project development process.
				PM	**179**	**173**	142	
15	Higuera/Suburban	WBR	170	AM	68	83	134	Convert WBR turn pocket to shared WBL/R. This improvement was required as part of the Avila Ranch EIR.
				PM	**274**	**286**	**244**	
		SBL	200	AM	141	**229**	158	
				PM	**288**	**261**	**262**	
16	Higuera/Tank Farm	NBR	100	AM	**192**	**186**	**215**	Extend NBR turn pocket to 200'; Extend SBL turn pocket to 250'. Extending the NBR may be infeasible due to right-of-way needs.
				PM	**173**	**155**	160	
		SBL	165	AM	**197**	**201**	223	
				PM	**231**	**224**	**264**	

1. Queue length that would not be exceeded 95 percent of the time.
Note: Bold indicates queue length longer than storage length.

ROADWAY SEGMENT ANALYSIS

The FEIR identified seventeen modal segment impacts under near term plus project conditions that would be mitigated by the Prado Road overcrossing decreasing traffic volumes on the segments and therefore increasing travel speeds. Three were auto impacts where the project degraded average segment travel speed by 2 miles per hour or less. Two were impacts to transit routes where the transit score degraded due to slower average travel speeds along the segment. Eleven were pedestrian impacts, and one was a bicycle impact, where the score degraded due to increased traffic volumes along the segment. Table 3 below summarizes roadway segment impacts.

The TIA consultant used a proprietary in-house spreadsheet to calculate roadway segment service levels. Because this spreadsheet is proprietary, it was unavailable for use in developing alternative mitigation measures. However, because all of the auto and transit segment impacts were related to roadway speeds, it would be necessary to increase capacity by adding travel lanes or improving corridor signal timing. Adding travel lanes is considered infeasible along these segments of Madonna Road and Los Osos Valley Road and adjusting corridor signal timings would reduce the severity of, but not eliminate, the impact. The transit impacts could also be mitigated by reducing service headways by five minutes or increasing on-time performance by at least one percent.

Constructing parallel Class I multiuse paths would reduce the severity of, but may not eliminate, the pedestrian and bicycle impacts. Note that portions of the paths would cross Caltrans right-of-way, and would require Caltrans review and approval. It is unknown if Caltrans would approve the intersection configuration changes necessary to accommodate the paths, so the feasibility of this improvement is also uncertain.

Table 3: Roadway Segment Analysis

			Near Term								Near Term + Project								
			AM Peak				PM Peak				AM Peak				PM Peak				
ID	Segment	Direction	Travel Speed (mph)	BFFS (mph)	Travel Speed/ BFFS	LOS	Travel Speed (mph)	BFFS (mph)	Travel Speed/ BFFS	LOS	Travel Speed (mph)	BFFS (mph)	Travel Speed/ BFFS	LOS	Travel Speed (mph)	BFFS (mph)	Travel Speed/ BFFS	LOS	Mitigation
	Auto																		
1	Madonna Road - Oceanaire to Los Osos Valley	WB	22.1	42.1	52%	C	**11.8**	**42.1**	**28%**	**F**	21.7	42.1	51%	C	**10.2**	**42.1**	**24%**	**F**	Adjust corridor signal timing as needed for optimum operations. This will reduce but may not eliminate the impact.
13	Los Osos Valley - Madonna to Froom Ranch	SB	24.0	41.9	57%	C	**16.9**	**41.8**	**41%**	**D**	22.7	41.9	54%	C	**15.2**	**41.8**	**36%**	**E**	
17	Los Osos Valley - US 101 NB Ramps to S. Higuera	EB	**17.5**	**39.4**	**45%**	**D**	**15.8**	**39.4**	**40%**	**D**	**16.9**	**39.4**	**43%**	**D**	**15.6**	**39.4**	**39%**	**E**	
			Score		**LOS**		**Score**		**LOS**		**Score**		**LOS**		**Score**		**LOS**		
	Transit																		
13	Los Osos Valley - Madonna to Froom Ranch (Route 4)	SB	**4.51**		**E**		**4.56**		**E**		**4.53**		**E**		**4.56**		**E**		
13	Los Osos Valley - Madonna to Froom Ranch (Route 5)	SB	**4.60**		**E**		**4.38**		**E**		**4.61**		**E**		**4.38**		**E**		
			Score		**LOS**		**Score**		**LOS**		**Score**		**LOS**		**Score**		**LOS**		
	Pedestrian																		
4	Madonna Road - US 101 SB Ramps to El Mercado	WB	**3.62**		**D**		**3.79**		**D**		**3.68**		**D**		**3.87**		**D**		Construct parallel Class I multiuse paths. This will reduce but may not eliminate the impact. Path construction may occur within Caltrans right-of-way and is subject to Caltrans approval and permitting, which is uncertain at this time.
		EB	**3.70**		**D**		**3.77**		**D**		**3.77**		**D**		**3.87**		**D**		
13	Los Osos Valley - Madonna to Froom Ranch	SB	**3.86**		**D**		**3.99**		**D**		**3.86**		**D**		**3.99**		**D**		
		NB	**3.74**		**F**		**4.19**		**F**		**3.75**		**F**		**4.19**		**F**		
14	Los Osos Valley - Froom Ranch to Calle Joaquin	SB	**3.84**		**D**		**4.05**		**D**		**3.87**		**D**		**4.08**		**D**		
		NB	**3.75**		**D**		**4.09**		**D**		**3.75**		**D**		**4.11**		**D**		
15	Los Osos Valley - Calle Joaquin to US 101 SB Ramps	SB	**3.69**		**D**		**3.70**		**D**		**3.71**		**D**		**3.72**		**D**		
		NB	**3.66**		**D**		**4.01**		**D**		**3.68**		**D**		**4.03**		**D**		
16	Los Osos Valley - US 101 SB Ramps to US 101 NB Ramps	SB	**3.93**		**D**		**3.91**		**D**		**3.94**		**D**		**3.92**		**D**		
		NB	**3.82**		**D**		3.27		C		**3.83**		**D**		3.29		C		
17	Los Osos Valley - US 101 NB Ramps to S. Higuera	EB	**3.94**		**D**		**3.78**		**D**		**3.95**		**D**		**3.79**		**D**		
		WB	**3.88**		**D**		**4.27**		**E**		**3.89**		**D**		**4.29**		**E**		
			Score		**LOS**		**Score**		**LOS**		**Score**		**LOS**		**Score**		**LOS**		
	Bicycle																		
4	Madonna Road - US 101 SB Ramps to El Mercado	WB	3.96		D		**4.35**		**E**		3.98		D		**4.38**		**E**		
		EB	3.61		D		3.62		D		3.64		D		3.65		D		

Note: Unacceptable operations shown in bold text.

FREEWAY ANALYSIS

For the Freeway Analysis, unacceptable operations under two scenarios were compared: Near Term Plus Project with Overcrossing and Near Term Plus Project without Overcrossing. Operational results for these scenarios were obtained from the *Draft US 101/Prado Road Interchange Traffic Operations Analysis Report* (Omni-Means, September 2017) and *San Luis Ranch Specific Plan Multimodal Transportation Impact Analysis Report Near Term US 101 Mainline, Ramps, and Weave Operations* (Omni-Means, April 2018), which are hereby incorporated by reference. The findings indicate that on three segments, eliminating the Prado Road overcrossing would result in or worsen unacceptable operations. Table 4 below summarizes the freeway impacts.

Table 4: Freeway Analysis

Direction	Location	Segment Type	Peak Hour	Near Term+Project with Overcrossing: No. of Lanes	Volume	Density (pc/mi/ln)	LOS	Near Term+Project without Overcrossing: No. of Lanes	Volume	Density (pc/mi/ln)	LOS	Finding
Freeway, Merge, and Diverge Segments[1]												
US 101 NB	South of LOVR	Freeway	AM	2	**3,186**	**29.1**	**D**	2	**3,186**	**29.1**	**D**	The Overcrossing does not change the unacceptable density.
			PM		2,538	22.3	C		2,538	22.3	C	
	LOVR Off Ramp	Diverge	AM	1	**629**	**33.5**	**D**	1	**643**	**33.5**	**D**	The Overcrossing does not change the unacceptable density.
			PM		630	27.1	C		620	27.1	C	
	Prado Off Ramp	Diverge	AM	1	**371**	**29.6**	**D**	1	**311**	**29.9**	**D**	Eliminating the Overcrossing would worsen unacceptable operations.
			PM		191	26.3	C		145	26.4	C	
US 101 SB	Madonna On Ramp	Merge	AM	1	232	16.5	B	1	232	16.5	B	The Overcrossing does not change the unacceptable density.
			PM		**409**	**28.6**	**D**		**409**	**28.6**	**D**	
	South of Madonna	Freeway	AM	2	1,881	16.5	B	2	1,881	16.5	B	The Overcrossing does not change the unacceptable density.
			PM		**3,261**	**30.0**	**D**		**3,261**	**30.0**	**D**	
	LOVR Off Ramp	Diverge	AM	1	655	17.9	B	1	676	17.9	B	The Overcrossing does not change the unacceptable density.
			PM		**573**	**31.5**	**D**		**573**	**31.5**	**D**	
	LOVR On Ramp	Merge	AM	1	413	17.3	B	1	413	17.1	B	The Overcrossing does not change the unacceptable density.
			PM		**829**	**33.8**	**D**		**829**	**33.8**	**D**	
	South of LOVR	Freeway	AM	2	1,639	14.4	B	2	1,618	14.2	B	The Overcrossing does not change the unacceptable density.
			PM		**3,517**	**33.6**	**D**		**3,517**	**33.6**	**D**	
				No. of Lanes	Length (ft)	Total Volume	LOS	No. of Lanes	Length (ft)	Total Volume	LOS	
Weave Segments[2]												
US 101 NB	North of Prado	Weave	AM	3	940	3,317	C	2	**2,140**	**3,112**	**E**	Eliminating the Overcrossing would result in unacceptable operations.
			PM		940	3,137	C		**2,140**	**2,146**	**E**	
	North of Madonna	Weave	AM	3	1,330	3,421	C/D	3	**1,330**	**3,523**	**D**	Eliminating the Overcrossing would result in unacceptable operations.
			PM		**1,330**	**3,795**	**D**		**1,330**	**3,754**	**D**	
US 101 SB	South of Marsh	Weave	AM	3	2,065	2,804	C	3	2,065	2,804	C	The Overcrossing does not change the unacceptable operations.
			PM		**2,065**	**4,184**	**E**		**2,065**	**4,184**	**E**	

1. HCS 2010 Analysis
2. Leisch Method Analysis
Note: Unacceptable operations shown in bold text.

TRAVEL DEMAND MANAGEMENT

In addition to the physical capacity-increasing roadway improvements, the project could implement a Travel Demand Management (TDM) plan to reduce vehicular trips to minimize impacts to transportation facilities. TDM plans generally incentivize behavior to increase transportation system efficiency.

TDM measures vary for different trip types and are divided here into strategies targeting the proposed commercial uses, which make up roughly 70 percent of the project's vehicular trips, and residential uses, which make up nearly 30 percent of the project's vehicular trips. We recommend the project develop and implement a TDM plan to the satisfaction of the City Public Works director until the Prado Road Overpass and NB Ramps are completed. Its recommended that the plan incorporate the following features, and that the effectiveness of these measures be monitored regularly and adjusted as needed.

Commercial Trip Reduction Program

Commercial trip reduction programs are targeted primarily at employees since their travel behavior is easier to influence than customers.

- Implement a commute trip reduction program to reduce employee trips to the project's commercial uses. Require commercial tenants' participation in SLO Regional Rideshare's *Commute Survey and Trip Reduction Plan* program. This program is provided at no cost to the employer and results in a Trip Reduction Plan prepared by Rideshare staff.
- Create an on-site bike share program open to employees and residents of the project. Monitor usage and supply bicycles as needed to accommodate demand.
- Provide close-in parking reserved for carpools and vanpools.
- Provide transit pass subsidies to employees who do not drive to work.
- Provide on-site bike lockers and showers.
- Work with Fun Ride and/or Zip Car to provide permanent car sharing parking spot(s) on site.
- Incorporate a transit stop into the project's site plan and work with SLO Transit to adjust routes as appropriate.

Residential Trip Reduction Program

- Unbundle parking spaces from multi-family residential units. This enables households that do not use parking spaces to save on housing costs. Offer reserved parking spaces for lease or sale to households who need them. Adjust the program as needed to ensure there is no parking spillover into nearby areas.
- Create an on-site bike share program open to employees and residents of the project. Monitor usage and supply bicycles as needed to accommodate demand.
- Provide an on-site bicycle repair station and secured bicycle parking.
- Create a bus pass subsidy program and/or shuttle bus to reduce vehicle trips.

Implementing these TDM measures would reduce, but not eliminate, the project transportation impacts.

CONCLUSIONS

There are multiple mitigation measures that would reduce the severity of impacts or eliminate significant impacts under near term plus project conditions without the Prado Road overcrossing. However, some of these improvements would require additional right-of-way, further study, or approval by Caltrans, making their feasibility uncertain. Although it is unlikely that the project would be fully completed prior to the Prado Road Interchange completion, currently estimated for 2022, the new project description which proposes to eliminate development phasing and restrictions tied to the interchange may result in temporary significant and unavoidable impacts at nine intersections, eight segments, and three Hwy 101 segments until the Prado Road Overpass and NB Ramps are completed.

ATTACHMENTS

Appendix A: Synchro Output Sheets

Appendix B: SimTraffic Output Sheets

Appendix A: Synchro Output Sheets

Near Term

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	131	30	158	67	116	50	530	132	332	735	39
Future Volume (vph)	95	131	30	158	67	116	50	530	132	332	735	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.5	5.5	5.5	5.0	6.5	5.5	5.0	6.5	
Lane Util. Factor	1.00	1.00		0.97	0.95	0.95	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99	0.96	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.95	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1802		3433	1663	1440	1770	5085	1557	3433	3507	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1802		3433	1663	1440	1770	5085	1557	3433	3507	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	102	141	32	170	72	125	54	570	142	357	790	42
RTOR Reduction (vph)	0	8	0	0	15	80	0	0	95	0	3	0
Lane Group Flow (vph)	102	165	0	170	90	12	54	570	47	357	829	0
Confl. Peds. (#/hr)	23		8	8		23	3		16	16		3
Confl. Bikes (#/hr)			5			5						6
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	2	2		6	6		3	8	6	7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	13.5	13.5		11.0	11.0	11.0	4.5	15.8	26.8	19.4	30.7	
Effective Green, g (s)	13.5	13.5		11.0	11.0	11.0	4.5	15.8	26.8	19.4	30.7	
Actuated g/C Ratio	0.17	0.17		0.13	0.13	0.13	0.06	0.19	0.33	0.24	0.38	
Clearance Time (s)	5.0	5.0		5.5	5.5	5.5	5.0	6.5	5.5	5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	292	297		462	223	193	97	983	615	815	1317	
v/s Ratio Prot	0.06	c0.09		0.05	c0.05		0.03	0.11	0.01	c0.10	c0.24	
v/s Ratio Perm						0.01			0.02			
v/c Ratio	0.35	0.56		0.37	0.40	0.06	0.56	0.58	0.08	0.44	0.63	
Uniform Delay, d1	30.2	31.4		32.2	32.4	30.9	37.6	29.9	18.9	26.5	20.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	2.3		0.5	1.2	0.1	6.8	0.8	0.1	0.4	1.0	
Delay (s)	30.9	33.6		32.7	33.6	31.0	44.4	30.8	19.0	26.9	21.8	
Level of Service	C	C		C	C	C	D	C	B	C	C	
Approach Delay (s)		32.6			32.5			29.5			23.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	81.7	Sum of lost time (s)	22.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	131	30	158	67	116	50	530	132	332	735	39
Future Volume (veh/h)	95	131	30	158	67	116	50	530	132	332	735	39
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.94	1.00		0.98	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	102	141	32	170	112	98	54	570	142	357	790	42
Adj No. of Lanes	1	1	0	2	1	1	1	3	1	2	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	313	256	58	559	293	234	78	1060	572	501	1056	56
Arrive On Green	0.18	0.18	0.18	0.16	0.16	0.16	0.04	0.21	0.21	0.15	0.31	0.31
Sat Flow, veh/h	1774	1452	330	3548	1863	1486	1774	5085	1547	3442	3408	181
Grp Volume(v), veh/h	102	0	173	170	112	98	54	570	142	357	410	422
Grp Sat Flow(s),veh/h/ln	1774	0	1781	1774	1863	1486	1774	1695	1547	1721	1770	1819
Q Serve(g_s), s	3.5	0.0	6.2	3.0	3.8	4.2	2.1	7.0	4.5	7.0	14.7	14.7
Cycle Q Clear(g_c), s	3.5	0.0	6.2	3.0	3.8	4.2	2.1	7.0	4.5	7.0	14.7	14.7
Prop In Lane	1.00		0.18	1.00		1.00	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	313	0	314	559	293	234	78	1060	572	501	548	564
V/C Ratio(X)	0.33	0.00	0.55	0.30	0.38	0.42	0.69	0.54	0.25	0.71	0.75	0.75
Avail Cap(c_a), veh/h	604	0	607	1208	634	506	227	1948	842	1123	1029	1058
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.4	0.0	26.5	26.3	26.6	26.8	33.2	24.9	15.6	28.7	21.8	21.9
Incr Delay (d2), s/veh	0.6	0.0	1.5	0.3	0.8	1.2	10.2	0.4	0.2	1.9	2.1	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.2	0.0	5.8	2.7	3.6	3.2	2.3	6.0	4.4	6.2	12.0	12.2
LnGrp Delay(d),s/veh	26.0	0.0	28.0	26.6	27.4	28.0	43.4	25.3	15.8	30.6	23.9	23.9
LnGrp LOS	C		C	C	C	C	D	C	B	C	C	C
Approach Vol, veh/h		275			380			766			1189	
Approach Delay, s/veh		27.2			27.2			24.8			25.9	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		17.4	8.1	28.3		16.6	15.3	21.2
Change Period (Y+Rc), s		5.0	5.0	6.5		5.5	5.0	6.5
Max Green Setting (Gmax), s		24.0	9.0	41.0		24.0	23.0	27.0
Max Q Clear Time (g_c+I1), s		8.2	4.1	16.7		6.2	9.0	9.0
Green Ext Time (p_c), s		1.2	0.0	5.2		1.6	1.3	4.0

Intersection Summary	
HCM 2010 Ctrl Delay	25.9
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	9	680	3	5	511	0	35	8	14	27	137	12
Future Volume (vph)	9	680	3	5	511	0	35	8	14	27	137	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		5.0	6.0	6.0			5.0	5.0		5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00			1.00	0.97		1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00			1.00	1.00		1.00
Frt	1.00	1.00		1.00	1.00	0.85			1.00	0.85		0.99
Flt Protected	0.95	1.00		0.95	1.00	1.00			0.98	1.00		0.96
Satd. Flow (prot)	1770	3539		1767	3539	1583			1828	1533		1763
Flt Permitted	0.95	1.00		0.95	1.00	1.00			0.88	1.00		0.74
Satd. Flow (perm)	1770	3539		1767	3539	1583			1632	1533		1363
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	739	3	5	555	0	38	9	15	29	149	13
RTOR Reduction (vph)	0	0	0	0	0	25	0	0	0	23	0	0
Lane Group Flow (vph)	10	739	0	8	555	13	0	0	24	6	0	176
Confl. Peds. (#/hr)			2							3	3	
Confl. Bikes (#/hr)										16		
Turn Type	Prot	NA	Prot	Prot	NA	Perm		Perm	NA	Perm	Perm	NA
Protected Phases	5	2	1	1	6				8			4
Permitted Phases						6		8		8	4	
Actuated Green, G (s)	0.5	23.8		0.5	22.8	22.8			12.9	12.9		12.9
Effective Green, g (s)	0.5	23.8		0.5	22.8	22.8			12.9	12.9		12.9
Actuated g/C Ratio	0.01	0.37		0.01	0.35	0.35			0.20	0.20		0.20
Clearance Time (s)	6.0	6.0		5.0	6.0	6.0			5.0	5.0		5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0			3.0	3.0		3.0
Lane Grp Cap (vph)	13	1297		13	1243	556			324	304		270
v/s Ratio Prot	c0.01	c0.21		0.00	0.16							
v/s Ratio Perm						0.01			0.01	0.00		c0.13
v/c Ratio	0.77	0.57		0.62	0.45	0.02			0.07	0.02		0.65
Uniform Delay, d1	32.1	16.5		32.1	16.2	13.8			21.1	20.9		23.9
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00		1.00
Incremental Delay, d2	128.6	0.6		64.0	0.3	0.0			0.1	0.0		5.5
Delay (s)	160.8	17.0		96.1	16.5	13.8			21.2	20.9		29.5
Level of Service	F	B		F	B	B			C	C		C
Approach Delay (s)		18.9			17.3				21.1			29.5
Approach LOS		B			B				C			C

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	27.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR2	SEL	SER2	NEL2	NEL	NER
Lane Configurations						
Traffic Volume (vph)	13	3	3	1	0	17
Future Volume (vph)	13	3	3	1	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	
Lane Util. Factor		1.00			1.00	
Frpb, ped/bikes		1.00			0.93	
Flpb, ped/bikes		1.00			1.00	
Frt		0.93			0.87	
Flt Protected		0.98			1.00	
Satd. Flow (prot)		1695			1514	
Flt Permitted		0.98			1.00	
Satd. Flow (perm)		1695			1514	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	3	3	1	0	18
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	6	0	0	19	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)	3					
Turn Type		Prot		Perm	Prot	
Protected Phases		7			3	
Permitted Phases				3		
Actuated Green, G (s)		0.7			1.0	
Effective Green, g (s)		0.7			1.0	
Actuated g/C Ratio		0.01			0.02	
Clearance Time (s)		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		18			23	
v/s Ratio Prot		c0.00				
v/s Ratio Perm					0.01	
v/c Ratio		0.33			0.83	
Uniform Delay, d1		31.9			31.9	
Progression Factor		1.00			1.00	
Incremental Delay, d2		10.6			110.0	
Delay (s)		42.5			141.9	
Level of Service		D			F	
Approach Delay (s)		42.5			141.9	
Approach LOS		D			F	

Intersection Summary

HCM 2010 methodology does not support more than 4 approaches.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1018	51	39	622	21	17	1	41	11	0	3
Future Volume (vph)	12	1018	51	39	622	21	17	1	41	11	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.99		1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (prot)	1768	3510		1770	5056			1777	1562		1767	1563
Flt Permitted	0.95	1.00		0.95	1.00			0.73	1.00		0.74	1.00
Satd. Flow (perm)	1768	3510		1770	5056			1354	1562		1385	1563
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	14	1157	58	44	707	24	19	1	47	12	0	3
RTOR Reduction (vph)	0	2	0	0	3	0	0	0	42	0	0	3
Lane Group Flow (vph)	14	1213	0	44	728	0	0	20	5	0	13	0
Confl. Peds. (#/hr)	1		3	3		1	1		2	2		1
Confl. Bikes (#/hr)			1			4						
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	0.5	38.0		2.7	40.2			6.1	6.1		6.1	6.1
Effective Green, g (s)	0.5	38.0		2.7	40.2			6.1	6.1		6.1	6.1
Actuated g/C Ratio	0.01	0.61		0.04	0.64			0.10	0.10		0.10	0.10
Clearance Time (s)	6.0	6.0		6.0	6.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	14	2123		76	3236			131	151		134	151
v/s Ratio Prot	0.01	c0.35		c0.02	0.14							
v/s Ratio Perm								c0.01	0.00		0.01	0.00
v/c Ratio	1.00	0.57		0.58	0.23			0.15	0.03		0.10	0.00
Uniform Delay, d1	31.1	7.5		29.5	4.8			26.0	25.7		25.8	25.6
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	240.5	0.4		10.3	0.0			0.5	0.1		0.3	0.0
Delay (s)	271.7	7.9		39.7	4.8			26.5	25.8		26.2	25.6
Level of Service	F	A		D	A			C	C		C	C
Approach Delay (s)		10.9			6.8			26.0			26.1	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	62.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	1018	51	39	622	21	17	1	41	11	0	3
Future Volume (veh/h)	12	1018	51	39	622	21	17	1	41	11	0	3
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	14	1157	58	44	707	24	19	1	47	12	0	3
Adj No. of Lanes	1	2	0	1	3	0	0	1	1	0	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	25	1654	83	67	2555	86	161	5	185	165	0	185
Arrive On Green	0.01	0.48	0.48	0.04	0.51	0.51	0.12	0.12	0.12	0.12	0.00	0.12
Sat Flow, veh/h	1774	3426	172	1774	5047	171	17	39	1575	17	0	1575
Grp Volume(v), veh/h	14	597	618	44	474	257	20	0	47	12	0	3
Grp Sat Flow(s),veh/h/ln	1774	1770	1828	1774	1695	1827	56	0	1575	17	0	1575
Q Serve(g_s), s	0.3	11.6	11.7	1.1	3.5	3.6	0.1	0.0	1.2	0.1	0.0	0.1
Cycle Q Clear(g_c), s	0.3	11.6	11.7	1.1	3.5	3.6	5.2	0.0	1.2	5.2	0.0	0.1
Prop In Lane	1.00		0.09	1.00		0.09	0.95		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	25	854	882	67	1716	925	166	0	185	165	0	185
V/C Ratio(X)	0.55	0.70	0.70	0.66	0.28	0.28	0.12	0.00	0.25	0.07	0.00	0.02
Avail Cap(c_a), veh/h	161	1323	1366	522	3226	1739	901	0	999	863	0	999
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.6	8.9	8.9	21.0	6.3	6.3	20.9	0.0	17.7	22.1	0.0	17.2
Incr Delay (d2), s/veh	17.6	1.1	1.0	10.5	0.1	0.2	0.3	0.0	0.7	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	9.9	10.1	1.3	3.0	3.3	0.5	0.0	1.0	0.3	0.0	0.1
LnGrp Delay(d),s/veh	39.2	10.0	9.9	31.5	6.3	6.4	21.3	0.0	18.5	22.3	0.0	17.3
LnGrp LOS	D	A	A	C	A	A	C		B	C		B
Approach Vol, veh/h		1229			775			67			15	
Approach Delay, s/veh		10.3			7.8			19.3			21.3	
Approach LOS		B			A			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.7	27.3		9.2	6.6	28.4		9.2
Change Period (Y+Rc), s	6.0	6.0		4.0	6.0	6.0		4.0
Max Green Setting (Gmax), s	13.0	33.0		28.0	4.0	42.0		28.0
Max Q Clear Time (g_c+I1), s	3.1	13.7		7.2	2.3	5.6		7.2
Green Ext Time (p_c), s	0.1	7.7		0.0	0.0	5.2		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	1025	74	143	461	34	281	26	500	5	2	7
Future Volume (vph)	15	1025	74	143	461	34	281	26	500	5	2	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		0.95	0.95	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	0.99	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.96	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1770	4988		1641	5022		1547	1565	1468	1681	1661	1553
Flt Permitted	0.95	1.00		0.95	1.00		0.76	0.76	1.00	0.25	0.62	1.00
Satd. Flow (perm)	1770	4988		1641	5022		1230	1238	1468	442	1055	1553
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	17	1152	83	161	518	38	316	29	562	6	2	8
RTOR Reduction (vph)	0	8	0	0	8	0	0	0	256	0	0	7
Lane Group Flow (vph)	17	1227	0	161	548	0	171	174	306	4	4	1
Confl. Peds. (#/hr)	1		5	5		1	4					4
Confl. Bikes (#/hr)			20			11						
Heavy Vehicles (%)	2%	2%	10%	10%	2%	2%	10%	10%	10%	2%	10%	2%
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	Perm
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	2.0	33.5		14.5	46.0		20.0	20.0	34.5	16.0	16.0	16.0
Effective Green, g (s)	2.0	33.5		14.5	46.0		20.0	20.0	34.5	16.0	16.0	16.0
Actuated g/C Ratio	0.02	0.34		0.14	0.46		0.20	0.20	0.34	0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	35	1670		237	2310		246	247	565	70	168	248
v/s Ratio Prot	0.01	c0.25		c0.10	0.11				0.08			
v/s Ratio Perm							0.14	c0.14	0.13	c0.01	0.00	0.00
v/c Ratio	0.49	0.73		0.68	0.24		0.70	0.70	0.54	0.06	0.02	0.01
Uniform Delay, d1	48.5	29.3		40.5	16.4		37.2	37.2	26.4	35.6	35.4	35.3
Progression Factor	1.00	1.00		1.28	0.52		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.2	2.9		6.7	0.2		15.0	15.6	1.1	1.6	0.3	0.0
Delay (s)	58.7	32.2		58.4	8.7		52.2	52.8	27.4	37.2	35.7	35.3
Level of Service	E	C		E	A		D	D	C	D	D	D
Approach Delay (s)		32.6			19.9			37.0			35.9	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	1025	74	143	461	34	281	26	500	5	2	7
Future Volume (veh/h)	15	1025	74	143	461	34	281	26	500	5	2	7
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1853	1900	1727	1863	1900	1727	1727	1727	1863	1792	1863
Adj Flow Rate, veh/h	17	1152	83	161	518	38	337	0	562	4	5	8
Adj No. of Lanes	1	3	0	1	3	0	2	0	1	1	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	10	2	2	10	10	10	2	10	2
Cap, veh/h	444	2714	195	189	2075	151	653	0	460	240	358	315
Arrive On Green	0.25	0.57	0.57	0.23	0.86	0.86	0.20	0.00	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1774	4803	346	1645	4826	350	2573	0	1459	842	1792	1574
Grp Volume(v), veh/h	17	809	426	161	362	194	337	0	562	4	5	8
Grp Sat Flow(s),veh/h/ln	1774	1686	1776	1645	1695	1786	1286	0	1459	842	1792	1574
Q Serve(g_s), s	0.7	13.7	13.7	9.4	1.9	1.9	12.1	0.0	20.0	0.4	0.2	0.4
Cycle Q Clear(g_c), s	0.7	13.7	13.7	9.4	1.9	1.9	12.3	0.0	20.0	0.4	0.2	0.4
Prop In Lane	1.00		0.19	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	444	1906	1004	189	1458	768	653	0	460	240	358	315
V/C Ratio(X)	0.04	0.42	0.42	0.85	0.25	0.25	0.52	0.00	1.22	0.02	0.01	0.03
Avail Cap(c_a), veh/h	444	1906	1004	280	1458	768	653	0	460	240	358	315
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.85	0.85	0.85	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.4	12.4	12.4	37.7	4.1	4.1	37.0	0.0	34.3	32.2	32.1	32.2
Incr Delay (d2), s/veh	0.0	0.7	1.3	13.0	0.3	0.7	2.9	0.0	117.5	0.1	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	10.6	11.3	8.2	1.6	1.8	8.1	0.0	50.0	0.2	0.2	0.3
LnGrp Delay(d),s/veh	28.4	13.1	13.8	50.7	4.5	4.8	39.9	0.0	151.8	32.3	32.2	32.3
LnGrp LOS	C	B	B	D	A	A	D		F	C	C	C
Approach Vol, veh/h		1252			717			899			17	
Approach Delay, s/veh		13.5			14.9			109.9			32.3	
Approach LOS		B			B			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.5	60.5		24.0	29.0	47.0		24.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	17.0	31.0		16.0	5.0	43.0		20.0
Max Q Clear Time (g_c+I1), s	11.4	15.7		2.4	2.7	3.9		22.0
Green Ext Time (p_c), s	0.2	7.2		0.0	0.0	3.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	44.0
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	476	1054	0	0	529	116	109	2	153	0	0	0
Future Volume (vph)	476	1054	0	0	529	116	109	2	153	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0				
Lane Util. Factor	0.97	0.95			0.95		1.00	1.00				
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.97		1.00	0.85				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3183	3539			3385		1641	1471				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3183	3539			3385		1641	1471				
Peak-hour factor, PHF	0.84	0.84	0.92	0.92	0.84	0.84	0.84	0.84	0.84	0.92	0.92	0.92
Adj. Flow (vph)	567	1255	0	0	630	138	130	2	182	0	0	0
RTOR Reduction (vph)	0	0	0	0	17	0	0	95	0	0	0	0
Lane Group Flow (vph)	567	1255	0	0	751	0	130	89	0	0	0	0
Confl. Peds. (#/hr)	1		9	9		1						
Confl. Bikes (#/hr)			7			12						
Heavy Vehicles (%)	10%	2%	2%	2%	2%	10%	10%	10%	10%	2%	2%	2%
Turn Type	Prot	NA			NA		Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases												
Actuated Green, G (s)	30.0	78.7			44.7		13.3	13.3				
Effective Green, g (s)	30.0	78.7			44.7		13.3	13.3				
Actuated g/C Ratio	0.30	0.79			0.45		0.13	0.13				
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	954	2785			1513		218	195				
v/s Ratio Prot	c0.18	0.35			c0.22		c0.08	0.06				
v/s Ratio Perm												
v/c Ratio	0.59	0.45			0.50		0.60	0.46				
Uniform Delay, d1	29.8	3.5			19.6		40.8	40.0				
Progression Factor	0.42	0.20			0.49		1.00	1.00				
Incremental Delay, d2	0.7	0.4			1.1		4.3	1.7				
Delay (s)	13.3	1.1			10.7		45.2	41.7				
Level of Service	B	A			B		D	D				
Approach Delay (s)		4.9			10.7			43.2			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Signalized Intersection Summary — Near Term AM 2025

6: Hwy 101 NB & Madonna — 02/26/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↑			↑↱		↰	↱				
Traffic Volume (veh/h)	476	1054	0	0	529	116	109	2	153	0	0	0
Future Volume (veh/h)	476	1054	0	0	529	116	109	2	153	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1727	1863	0	0	1837	1900	1727	1727	1900			
Adj Flow Rate, veh/h	567	1255	0	0	630	138	130	2	182			
Adj No. of Lanes	2	2	0	0	2	0	1	1	0			
Peak Hour Factor	0.84	0.84	0.92	0.92	0.84	0.84	0.84	0.84	0.84			
Percent Heavy Veh, %	10	2	0	0	2	2	10	10	10			
Cap, veh/h	1089	2729	0	0	1107	242	245	2	217			
Arrive On Green	0.68	1.00	0.00	0.00	0.13	0.13	0.15	0.15	0.15			
Sat Flow, veh/h	3191	3632	0	0	2929	620	1645	16	1455			
Grp Volume(v), veh/h	567	1255	0	0	387	381	130	0	184			
Grp Sat Flow(s),veh/h/ln	1596	1770	0	0	1745	1713	1645	0	1471			
Q Serve(g_s), s	8.8	0.0	0.0	0.0	20.8	20.9	7.3	0.0	12.2			
Cycle Q Clear(g_c), s	8.8	0.0	0.0	0.0	20.8	20.9	7.3	0.0	12.2			
Prop In Lane	1.00		0.00	0.00		0.36	1.00		0.99			
Lane Grp Cap(c), veh/h	1089	2729	0	0	681	668	245	0	219			
V/C Ratio(X)	0.52	0.46	0.00	0.00	0.57	0.57	0.53	0.00	0.84			
Avail Cap(c_a), veh/h	1089	2729	0	0	681	668	313	0	279			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.62	0.62	0.00	0.00	0.94	0.94	1.00	0.00	1.00			
Uniform Delay (d), s/veh	11.9	0.0	0.0	0.0	35.7	35.7	39.3	0.0	41.4			
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.0	3.2	3.3	1.8	0.0	16.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	6.3	0.2	0.0	0.0	15.9	15.7	6.2	0.0	10.0			
LnGrp Delay(d),s/veh	12.1	0.3	0.0	0.0	38.9	39.0	41.1	0.0	57.8			
LnGrp LOS	B	A			D	D	D		E			
Approach Vol, veh/h		1822			768			314				
Approach Delay, s/veh		4.0			38.9			50.9				
Approach LOS		A			D			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		81.1			38.1	43.0		18.9
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		73.0			30.0	39.0		19.0
Max Q Clear Time (g_c+I1), s		2.0			10.8	22.9		14.2
Green Ext Time (p_c), s		13.1			2.6	4.3		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	18.3
HCM 2010 LOS	B

HCM Signalized Intersection Capacity Analysis — Near Term AM 2025

7: Higuera & Madonna/Shopping Center — 02/26/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↑	↱	↰	↑↱		↰	↑↱			↰↑	↱↱
Traffic Volume (vph)	617	30	535	10	10	10	150	315	10	10	450	469
Future Volume (vph)	617	30	535	10	10	10	150	315	10	10	450	469
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95			0.95	0.88
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00			1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1681	1693	1556	1770	1723		1770	3518			3535	2749
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00			0.94	1.00
Satd. Flow (perm)	1681	1693	1556	1770	1723		1770	3518			3340	2749
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	686	33	594	11	11	11	167	350	11	11	500	521
RTOR Reduction (vph)	0	0	196	0	11	0	0	2	0	0	0	0
Lane Group Flow (vph)	357	362	398	11	11	0	167	359	0	0	511	521
Confl. Peds. (#/hr)			6	6			5		6	6		5
Confl. Bikes (#/hr)									9			9
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Perm	NA	pm+ov
Protected Phases	8	8	1	4	4		1	6			2	8
Permitted Phases			8							2		2
Actuated Green, G (s)	43.8	43.8	57.8	4.2	4.2		14.0	40.0			22.0	65.8
Effective Green, g (s)	43.8	43.8	57.8	4.2	4.2		14.0	40.0			22.0	65.8
Actuated g/C Ratio	0.44	0.44	0.58	0.04	0.04		0.14	0.40			0.22	0.66
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	736	741	961	74	72		247	1407			734	1808
v/s Ratio Prot	0.21	c0.21	0.06	0.01	c0.01		c0.09	0.10				0.13
v/s Ratio Perm			0.20								c0.15	0.06
v/c Ratio	0.49	0.49	0.41	0.15	0.16		0.68	0.25			0.70	0.29
Uniform Delay, d1	20.1	20.1	11.7	46.2	46.2		40.8	20.0			35.9	7.2
Progression Factor	0.60	0.60	0.56	1.00	1.00		1.00	1.00			0.65	0.44
Incremental Delay, d2	2.1	2.1	0.3	0.9	1.0		7.1	0.4			5.1	0.4
Delay (s)	14.2	14.2	6.8	47.1	47.2		48.0	20.5			28.5	3.6
Level of Service	B	B	A	D	D		D	C			C	A
Approach Delay (s)		10.8			47.2			29.2			15.9	
Approach LOS		B			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	617	30	535	10	10	10	150	315	10	10	450	469
Future Volume (veh/h)	617	30	535	10	10	10	150	315	10	10	450	469
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.96	0.99		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	710	0	594	11	11	11	167	350	11	11	500	521
Adj No. of Lanes	2	0	1	1	1	0	1	2	0	0	2	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	1135	0	683	284	136	136	201	1399	44	45	844	1548
Arrive On Green	0.32	0.00	0.32	0.16	0.16	0.16	0.11	0.40	0.40	0.08	0.08	0.08
Sat Flow, veh/h	3548	0	1574	1774	851	851	1774	3499	110	29	3420	2661
Grp Volume(v), veh/h	710	0	594	11	0	22	167	177	184	273	238	521
Grp Sat Flow(s),veh/h/ln	1774	0	1574	1774	0	1701	1774	1770	1839	1838	1610	1330
Q Serve(g_s), s	17.0	0.0	32.0	0.5	0.0	1.1	9.2	6.7	6.7	0.0	14.3	11.1
Cycle Q Clear(g_c), s	17.0	0.0	32.0	0.5	0.0	1.1	9.2	6.7	6.7	14.1	14.3	11.1
Prop In Lane	1.00		1.00	1.00		0.50	1.00		0.06	0.04		1.00
Lane Grp Cap(c), veh/h	1135	0	683	284	0	272	201	708	735	491	397	1548
V/C Ratio(X)	0.63	0.00	0.87	0.04	0.00	0.08	0.83	0.25	0.25	0.56	0.60	0.34
Avail Cap(c_a), veh/h	1135	0	683	284	0	272	284	708	735	491	397	1548
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.89	0.00	0.89	1.00	0.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92
Uniform Delay (d), s/veh	28.9	0.0	25.8	35.5	0.0	35.7	43.4	20.0	20.0	41.1	41.2	14.4
Incr Delay (d2), s/veh	2.3	0.0	12.9	0.1	0.0	0.1	13.4	0.8	0.8	4.1	6.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	13.2	0.0	23.7	0.5	0.0	1.0	9.0	6.1	6.4	12.3	11.2	11.4
LnGrp Delay(d),s/veh	31.2	0.0	38.7	35.6	0.0	35.9	56.8	20.8	20.8	45.2	47.2	14.9
LnGrp LOS	C		D	D		D	E	C	C	D	D	B
Approach Vol, veh/h		1304			33			528			1032	
Approach Delay, s/veh		34.6			35.8			32.2			30.4	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	15.3	28.7		20.0		44.0		36.0
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s	16.0	20.0		16.0		40.0		32.0
Max Q Clear Time (g_c+I1), s	11.2	16.3		3.1		8.7		34.0
Green Ext Time (p_c), s	0.2	2.1		0.1		2.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	32.7
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary Near Term AM 2025
7: Higuera & Madonna/Shopping Center 02/26/2018

User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Central Coast Transportation Consulting Synchro 10 Report

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	17	910	77	28	962
Future Vol, veh/h	26	17	910	77	28	962
Conflicting Peds, #/hr	0	0	0	8	8	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	175	-	50	60	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	18	989	84	30	1046

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1580	503	0	0	1081	0
Stage 1	997	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	100	514	-	-	641	-
Stage 1	318	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	95	510	-	-	636	-
Mov Cap-2 Maneuver	210	-	-	-	-	-
Stage 1	301	-	-	-	-	-
Stage 2	521	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.9	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	210	510	636	-
HCM Lane V/C Ratio	-	-	0.135	0.036	0.048	-
HCM Control Delay (s)	-	-	24.8	12.3	10.9	-
HCM Lane LOS	-	-	C	B	B	-
HCM 95th %tile Q(veh)	-	-	0.5	0.1	0.1	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	2	51	56	3	19	47	910	71	34	965	17
Future Volume (vph)	9	2	51	56	3	19	47	910	71	34	965	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.98		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1754	1863	1583	1770	1589		1769	3539	1544	1769	3539	1553
Flt Permitted	0.74	1.00	1.00	0.76	1.00		0.24	1.00	1.00	0.26	1.00	1.00
Satd. Flow (perm)	1369	1863	1583	1409	1589		441	3539	1544	480	3539	1553
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	10	2	57	62	3	21	52	1011	79	38	1072	19
RTOR Reduction (vph)	0	0	51	0	19	0	0	0	25	0	0	6
Lane Group Flow (vph)	10	2	6	62	5	0	52	1011	54	38	1072	13
Confl. Peds. (#/hr)	6					6	4		2	2		4
Confl. Bikes (#/hr)												4
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Actuated Green, G (s)	7.8	7.8	7.8	7.8	7.8		57.8	54.2	54.2	56.6	53.6	53.6
Effective Green, g (s)	7.8	7.8	7.8	7.8	7.8		57.8	54.2	54.2	56.6	53.6	53.6
Actuated g/C Ratio	0.10	0.10	0.10	0.10	0.10		0.72	0.68	0.68	0.71	0.67	0.67
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	133	181	154	137	154		378	2397	1046	387	2371	1040
v/s Ratio Prot		0.00			0.00		c0.01	0.29		0.00	c0.30	
v/s Ratio Perm	0.01		0.00	c0.04			0.09		0.03	0.07		0.01
v/c Ratio	0.08	0.01	0.04	0.45	0.03		0.14	0.42	0.05	0.10	0.45	0.01
Uniform Delay, d1	32.8	32.6	32.7	34.1	32.7		5.6	5.8	4.3	5.4	6.2	4.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.0	0.1	2.4	0.1		0.2	0.5	0.1	0.1	0.6	0.0
Delay (s)	33.1	32.6	32.8	36.5	32.8		5.7	6.4	4.4	5.5	6.9	4.4
Level of Service	C	C	C	D	C		A	A	A	A	A	A
Approach Delay (s)		32.8			35.4			6.2			6.8	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	2	51	56	3	19	47	910	71	34	965	17
Future Volume (veh/h)	9	2	51	56	3	19	47	910	71	34	965	17
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	0.98		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	10	2	0	62	3	21	52	1011	79	38	1072	19
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	151	129	201	16	112	633	1858	828	622	1814	798
Arrive On Green	0.08	0.08	0.00	0.08	0.08	0.08	0.22	0.52	0.52	0.21	0.51	0.51
Sat Flow, veh/h	1354	1863	1583	1378	198	1384	1774	3539	1577	1774	3539	1558
Grp Volume(v), veh/h	10	2	0	62	0	24	52	1011	79	38	1072	19
Grp Sat Flow(s),veh/h/ln	1354	1863	1583	1378	0	1582	1774	1770	1577	1774	1770	1558
Q Serve(g_s), s	0.6	0.1	0.0	3.5	0.0	1.1	0.0	15.2	2.0	0.0	16.9	0.5
Cycle Q Clear(g_c), s	1.7	0.1	0.0	3.5	0.0	1.1	0.0	15.2	2.0	0.0	16.9	0.5
Prop In Lane	1.00		1.00	1.00		0.88	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	181	151	129	201	0	128	633	1858	828	622	1814	798
V/C Ratio(X)	0.06	0.01	0.00	0.31	0.00	0.19	0.08	0.54	0.10	0.06	0.59	0.02
Avail Cap(c_a), veh/h	376	419	356	399	0	356	633	1858	828	622	1814	798
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	0.84	0.84	0.84	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.1	33.8	0.0	35.4	0.0	34.3	10.3	12.6	9.5	9.6	13.6	9.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.9	0.0	0.7	0.0	1.0	0.2	0.0	1.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.1	0.0	2.5	0.0	0.9	1.1	11.7	1.6	0.8	13.3	0.4
LnGrp Delay(d),s/veh	35.2	33.8	0.0	36.3	0.0	35.0	10.3	13.6	9.7	9.6	15.1	9.7
LnGrp LOS	D	C		D		C	B	B	A	A	B	A
Approach Vol, veh/h		12			86			1142			1129	
Approach Delay, s/veh		35.0			35.9			13.2			14.8	
Approach LOS		C			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.5	47.0		10.5	21.5	48.0		10.5
Change Period (Y+Rc), s	5.0	6.0		4.0	5.0	6.0		4.0
Max Green Setting (Gmax), s	6.0	41.0		18.0	5.0	42.0		18.0
Max Q Clear Time (g_c+I1), s	2.0	18.9		5.5	2.0	17.2		3.7
Green Ext Time (p_c), s	0.0	7.7		0.2	0.0	8.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	420	210	122	523	1108	99
Future Volume (vph)	420	210	122	523	1108	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5		3.5	6.0	6.0	3.5
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	3081		1641	3539	3539	1445
Flt Permitted	0.97		0.95	1.00	1.00	1.00
Satd. Flow (perm)	3081		1641	3539	3539	1445
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	447	223	130	556	1179	105
RTOR Reduction (vph)	66	0	0	0	0	29
Lane Group Flow (vph)	604	0	130	556	1179	76
Confl. Bikes (#/hr)						5
Heavy Vehicles (%)	10%	10%	10%	2%	2%	10%
Turn Type	Prot		Prot	NA	NA	pm+ov
Protected Phases	3		1	6	2	3
Permitted Phases						2
Actuated Green, G (s)	21.2		10.9	62.1	47.7	68.9
Effective Green, g (s)	21.2		10.9	62.1	47.7	68.9
Actuated g/C Ratio	0.21		0.11	0.62	0.48	0.69
Clearance Time (s)	3.5		3.5	6.0	6.0	3.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	653		178	2197	1688	995
v/s Ratio Prot	c0.20		c0.08	0.16	c0.33	0.02
v/s Ratio Perm						0.04
v/c Ratio	0.92		0.73	0.25	0.70	0.08
Uniform Delay, d1	38.6		43.1	8.5	20.5	5.1
Progression Factor	1.00		1.00	1.00	0.40	0.40
Incremental Delay, d2	18.9		14.3	0.3	1.7	0.0
Delay (s)	57.5		57.4	8.8	9.8	2.1
Level of Service	E		E	A	A	A
Approach Delay (s)	57.5			18.0	9.2	
Approach LOS	E			B	A	

Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	155	84	1097	280	75	569
Future Volume (vph)	155	84	1097	280	75	569
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.98	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.97		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1545	3414		1769	3539
Flt Permitted	0.95	1.00	1.00		0.13	1.00
Satd. Flow (perm)	1770	1545	3414		247	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	168	91	1192	304	82	618
RTOR Reduction (vph)	0	67	20	0	0	0
Lane Group Flow (vph)	168	24	1476	0	82	618
Confl. Peds. (#/hr)		6		1	1	
Confl. Bikes (#/hr)		5		6		
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	12.8	12.8	52.3		52.3	52.3
Effective Green, g (s)	12.8	12.8	52.3		52.3	52.3
Actuated g/C Ratio	0.17	0.17	0.69		0.69	0.69
Clearance Time (s)	5.0	5.0	6.0		6.0	6.0
Vehicle Extension (s)	2.0	2.0	5.5		5.5	5.5
Lane Grp Cap (vph)	297	259	2346		169	2432
v/s Ratio Prot	c0.09		c0.43			0.17
v/s Ratio Perm		0.02			0.33	
v/c Ratio	0.57	0.09	0.63		0.49	0.25
Uniform Delay, d1	29.1	26.7	6.6		5.6	4.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.5	0.1	0.8		5.3	0.1
Delay (s)	30.6	26.8	7.4		10.9	4.6
Level of Service	C	C	A		B	A
Approach Delay (s)	29.2		7.4			5.4
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	76.1	Sum of lost time (s)	11.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	155	84	1097	280	75	569
Future Volume (veh/h)	155	84	1097	280	75	569
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	168	91	1192	304	82	618
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	230	205	1950	490	276	2476
Arrive On Green	0.13	0.13	0.70	0.70	0.70	0.70
Sat Flow, veh/h	1774	1583	2881	701	350	3632
Grp Volume(v), veh/h	168	91	750	746	82	618
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1719	350	1770
Q Serve(g_s), s	5.9	3.4	14.2	14.8	10.5	4.1
Cycle Q Clear(g_c), s	5.9	3.4	14.2	14.8	25.3	4.1
Prop In Lane	1.00	1.00		0.41	1.00	
Lane Grp Cap(c), veh/h	230	205	1238	1202	276	2476
V/C Ratio(X)	0.73	0.44	0.61	0.62	0.30	0.25
Avail Cap(c_a), veh/h	662	590	1512	1469	330	3025
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	25.9	5.0	5.1	11.8	3.5
Incr Delay (d2), s/veh	1.7	0.6	1.3	1.5	1.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.3	2.7	11.5	11.8	2.0	3.6
LnGrp Delay(d),s/veh	28.6	26.4	6.4	6.6	13.5	3.7
LnGrp LOS	C	C	A	A	B	A
Approach Vol, veh/h	259		1496			700
Approach Delay, s/veh	27.8		6.5			4.8
Approach LOS	C		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		51.0				51.0		13.3
Change Period (Y+Rc), s		6.0				6.0		5.0
Max Green Setting (Gmax), s		55.0				55.0		24.0
Max Q Clear Time (g_c+I1), s		16.8				27.3		7.9
Green Ext Time (p_c), s		28.2				11.6		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	10	30	375	10	260	20	530	730	250	355	10
Future Volume (vph)	30	10	30	375	10	260	20	530	730	250	355	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0	5.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.96	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1796	1556	1681	1690	1572	1770	3539	1569	1770	3521	
Flt Permitted		0.96	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1796	1556	1681	1690	1572	1770	3539	1569	1770	3521	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	11	32	403	11	280	22	570	785	269	382	11
RTOR Reduction (vph)	0	0	30	0	0	167	0	0	326	0	2	0
Lane Group Flow (vph)	0	43	2	206	208	113	22	570	459	269	391	0
Confl. Peds. (#/hr)			1	1			3		3	3		3
Confl. Bikes (#/hr)			1			5						10
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		4	4	1	5	2	4	1	6	
Permitted Phases			8			4			2			
Actuated Green, G (s)		5.4	5.4	17.8	17.8	37.0	1.7	26.1	43.9	19.2	43.6	
Effective Green, g (s)		5.4	5.4	17.8	17.8	37.0	1.7	26.1	43.9	19.2	43.6	
Actuated g/C Ratio		0.06	0.06	0.19	0.19	0.40	0.02	0.29	0.48	0.21	0.48	
Clearance Time (s)		6.0	6.0	6.0	6.0	5.0	5.0	6.0	6.0	5.0	6.0	
Vehicle Extension (s)		2.0	2.0	2.0	2.0	3.5	2.0	5.0	2.0	3.5	5.0	
Lane Grp Cap (vph)		105	91	327	328	635	32	1009	855	371	1677	
v/s Ratio Prot		c0.02		0.12	c0.12	0.04	0.01	0.16	c0.10	c0.15	0.11	
v/s Ratio Perm			0.00			0.03			0.19			
v/c Ratio		0.41	0.02	0.63	0.63	0.18	0.69	0.56	0.54	0.73	0.23	
Uniform Delay, d1		41.5	40.6	33.8	33.9	17.5	44.6	27.9	16.7	33.7	14.1	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.9	0.0	2.7	2.9	0.2	39.1	1.2	0.3	7.1	0.2	
Delay (s)		42.5	40.6	36.6	36.8	17.7	83.8	29.1	17.0	40.8	14.3	
Level of Service		D	D	D	D	B	F	C	B	D	B	
Approach Delay (s)		41.7			29.0			23.1			25.0	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	91.5	Sum of lost time (s)	23.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	10	30	375	10	260	20	530	730	250	355	10
Future Volume (veh/h)	30	10	30	375	10	260	20	530	730	250	355	10
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	32	11	32	411	0	0	22	570	785	269	382	11
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	25	83	531	0	524	43	1156	752	322	1699	49
Arrive On Green	0.05	0.05	0.05	0.15	0.00	0.00	0.02	0.33	0.33	0.18	0.48	0.48
Sat Flow, veh/h	1336	459	1551	3548	0	1583	1774	3539	1576	1774	3511	101
Grp Volume(v), veh/h	43	0	32	411	0	0	22	570	785	269	192	201
Grp Sat Flow(s),veh/h/ln	1796	0	1551	1774	0	1583	1774	1770	1576	1774	1770	1843
Q Serve(g_s), s	1.8	0.0	1.6	8.9	0.0	0.0	1.0	10.3	26.0	11.6	5.0	5.0
Cycle Q Clear(g_c), s	1.8	0.0	1.6	8.9	0.0	0.0	1.0	10.3	26.0	11.6	5.0	5.0
Prop In Lane	0.74		1.00	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	96	0	83	531	0	524	43	1156	752	322	856	891
V/C Ratio(X)	0.45	0.00	0.39	0.77	0.00	0.00	0.51	0.49	1.04	0.84	0.22	0.23
Avail Cap(c_a), veh/h	496	0	429	1159	0	804	111	1156	752	513	978	1019
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.5	0.0	36.4	32.5	0.0	0.0	38.4	21.5	17.7	31.4	11.9	11.9
Incr Delay (d2), s/veh	1.2	0.0	1.1	0.9	0.0	0.0	3.5	0.7	44.9	7.7	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	0.0	1.3	7.8	0.0	0.0	0.9	8.8	46.2	10.5	4.4	4.7
LnGrp Delay(d),s/veh	37.8	0.0	37.5	33.5	0.0	0.0	41.9	22.2	62.6	39.1	12.2	12.2
LnGrp LOS	D		D	C			D	C	F	D	B	B
Approach Vol, veh/h		75			411			1377			662	
Approach Delay, s/veh		37.6			33.5			45.6			23.1	
Approach LOS		D			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.4	32.0		17.9	6.9	44.5		10.2
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0
Max Green Setting (Gmax), s	23.0	26.0		26.0	5.0	44.0		22.0
Max Q Clear Time (g_c+I1), s	13.6	28.0		10.9	3.0	7.0		3.8
Green Ext Time (p_c), s	0.8	0.0		0.9	0.0	4.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	37.5
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	93	60	326	113	440	88	1096	401	380	843	37
Future Volume (vph)	45	93	60	326	113	440	88	1096	401	380	843	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.5	5.5	5.5	5.0	6.5	5.5	5.0	6.5	
Lane Util. Factor	1.00	1.00		0.97	0.95	0.95	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.98	0.97	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.94		1.00	0.91	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1733		3433	1578	1456	1770	5085	1556	3433	3511	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1733		3433	1578	1456	1770	5085	1556	3433	3511	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	46	96	62	336	116	454	91	1130	413	392	869	38
RTOR Reduction (vph)	0	19	0	0	46	224	0	0	209	0	3	0
Lane Group Flow (vph)	46	139	0	336	247	53	91	1130	204	392	904	0
Confl. Peds. (#/hr)	10		10	10		10	5		10	10		5
Confl. Bikes (#/hr)			3			4						5
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	2	2		6	6		3	8	6	7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	25.1	25.1		22.0	22.0	22.0	11.5	30.6	52.6	16.3	35.4	
Effective Green, g (s)	25.1	25.1		22.0	22.0	22.0	11.5	30.6	52.6	16.3	35.4	
Actuated g/C Ratio	0.22	0.22		0.19	0.19	0.19	0.10	0.26	0.45	0.14	0.31	
Clearance Time (s)	5.0	5.0		5.5	5.5	5.5	5.0	6.5	5.5	5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	382	374		651	299	276	175	1341	705	482	1071	
v/s Ratio Prot	0.03	c0.08		0.10	c0.16		0.05	0.22	0.05	c0.11	c0.26	
v/s Ratio Perm						0.04			0.08			
v/c Ratio	0.12	0.37		0.52	0.83	0.19	0.52	0.84	0.29	0.81	0.84	
Uniform Delay, d1	36.6	38.7		42.2	45.2	39.5	49.6	40.4	19.9	48.4	37.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	2.8		0.7	16.7	0.3	2.8	5.0	0.2	10.1	6.2	
Delay (s)	37.2	41.6		42.9	61.9	39.8	52.4	45.4	20.2	58.5	43.9	
Level of Service	D	D		D	E	D	D	D	C	E	D	
Approach Delay (s)		40.6			48.1			39.4			48.3	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	44.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	116.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	93	60	326	113	440	88	1096	401	380	843	37
Future Volume (veh/h)	45	93	60	326	113	440	88	1096	401	380	843	37
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	46	96	62	336	370	285	91	1130	413	392	869	38
Adj No. of Lanes	1	1	0	2	1	1	1	3	1	2	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	381	224	145	716	376	309	188	1338	731	454	996	44
Arrive On Green	0.21	0.21	0.21	0.20	0.20	0.20	0.11	0.26	0.26	0.13	0.29	0.29
Sat Flow, veh/h	1774	1045	675	3548	1863	1534	1774	5085	1565	3442	3447	151
Grp Volume(v), veh/h	46	0	158	336	370	285	91	1130	413	392	446	461
Grp Sat Flow(s),veh/h/ln	1774	0	1720	1774	1863	1534	1774	1695	1565	1721	1770	1828
Q Serve(g_s), s	2.4	0.0	9.3	9.7	23.1	21.2	5.6	24.5	22.4	13.0	27.9	27.9
Cycle Q Clear(g_c), s	2.4	0.0	9.3	9.7	23.1	21.2	5.6	24.5	22.4	13.0	27.9	27.9
Prop In Lane	1.00		0.39	1.00		1.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	381	0	369	716	376	309	188	1338	731	454	511	528
V/C Ratio(X)	0.12	0.00	0.43	0.47	0.98	0.92	0.48	0.84	0.56	0.86	0.87	0.87
Avail Cap(c_a), veh/h	381	0	369	716	376	309	188	1418	756	502	600	620
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.9	0.0	39.6	41.0	46.3	45.6	49.1	40.7	22.7	49.6	39.4	39.4
Incr Delay (d2), s/veh	0.6	0.0	3.6	0.5	42.3	31.5	1.9	4.7	0.9	13.5	11.9	11.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	4.8	4.8	16.2	11.7	2.9	12.1	13.4	7.1	15.3	15.8
LnGrp Delay(d),s/veh	37.6	0.0	43.2	41.5	88.6	77.1	51.0	45.3	23.6	63.1	51.3	51.0
LnGrp LOS	D		D	D	F	E	D	D	C	E	D	D
Approach Vol, veh/h		204			991			1634			1299	
Approach Delay, s/veh		41.9			69.3			40.2			54.8	
Approach LOS		D			E			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		30.0	17.4	40.2		29.0	20.4	37.2				
Change Period (Y+Rc), s		5.0	5.0	6.5		5.5	5.0	6.5				
Max Green Setting (Gmax), s		25.0	10.0	39.5		23.5	17.0	32.5				
Max Q Clear Time (g_c+I1), s		11.3	7.6	29.9		25.1	15.0	26.5				
Green Ext Time (p_c), s		0.9	0.0	3.7		0.0	0.4	4.1				
Intersection Summary												
HCM 2010 Ctrl Delay			51.8									
HCM 2010 LOS			D									
Notes												

HCM 2010 Signalized Intersection Summary Near Term PM 2025
1: LOVR & Madonna 02/26/2018

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Central Coast Transportation Consulting Synchro 10 Report

Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	15	864	1	30	18	1007	8	155	4	0	29	104
Future Volume (vph)	15	864	1	30	18	1007	8	155	4	0	29	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0			4.0	4.0	
Lane Util. Factor	1.00	0.95			1.00	0.95	1.00			1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	1.00	1.00			1.00	0.98	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00			1.00	1.00	
Frt	1.00	1.00			1.00	1.00	0.85			1.00	0.85	
Flt Protected	0.95	1.00			0.95	1.00	1.00			0.95	1.00	
Satd. Flow (prot)	1770	3539			1770	3539	1583			1768	1556	
Flt Permitted	0.95	1.00			0.95	1.00	1.00			0.76	1.00	
Satd. Flow (perm)	1770	3539			1770	3539	1583			1419	1556	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	939	1	33	20	1095	9	168	4	0	32	113
RTOR Reduction (vph)	0	0	0	0	0	0	90	0	0	0	27	0
Lane Group Flow (vph)	16	940	0	0	53	1095	87	0	0	4	5	0
Confl. Peds. (#/hr)			2						1		5	5
Turn Type	Prot	NA		Prot	Prot	NA	Perm		Perm	NA	Perm	Perm
Protected Phases	5	2		1	1	6				8		
Permitted Phases							6		8		8	4
Actuated Green, G (s)	0.6	26.6			2.2	28.2	28.2			8.6	8.6	
Effective Green, g (s)	0.6	26.6			2.2	28.2	28.2			8.6	8.6	
Actuated g/C Ratio	0.01	0.44			0.04	0.46	0.46			0.14	0.14	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0			4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0			3.0	3.0	
Lane Grp Cap (vph)	17	1550			64	1644	735			201	220	
v/s Ratio Prot	0.01	0.27			c0.03	c0.31						
v/s Ratio Perm							0.05			0.00	0.00	
v/c Ratio	0.94	0.61			0.83	0.67	0.12			0.02	0.02	
Uniform Delay, d1	30.0	13.0			29.1	12.6	9.2			22.4	22.4	
Progression Factor	1.00	1.00			1.00	1.00	1.00			1.00	1.00	
Incremental Delay, d2	188.5	0.7			56.0	1.0	0.1			0.0	0.0	
Delay (s)	218.6	13.7			85.0	13.6	9.3			22.5	22.5	
Level of Service	F	B			F	B	A			C	C	
Approach Delay (s)		17.2				15.9				22.5		
Approach LOS		B				B				C		

Intersection Summary			
HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	60.7	Sum of lost time (s)	20.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR	SBR2	SEL	SER2	NEL2	NEL	NER
Lane Configurations								
Traffic Volume (vph)	0	2	16	1	4	1	2	23
Future Volume (vph)	0	2	16	1	4	1	2	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0			4.0	
Lane Util. Factor	1.00			1.00			1.00	
Frpb, ped/bikes	1.00			0.98			0.98	
Flpb, ped/bikes	1.00			1.00			1.00	
Frt	0.98			0.89			0.88	
Flt Protected	0.96			0.99			0.99	
Satd. Flow (prot)	1738			1612			1604	
Flt Permitted	0.75			0.99			0.99	
Satd. Flow (perm)	1366			1612			1604	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2	17	1	4	1	2	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	132	0	0	5	0	0	28	0
Confl. Peds. (#/hr)		1		5	2	1		5
Turn Type	NA			Prot		Perm	Prot	
Protected Phases	4			7			3	
Permitted Phases						3		
Actuated Green, G (s)	8.6			0.9			2.4	
Effective Green, g (s)	8.6			0.9			2.4	
Actuated g/C Ratio	0.14			0.01			0.04	
Clearance Time (s)	4.0			4.0			4.0	
Vehicle Extension (s)	3.0			3.0			3.0	
Lane Grp Cap (vph)	193			23			63	
v/s Ratio Prot				c0.00				
v/s Ratio Perm	c0.10						0.02	
v/c Ratio	0.68			0.22			0.44	
Uniform Delay, d1	24.8			29.6			28.5	
Progression Factor	1.00			1.00			1.00	
Incremental Delay, d2	9.6			4.7			4.9	
Delay (s)	34.4			34.3			33.4	
Level of Service	C			C			C	
Approach Delay (s)	34.4			34.3			33.4	
Approach LOS	C			C			C	

Intersection Summary

HCM 2010 methodology does not support more than 4 approaches.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	903	166	109	1081	25	137	1	115	29	9	22
Future Volume (vph)	35	903	166	109	1081	25	137	1	115	29	9	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	8	12	12	12
Total Lost time (s)	6.0	6.0		6.0	6.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.98		1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	0.98		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (prot)	1770	3443		1770	5065			1775	1348		1794	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.70	1.00		0.77	1.00
Satd. Flow (perm)	1770	3443		1770	5065			1302	1348		1426	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	36	931	171	112	1114	26	141	1	119	30	9	23
RTOR Reduction (vph)	0	15	0	0	2	0	0	0	95	0	0	18
Lane Group Flow (vph)	36	1087	0	112	1138	0	0	142	24	0	39	5
Confl. Peds. (#/hr)			5	5								
Confl. Bikes (#/hr)			20			11			5			
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	2.0	34.4		6.8	39.2			14.2	14.2		14.2	14.2
Effective Green, g (s)	2.0	34.4		6.8	39.2			14.2	14.2		14.2	14.2
Actuated g/C Ratio	0.03	0.48		0.10	0.55			0.20	0.20		0.20	0.20
Clearance Time (s)	6.0	6.0		6.0	6.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	49	1658		168	2780			258	268		283	314
v/s Ratio Prot	0.02	c0.32		c0.06	c0.22							
v/s Ratio Perm								c0.11	0.02		0.03	0.00
v/c Ratio	0.73	0.66		0.67	0.41			0.55	0.09		0.14	0.01
Uniform Delay, d1	34.4	14.0		31.2	9.4			25.7	23.3		23.6	23.0
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	43.4	0.9		9.6	0.1			2.5	0.1		0.2	0.0
Delay (s)	77.9	15.0		40.8	9.5			28.3	23.5		23.8	23.0
Level of Service	E	B		D	A			C	C		C	C
Approach Delay (s)		17.0			12.3			26.1			23.5	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	71.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	903	166	109	1081	25	137	1	115	29	9	22
Future Volume (veh/h)	35	903	166	109	1081	25	137	1	115	29	9	22
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1788	1900	1863	1863
Adj Flow Rate, veh/h	36	931	171	112	1114	26	141	1	119	30	9	23
Adj No. of Lanes	1	2	0	1	3	0	0	1	1	0	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	49	1117	205	142	2190	51	89	0	518	79	14	548
Arrive On Green	0.03	0.38	0.38	0.08	0.43	0.43	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1774	2972	546	1774	5108	119	0	1	1497	0	40	1583
Grp Volume(v), veh/h	36	554	548	112	739	401	142	0	119	39	0	23
Grp Sat Flow(s),veh/h/ln	1774	1770	1748	1774	1695	1837	1	0	1497	40	0	1583
Q Serve(g_s), s	1.6	23.0	23.1	5.0	12.9	12.9	0.0	0.0	4.6	0.0	0.0	0.8
Cycle Q Clear(g_c), s	1.6	23.0	23.1	5.0	12.9	12.9	28.0	0.0	4.6	28.0	0.0	0.8
Prop In Lane	1.00		0.31	1.00		0.06	0.99		1.00	0.77		1.00
Lane Grp Cap(c), veh/h	49	665	657	142	1454	788	89	0	518	93	0	548
V/C Ratio(X)	0.74	0.83	0.83	0.79	0.51	0.51	1.60	0.00	0.23	0.42	0.00	0.04
Avail Cap(c_a), veh/h	132	809	799	197	1676	908	89	0	518	93	0	548
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.1	22.9	23.0	36.5	16.9	16.9	40.4	0.0	18.8	30.6	0.0	17.6
Incr Delay (d2), s/veh	19.5	6.3	6.4	13.1	0.3	0.5	314.3	0.0	0.2	3.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	12.4	12.3	3.0	6.0	6.6	9.7	0.0	1.9	0.9	0.0	0.3
LnGrp Delay(d),s/veh	58.6	29.2	29.4	49.7	17.2	17.4	354.6	0.0	19.0	33.7	0.0	17.6
LnGrp LOS	E	C	C	D	B	B	F		B	C		B
Approach Vol, veh/h		1138			1252			261			62	
Approach Delay, s/veh		30.2			20.1			201.6			27.7	
Approach LOS		C			C			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.5	36.4		32.0	8.2	40.7		32.0
Change Period (Y+Rc), s	6.0	6.0		4.0	6.0	6.0		4.0
Max Green Setting (Gmax), s	9.0	37.0		28.0	6.0	40.0		28.0
Max Q Clear Time (g_c+I1), s	7.0	25.1		30.0	3.6	14.9		30.0
Green Ext Time (p_c), s	0.1	5.4		0.0	0.0	8.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	42.0
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1021	193	185	829	17	513	10	300	20	12	15
Future Volume (vph)	19	1021	193	185	829	17	513	10	300	20	12	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		0.95	0.95	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	0.99	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.95	1.00	0.95	0.99	1.00
Satd. Flow (prot)	1770	4839		1641	5065		1545	1552	1455	1681	1749	1548
Flt Permitted	0.95	1.00		0.95	1.00		0.75	0.72	1.00	0.25	0.56	1.00
Satd. Flow (perm)	1770	4839		1641	5065		1212	1173	1455	442	984	1548
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	20	1064	201	193	864	18	534	10	312	21	12	16
RTOR Reduction (vph)	0	28	0	0	2	0	0	0	191	0	0	13
Lane Group Flow (vph)	20	1237	0	193	880	0	272	272	122	17	17	3
Confl. Peds. (#/hr)	2		12	12		2	5					5
Confl. Bikes (#/hr)			21			17			1			1
Heavy Vehicles (%)	2%	2%	10%	10%	2%	2%	10%	10%	10%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	Perm
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	2.0	29.0		12.0	39.0		27.0	27.0	39.0	16.0	16.0	16.0
Effective Green, g (s)	2.0	29.0		12.0	39.0		27.0	27.0	39.0	16.0	16.0	16.0
Actuated g/C Ratio	0.02	0.29		0.12	0.39		0.27	0.27	0.39	0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	35	1403		196	1975		327	316	625	70	157	247
v/s Ratio Prot	0.01	c0.26		c0.12	0.17				0.02			
v/s Ratio Perm							0.22	c0.23	0.06	c0.04	0.02	0.00
v/c Ratio	0.57	0.88		0.98	0.45		0.83	0.86	0.20	0.24	0.11	0.01
Uniform Delay, d1	48.6	33.9		43.9	22.5		34.4	34.7	20.1	36.7	35.9	35.3
Progression Factor	1.00	1.00		0.80	0.42		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	20.6	8.3		52.2	0.6		21.3	25.1	0.2	8.1	1.4	0.1
Delay (s)	69.1	42.2		87.3	10.0		55.6	59.8	20.3	44.8	37.3	35.4
Level of Service	E	D		F	A		E	E	C	D	D	D
Approach Delay (s)		42.6			23.9			44.1			39.2	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	36.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	1021	193	185	829	17	513	10	300	20	12	15
Future Volume (veh/h)	19	1021	193	185	829	17	513	10	300	20	12	15
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	0.99		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1840	1900	1727	1863	1900	1727	1727	1727	1863	1863	1863
Adj Flow Rate, veh/h	20	1064	201	193	864	18	541	0	312	16	18	16
Adj No. of Lanes	1	3	0	1	3	0	2	0	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	10	2	2	10	10	10	2	2	2
Cap, veh/h	444	2062	389	197	1843	38	808	0	565	358	503	420
Arrive On Green	0.25	0.49	0.49	0.24	0.72	0.72	0.27	0.00	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1774	4208	794	1645	5121	107	2526	0	1441	1059	1863	1554
Grp Volume(v), veh/h	20	846	419	193	572	310	541	0	312	16	18	16
Grp Sat Flow(s),veh/h/ln	1774	1674	1653	1645	1695	1837	1263	0	1441	1059	1863	1554
Q Serve(g_s), s	0.9	17.3	17.3	11.7	7.1	7.1	20.1	0.0	16.9	1.1	0.7	0.8
Cycle Q Clear(g_c), s	0.9	17.3	17.3	11.7	7.1	7.1	20.8	0.0	16.9	1.1	0.7	0.8
Prop In Lane	1.00		0.48	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	444	1641	810	197	1220	661	808	0	565	358	503	420
V/C Ratio(X)	0.05	0.52	0.52	0.98	0.47	0.47	0.67	0.00	0.55	0.04	0.04	0.04
Avail Cap(c_a), veh/h	444	1641	810	197	1220	661	808	0	565	358	503	420
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.79	0.79	0.72	0.72	0.72	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.4	17.4	17.4	37.9	10.0	10.0	34.6	0.0	23.7	27.1	26.9	26.9
Incr Delay (d2), s/veh	0.0	0.9	1.9	48.0	0.9	1.7	4.4	0.0	3.8	0.2	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	8.1	8.2	7.9	3.3	3.8	7.5	0.0	7.3	0.4	0.4	0.3
LnGrp Delay(d),s/veh	28.5	18.3	19.3	85.9	10.9	11.7	39.0	0.0	27.6	27.3	27.0	27.1
LnGrp LOS	C	B	B	F	B	B	D		C	C	C	C
Approach Vol, veh/h		1285			1075			853			50	
Approach Delay, s/veh		18.8			24.6			34.8			27.1	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.0	53.0		31.0	29.0	40.0		31.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	12.0	29.0		16.0	5.0	36.0		27.0
Max Q Clear Time (g_c+I1), s	13.7	19.3		3.1	2.9	9.1		22.8
Green Ext Time (p_c), s	0.0	5.5		0.1	0.0	6.1		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	25.0
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
Near Term PM 2025
5: Hwy 101 SB/Madonna Inn & Madonna
02/26/2018

User approved volume balancing among the lanes for turning movement.

Central Coast Transportation Consulting
Synchro 10 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	565	776	0	0	907	175	125	3	126	0	0	0
Future Volume (vph)	565	776	0	0	907	175	125	3	126	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0				
Lane Util. Factor	0.97	0.95			0.95		1.00	1.00				
Frpb, ped/bikes	1.00	1.00			1.00		1.00	0.98				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.98		1.00	0.85				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3183	3539			3400		1641	1451				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3183	3539			3400		1641	1451				
Peak-hour factor, PHF	0.97	0.97	0.92	0.92	0.97	0.97	0.97	0.97	0.97	0.92	0.92	0.92
Adj. Flow (vph)	582	800	0	0	935	180	129	3	130	0	0	0
RTOR Reduction (vph)	0	0	0	0	15	0	0	114	0	0	0	0
Lane Group Flow (vph)	582	800	0	0	1100	0	129	19	0	0	0	0
Confl. Peds. (#/hr)			11	11					2	2		
Confl. Bikes (#/hr)			19			17						
Heavy Vehicles (%)	10%	2%	2%	2%	2%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Prot	NA			NA		Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases												
Actuated Green, G (s)	25.0	79.4			50.4		12.6	12.6				
Effective Green, g (s)	25.0	79.4			50.4		12.6	12.6				
Actuated g/C Ratio	0.25	0.79			0.50		0.13	0.13				
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	795	2809			1713		206	182				
v/s Ratio Prot	c0.18	0.23			c0.32		c0.08	0.01				
v/s Ratio Perm												
v/c Ratio	0.73	0.28			0.64		0.63	0.11				
Uniform Delay, d1	34.4	2.7			18.2		41.5	38.7				
Progression Factor	0.93	2.39			0.58		1.00	1.00				
Incremental Delay, d2	2.2	0.2			1.4		5.8	0.3				
Delay (s)	34.2	6.7			12.0		47.3	39.0				
Level of Service	C	A			B		D	D				
Approach Delay (s)		18.3			12.0			43.1			0.0	
Approach LOS		B			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	565	776	0	0	907	175	125	3	126	0	0	0
Future Volume (veh/h)	565	776	0	0	907	175	125	3	126	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1727	1863	0	0	1839	1900	1727	1727	1900			
Adj Flow Rate, veh/h	582	800	0	0	935	180	129	3	130			
Adj No. of Lanes	2	2	0	0	2	0	1	1	0			
Peak Hour Factor	0.97	0.97	0.92	0.92	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	10	2	0	0	2	2	10	10	10			
Cap, veh/h	940	2848	0	0	1370	263	190	4	165			
Arrive On Green	0.59	1.00	0.00	0.00	0.31	0.31	0.12	0.12	0.12			
Sat Flow, veh/h	3191	3632	0	0	3006	561	1645	33	1433			
Grp Volume(v), veh/h	582	800	0	0	560	555	129	0	133			
Grp Sat Flow(s),veh/h/ln	1596	1770	0	0	1747	1727	1645	0	1466			
Q Serve(g_s), s	11.8	0.0	0.0	0.0	28.0	28.0	7.5	0.0	8.8			
Cycle Q Clear(g_c), s	11.8	0.0	0.0	0.0	28.0	28.0	7.5	0.0	8.8			
Prop In Lane	1.00		0.00	0.00		0.32	1.00		0.98			
Lane Grp Cap(c), veh/h	940	2848	0	0	821	812	190	0	169			
V/C Ratio(X)	0.62	0.28	0.00	0.00	0.68	0.68	0.68	0.00	0.79			
Avail Cap(c_a), veh/h	940	2848	0	0	821	812	263	0	235			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00			
Upstream Filter(I)	0.52	0.52	0.00	0.00	0.68	0.68	1.00	0.00	1.00			
Uniform Delay (d), s/veh	16.9	0.0	0.0	0.0	27.7	27.8	42.5	0.0	43.0			
Incr Delay (d2), s/veh	0.7	0.1	0.0	0.0	3.2	3.2	4.2	0.0	11.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	5.1	0.1	0.0	0.0	14.2	14.1	3.6	0.0	4.1			
LnGrp Delay(d),s/veh	17.6	0.1	0.0	0.0	30.9	31.0	46.7	0.0	54.4			
LnGrp LOS	B	A			C	C	D		D			
Approach Vol, veh/h		1382			1115			262				
Approach Delay, s/veh		7.5			30.9			50.6				
Approach LOS		A			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		84.5			33.5	51.0		15.5
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		76.0			25.0	47.0		16.0
Max Q Clear Time (g_c+I1), s		2.0			13.8	30.0		10.8
Green Ext Time (p_c), s		6.6			2.1	6.8		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	21.0
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	499	15	357	10	90	10	404	609	13	10	537	630
Future Volume (vph)	499	15	357	10	90	10	404	609	13	10	537	630
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95			0.95	0.88
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00			1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00			1.00	0.85
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1681	1690	1573	1770	1831		1770	3523			3535	2734
Flt Permitted	0.95	0.95	1.00	0.95	1.00		0.95	1.00			0.94	1.00
Satd. Flow (perm)	1681	1690	1573	1770	1831		1770	3523			3319	2734
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	537	16	384	11	97	11	434	655	14	11	577	677
RTOR Reduction (vph)	0	0	184	0	4	0	0	1	0	0	0	0
Lane Group Flow (vph)	274	279	200	11	104	0	434	668	0	0	588	677
Confl. Peds. (#/hr)			1	1			4		10	10		4
Confl. Bikes (#/hr)						2			21			12
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Perm	NA	pm+ov
Protected Phases	8	8	1	4	4		1	6			2	8
Permitted Phases			8							2		2
Actuated Green, G (s)	25.7	25.7	52.0	10.9	10.9		26.3	51.4			21.1	46.8
Effective Green, g (s)	25.7	25.7	52.0	10.9	10.9		26.3	51.4			21.1	46.8
Actuated g/C Ratio	0.26	0.26	0.52	0.11	0.11		0.26	0.51			0.21	0.47
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	432	434	880	192	199		465	1810			700	1279
v/s Ratio Prot	0.16	c0.17	0.06	0.01	c0.06		c0.25	0.19				0.14
v/s Ratio Perm			0.07								c0.18	0.11
v/c Ratio	0.63	0.64	0.23	0.06	0.52		0.93	0.37			0.84	0.53
Uniform Delay, d1	33.0	33.1	13.1	39.9	42.1		36.0	14.6			37.8	18.8
Progression Factor	1.48	1.48	5.22	1.00	1.00		1.00	1.00			0.75	0.68
Incremental Delay, d2	6.7	6.9	0.1	0.1	2.4		25.8	0.1			7.9	0.4
Delay (s)	55.4	55.8	68.3	40.1	44.5		61.8	14.7			36.5	13.1
Level of Service	E	E	E	D	D		E	B			D	B
Approach Delay (s)		60.8			44.1			33.2			24.0	
Approach LOS		E			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	499	15	357	10	90	10	404	609	13	10	537	630
Future Volume (veh/h)	499	15	357	10	90	10	404	609	13	10	537	630
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.96	0.99		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	548	0	0	11	97	11	434	655	14	11	577	677
Adj No. of Lanes	2	0	1	1	1	0	1	2	0	0	2	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	710	0	731	299	277	31	464	1810	39	43	716	1105
Arrive On Green	0.20	0.00	0.00	0.17	0.17	0.17	0.26	0.51	0.51	0.07	0.07	0.07
Sat Flow, veh/h	3548	0	1583	1774	1640	186	1774	3539	76	25	3410	2608
Grp Volume(v), veh/h	548	0	0	11	0	108	434	327	342	313	275	677
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1826	1774	1770	1845	1826	1610	1304
Q Serve(g_s), s	14.6	0.0	0.0	0.5	0.0	5.2	23.9	11.1	11.1	4.4	16.8	19.7
Cycle Q Clear(g_c), s	14.6	0.0	0.0	0.5	0.0	5.2	23.9	11.1	11.1	16.8	16.8	19.7
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.04	0.04		1.00
Lane Grp Cap(c), veh/h	710	0	731	299	0	308	464	905	944	421	338	1105
V/C Ratio(X)	0.77	0.00	0.00	0.04	0.00	0.35	0.94	0.36	0.36	0.74	0.81	0.61
Avail Cap(c_a), veh/h	710	0	731	299	0	308	479	920	960	421	338	1105
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.97	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.88	0.88	0.88
Uniform Delay (d), s/veh	37.8	0.0	0.0	34.8	0.0	36.7	36.1	14.6	14.6	44.5	44.6	27.4
Incr Delay (d2), s/veh	7.7	0.0	0.0	0.0	0.0	0.7	25.6	0.2	0.2	6.2	12.5	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	0.0	0.0	0.3	0.0	2.7	15.0	5.4	5.7	9.3	8.7	9.5
LnGrp Delay(d),s/veh	45.6	0.0	0.0	34.8	0.0	37.4	61.7	14.9	14.9	50.7	57.1	28.2
LnGrp LOS	D			C		D	E	B	B	D	E	C
Approach Vol, veh/h		548			119			1103			1265	
Approach Delay, s/veh		45.6			37.2			33.3			40.1	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	30.1	25.0		20.9		55.1		24.0
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s	27.0	21.0		16.0		52.0		20.0
Max Q Clear Time (g_c+I1), s	25.9	21.7		7.2		13.1		16.6
Green Ext Time (p_c), s	0.2	0.0		0.3		4.2		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	38.5
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Intersection						
Int Delay, s/veh	1.6					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	43	1671	38	27	1449
Future Vol, veh/h	40	43	1671	38	27	1449
Conflicting Peds, #/hr	0	0	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	175	-	50	60	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	47	1816	41	29	1575

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2672	918	0	0	1867	0
Stage 1	1826	-	-	-	-	-
Stage 2	846	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 18	274	-	-	319	-
Stage 1	113	-	-	-	-	-
Stage 2	381	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 16	271	-	-	316	-
Mov Cap-2 Maneuver	77	-	-	-	-	-
Stage 1	102	-	-	-	-	-
Stage 2	381	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	59.2	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	77	271	316	-
HCM Lane V/C Ratio	-	-	0.565	0.172	0.093	-
HCM Control Delay (s)	-	-	100.3	21	17.6	-
HCM Lane LOS	-	-	F	C	C	-
HCM 95th %tile Q(veh)	-	-	2.5	0.6	0.3	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
11: LOVR & Calle Joaquin

Near Term PM 2025
02/26/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	4	46	120	10	65	44	1575	62	41	1373	22
Future Volume (vph)	16	4	46	120	10	65	44	1575	62	41	1373	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99		1.00	1.00	0.97	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1765	1863	1583	1770	1599		1770	3539	1532	1770	3539	1564
Flt Permitted	0.71	1.00	1.00	0.76	1.00		0.12	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	1313	1863	1583	1407	1599		228	3539	1532	221	3539	1564
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	16	4	47	124	10	67	45	1624	64	42	1415	23
RTOR Reduction (vph)	0	0	41	0	58	0	0	0	20	0	0	7
Lane Group Flow (vph)	16	4	6	124	19	0	45	1624	44	42	1415	16
Confl. Peds. (#/hr)	2					2			5	5		
Confl. Bikes (#/hr)												1
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Actuated Green, G (s)	10.6	10.6	10.6	10.6	10.6		54.9	54.9	54.9	54.2	54.2	54.2
Effective Green, g (s)	10.6	10.6	10.6	10.6	10.6		54.9	54.9	54.9	54.2	54.2	54.2
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13		0.69	0.69	0.69	0.68	0.68	0.68
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	173	246	209	186	211		218	2428	1051	198	2397	1059
v/s Ratio Prot		0.00			0.01		0.01	c0.46		0.01	c0.40	
v/s Ratio Perm	0.01		0.00	c0.09			0.13		0.03	0.14		0.01
v/c Ratio	0.09	0.02	0.03	0.67	0.09		0.21	0.67	0.04	0.21	0.59	0.01
Uniform Delay, d1	30.5	30.2	30.2	33.0	30.5		6.4	7.3	4.1	10.2	6.9	4.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.0	0.1	8.7	0.2		0.5	1.5	0.1	0.5	1.1	0.0
Delay (s)	30.7	30.2	30.3	41.7	30.6		6.9	8.8	4.1	10.7	8.0	4.2
Level of Service	C	C	C	D	C		A	A	A	B	A	A
Approach Delay (s)		30.4			37.5			8.5			8.0	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 Signalized Intersection Summary
11: LOVR & Calle Joaquin

Near Term PM 2025
02/26/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	4	46	120	10	65	44	1575	62	41	1373	22
Future Volume (veh/h)	16	4	46	120	10	65	44	1575	62	41	1373	22
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	16	4	0	124	10	67	45	1624	64	42	1415	23
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	226	192	257	25	170	263	2124	946	387	2467	1088
Arrive On Green	0.12	0.12	0.00	0.12	0.12	0.12	0.03	0.60	0.60	0.13	0.70	0.70
Sat Flow, veh/h	1312	1863	1583	1400	209	1399	1774	3539	1577	1774	3539	1560
Grp Volume(v), veh/h	16	4	0	124	0	77	45	1624	64	42	1415	23
Grp Sat Flow(s),veh/h/ln	1312	1863	1583	1400	0	1608	1774	1770	1577	1774	1770	1560
Q Serve(g_s), s	0.9	0.2	0.0	6.8	0.0	3.5	0.9	27.1	1.4	0.0	16.1	0.4
Cycle Q Clear(g_c), s	4.4	0.2	0.0	7.0	0.0	3.5	0.9	27.1	1.4	0.0	16.1	0.4
Prop In Lane	1.00		1.00	1.00		0.87	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	191	226	192	257	0	195	263	2124	946	387	2467	1088
V/C Ratio(X)	0.08	0.02	0.00	0.48	0.00	0.39	0.17	0.76	0.07	0.11	0.57	0.02
Avail Cap(c_a), veh/h	294	373	317	367	0	322	296	2124	946	387	2467	1088
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	0.74	0.74	0.74	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.5	30.9	0.0	34.0	0.0	32.4	9.8	11.8	6.7	18.9	6.1	3.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	1.4	0.0	1.3	0.2	2.0	0.1	0.1	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	0.0	2.8	0.0	1.6	0.4	13.7	0.6	0.7	8.0	0.2
LnGrp Delay(d),s/veh	34.7	31.0	0.0	35.4	0.0	33.7	10.0	13.8	6.8	19.0	7.1	3.8
LnGrp LOS	C	C		D		C	A	B	A	B	A	A
Approach Vol, veh/h		20			201			1733			1480	
Approach Delay, s/veh		33.9			34.8			13.5			7.4	
Approach LOS		C			C			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.5	59.8		13.7	14.3	52.0		13.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	4.0	48.0		16.0	4.0	48.0		16.0
Max Q Clear Time (g_c+I1), s	2.9	18.1		9.0	2.0	29.1		6.4
Green Ext Time (p_c), s	0.0	12.6		0.5	0.0	12.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.2
HCM 2010 LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	496	108	190	925	760	304
Future Volume (vph)	496	108	190	925	760	304
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5		3.5	6.0	6.0	3.5
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	0.96		0.95	1.00	1.00	1.00
Satd. Flow (prot)	3132		1641	3539	3539	1444
Flt Permitted	0.96		0.95	1.00	1.00	1.00
Satd. Flow (perm)	3132		1641	3539	3539	1444
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	528	115	202	984	809	323
RTOR Reduction (vph)	19	0	0	0	0	99
Lane Group Flow (vph)	624	0	202	984	809	224
Confl. Peds. (#/hr)	3					
Confl. Bikes (#/hr)						8
Heavy Vehicles (%)	10%	10%	10%	2%	2%	10%
Turn Type	Prot		Prot	NA	NA	pm+ov
Protected Phases	3		1	6	2	3
Permitted Phases						2
Actuated Green, G (s)	23.1		17.8	67.4	46.1	69.2
Effective Green, g (s)	23.1		17.8	67.4	46.1	69.2
Actuated g/C Ratio	0.23		0.18	0.67	0.46	0.69
Clearance Time (s)	3.5		3.5	6.0	6.0	3.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	723		292	2385	1631	999
v/s Ratio Prot	c0.20		c0.12	0.28	c0.23	0.05
v/s Ratio Perm						0.10
v/c Ratio	0.86		0.69	0.41	0.50	0.22
Uniform Delay, d1	36.9		38.5	7.4	18.8	5.6
Progression Factor	1.00		1.00	1.00	0.84	5.95
Incremental Delay, d2	10.4		6.9	0.5	1.0	0.1
Delay (s)	47.3		45.4	7.9	16.8	33.5
Level of Service	D		D	A	B	C
Approach Delay (s)	47.3			14.3	21.6	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	500	165	845	195	155	1195
Future Volume (vph)	500	165	845	195	155	1195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.98	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.97		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1549	3423		1770	3539
Flt Permitted	0.95	1.00	1.00		0.19	1.00
Satd. Flow (perm)	1770	1549	3423		352	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	526	174	889	205	163	1258
RTOR Reduction (vph)	0	81	28	0	0	0
Lane Group Flow (vph)	526	93	1066	0	163	1258
Confl. Peds. (#/hr)		9				
Confl. Bikes (#/hr)		3		8		
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	22.9	22.9	36.1		36.1	36.1
Effective Green, g (s)	22.9	22.9	36.1		36.1	36.1
Actuated g/C Ratio	0.33	0.33	0.52		0.52	0.52
Clearance Time (s)	5.0	5.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	579	506	1765		181	1825
v/s Ratio Prot	c0.30		0.31			0.36
v/s Ratio Perm		0.06			c0.46	
v/c Ratio	0.91	0.18	0.60		0.90	0.69
Uniform Delay, d1	22.5	16.9	11.9		15.3	12.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	18.0	0.2	0.6		40.0	1.1
Delay (s)	40.6	17.0	12.5		55.3	13.8
Level of Service	D	B	B		E	B
Approach Delay (s)	34.7		12.5			18.6
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	500	165	845	195	155	1195
Future Volume (veh/h)	500	165	845	195	155	1195
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	526	174	889	205	163	1258
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	563	502	1522	351	263	1895
Arrive On Green	0.32	0.32	0.54	0.54	0.54	0.54
Sat Flow, veh/h	1774	1583	2935	655	513	3632
Grp Volume(v), veh/h	526	174	553	541	163	1258
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1727	513	1770
Q Serve(g_s), s	21.5	6.3	15.8	15.8	23.5	19.1
Cycle Q Clear(g_c), s	21.5	6.3	15.8	15.8	39.3	19.1
Prop In Lane	1.00	1.00		0.38	1.00	
Lane Grp Cap(c), veh/h	563	502	948	925	263	1895
V/C Ratio(X)	0.93	0.35	0.58	0.58	0.62	0.66
Avail Cap(c_a), veh/h	570	509	948	925	263	1895
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.7	19.6	11.7	11.7	25.0	12.5
Incr Delay (d2), s/veh	22.7	0.4	0.9	1.0	4.4	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.1	2.8	7.9	7.8	3.6	9.5
LnGrp Delay(d),s/veh	47.4	20.0	12.6	12.7	29.5	13.4
LnGrp LOS	D	B	B	B	C	B
Approach Vol, veh/h	700		1094			1421
Approach Delay, s/veh	40.6		12.7			15.2
Approach LOS	D		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		46.0				46.0		28.7
Change Period (Y+Rc), s		6.0				6.0		5.0
Max Green Setting (Gmax), s		40.0				40.0		24.0
Max Q Clear Time (g_c+I1), s		17.8				41.3		23.5
Green Ext Time (p_c), s		7.3				0.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	19.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	10	20	710	20	330	40	595	470	280	690	30
Future Volume (vph)	10	10	20	710	20	330	40	595	470	280	690	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5	4.5	3.5	4.5	4.5	3.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1817	1542	1681	1690	1560	1770	3539	1573	1770	3511	
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1817	1542	1681	1690	1560	1770	3539	1573	1770	3511	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	10	21	740	21	344	42	620	490	292	719	31
RTOR Reduction (vph)	0	0	20	0	0	247	0	0	193	0	2	0
Lane Group Flow (vph)	0	20	1	377	384	97	42	620	297	292	748	0
Confl. Peds. (#/hr)	1		7	7		1	9		1	1		9
Confl. Bikes (#/hr)			2			2						12
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		8	8		5	2	8	1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)		6.3	6.3	26.9	26.9	26.9	3.7	24.6	51.5	20.8	41.7	
Effective Green, g (s)		6.3	6.3	26.9	26.9	26.9	3.7	24.6	51.5	20.8	41.7	
Actuated g/C Ratio		0.07	0.07	0.28	0.28	0.28	0.04	0.26	0.54	0.22	0.44	
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	3.5	4.5	4.5	3.5	4.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	5.0	2.0	3.5	5.0	
Lane Grp Cap (vph)		119	101	473	475	438	68	910	847	385	1531	
v/s Ratio Prot		c0.01		0.22	c0.23		0.02	c0.18	0.10	c0.17	0.21	
v/s Ratio Perm			0.00			0.06			0.09			
v/c Ratio		0.17	0.01	0.80	0.81	0.22	0.62	0.68	0.35	0.76	0.49	
Uniform Delay, d1		42.2	41.7	31.8	32.0	26.3	45.3	32.0	12.5	35.0	19.3	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2	0.0	8.5	9.2	0.1	11.2	2.7	0.1	8.6	0.5	
Delay (s)		42.4	41.8	40.3	41.2	26.4	56.4	34.7	12.6	43.6	19.8	
Level of Service		D	D	D	D	C	E	C	B	D	B	
Approach Delay (s)		42.1			36.3			26.1			26.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	95.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	10	20	710	20	330	40	595	470	280	690	30
Future Volume (veh/h)	10	10	20	710	20	330	40	595	470	280	690	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		0.99	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	10	10	21	755	0	0	42	620	490	292	719	31
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	48	48	80	893	0	398	52	1027	854	341	1563	67
Arrive On Green	0.05	0.05	0.05	0.25	0.00	0.00	0.03	0.29	0.29	0.19	0.45	0.45
Sat Flow, veh/h	909	909	1491	3548	0	1583	1774	3539	1569	1774	3450	149
Grp Volume(v), veh/h	20	0	21	755	0	0	42	620	490	292	369	381
Grp Sat Flow(s),veh/h/ln	1817	0	1491	1774	0	1583	1774	1770	1569	1774	1770	1829
Q Serve(g_s), s	0.8	0.0	1.1	16.2	0.0	0.0	1.9	12.1	16.7	12.7	11.5	11.5
Cycle Q Clear(g_c), s	0.8	0.0	1.1	16.2	0.0	0.0	1.9	12.1	16.7	12.7	11.5	11.5
Prop In Lane	0.50		1.00	1.00		1.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	97	0	80	893	0	398	52	1027	854	341	802	829
V/C Ratio(X)	0.21	0.00	0.26	0.85	0.00	0.00	0.80	0.60	0.57	0.86	0.46	0.46
Avail Cap(c_a), veh/h	613	0	503	1352	0	604	157	1092	883	461	849	878
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.3	0.0	36.4	28.5	0.0	0.0	38.6	24.4	12.2	31.2	15.1	15.1
Incr Delay (d2), s/veh	0.4	0.0	0.6	2.0	0.0	0.0	10.0	1.4	1.5	12.1	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.5	8.1	0.0	0.0	1.1	6.1	11.1	7.4	5.8	6.0
LnGrp Delay(d),s/veh	36.6	0.0	37.0	30.5	0.0	0.0	48.6	25.9	13.7	43.3	16.0	16.0
LnGrp LOS	D		D	C			D	C	B	D	B	B
Approach Vol, veh/h		41			755			1152			1042	
Approach Delay, s/veh		36.8			30.5			21.5			23.6	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.9	27.7		8.8	5.9	40.8		24.6
Change Period (Y+Rc), s	3.5	4.5		4.5	3.5	4.5		4.5
Max Green Setting (Gmax), s	20.8	24.7		27.0	7.1	38.4		30.5
Max Q Clear Time (g_c+I1), s	14.7	18.7		3.1	3.9	13.5		18.2
Green Ext Time (p_c), s	0.7	4.4		0.1	0.0	8.8		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	24.7
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Near Term Plus Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	138	30	158	69	130	55	542	134	472	744	39
Future Volume (vph)	95	138	30	158	69	130	55	542	134	472	744	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.5	5.5	5.5	5.0	6.5	5.5	5.0	6.5	
Lane Util. Factor	1.00	1.00		0.97	0.95	0.95	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99	0.98	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.94	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1804		3433	1649	1467	1770	5085	1554	3433	3504	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1804		3433	1649	1467	1770	5085	1554	3433	3504	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	102	148	32	170	74	140	59	583	144	508	800	42
RTOR Reduction (vph)	0	7	0	0	21	79	0	0	96	0	3	0
Lane Group Flow (vph)	102	173	0	170	101	13	59	583	48	508	839	0
Confl. Peds. (#/hr)	26		8	8			7		19	19		7
Confl. Bikes (#/hr)			5			8						10
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	2	2		6	6		3	8	6	7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	14.1	14.1		11.6	11.6	11.6	6.3	16.3	27.9	20.4	30.4	
Effective Green, g (s)	14.1	14.1		11.6	11.6	11.6	6.3	16.3	27.9	20.4	30.4	
Actuated g/C Ratio	0.17	0.17		0.14	0.14	0.14	0.07	0.19	0.33	0.24	0.36	
Clearance Time (s)	5.0	5.0		5.5	5.5	5.5	5.0	6.5	5.5	5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	295	301		471	226	201	132	982	614	829	1262	
v/s Ratio Prot	0.06	c0.10		0.05	c0.06		0.03	0.11	0.01	c0.15	c0.24	
v/s Ratio Perm						0.01			0.02			
v/c Ratio	0.35	0.58		0.36	0.45	0.06	0.45	0.59	0.08	0.61	0.66	
Uniform Delay, d1	31.1	32.4		33.0	33.5	31.7	37.4	31.0	19.4	28.5	22.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	2.7		0.5	1.4	0.1	2.4	1.0	0.1	1.4	1.3	
Delay (s)	31.8	35.1		33.5	34.9	31.8	39.8	32.0	19.5	29.8	24.0	
Level of Service	C	D		C	C	C	D	C	B	C	C	
Approach Delay (s)		33.9			33.5			30.3			26.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	84.4	Sum of lost time (s)	22.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	138	30	158	69	130	55	542	134	472	744	39
Future Volume (veh/h)	95	138	30	158	69	130	55	542	134	472	744	39
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	1.00		0.97	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	102	148	32	170	124	107	59	583	144	508	800	42
Adj No. of Lanes	1	1	0	2	1	1	1	3	1	2	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	319	263	57	466	245	199	157	1050	526	653	1049	55
Arrive On Green	0.18	0.18	0.18	0.13	0.13	0.13	0.09	0.21	0.21	0.19	0.31	0.31
Sat Flow, veh/h	1774	1466	317	3548	1863	1515	1774	5085	1540	3442	3408	179
Grp Volume(v), veh/h	102	0	180	170	124	107	59	583	144	508	415	427
Grp Sat Flow(s),veh/h/ln	1774	0	1783	1774	1863	1515	1774	1695	1540	1721	1770	1817
Q Serve(g_s), s	3.8	0.0	6.9	3.3	4.7	5.0	2.4	7.7	5.1	10.5	16.0	16.0
Cycle Q Clear(g_c), s	3.8	0.0	6.9	3.3	4.7	5.0	2.4	7.7	5.1	10.5	16.0	16.0
Prop In Lane	1.00		0.18	1.00		1.00	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	319	0	320	466	245	199	157	1050	526	653	544	559
V/C Ratio(X)	0.32	0.00	0.56	0.36	0.51	0.54	0.38	0.56	0.27	0.78	0.76	0.76
Avail Cap(c_a), veh/h	567	0	569	1133	595	484	213	1827	761	1054	966	992
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	0.0	28.1	29.8	30.4	30.5	32.3	26.7	18.2	28.9	23.5	23.5
Incr Delay (d2), s/veh	0.6	0.0	1.5	0.5	1.6	2.2	1.5	0.5	0.3	2.0	2.2	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.4	0.0	6.4	2.9	4.5	3.9	2.2	6.6	4.8	8.9	12.7	13.0
LnGrp Delay(d),s/veh	27.4	0.0	29.7	30.3	32.0	32.8	33.8	27.2	18.4	31.0	25.8	25.7
LnGrp LOS	C		C	C	C	C	C	C	B	C	C	C
Approach Vol, veh/h		282			401			786			1350	
Approach Delay, s/veh		28.9			31.5			26.1			27.7	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		18.5	11.7	29.6		15.4	19.3	22.0
Change Period (Y+Rc), s		5.0	5.0	6.5		5.5	5.0	6.5
Max Green Setting (Gmax), s		24.0	9.0	41.0		24.0	23.0	27.0
Max Q Clear Time (g_c+I1), s		8.9	4.4	18.0		7.0	12.5	9.7
Green Ext Time (p_c), s		1.3	0.0	5.2		1.7	1.7	4.1

Intersection Summary	
HCM 2010 Ctrl Delay	27.9
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	9	691	5	3	530	0	41	8	14	34	144	12
Future Volume (vph)	9	691	5	3	530	0	41	8	14	34	144	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		5.0	6.0	6.0			5.0	5.0		5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97			1.00	0.97		1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00			1.00	1.00		1.00
Frt	1.00	1.00		1.00	1.00	0.85			1.00	0.85		0.99
Flt Protected	0.95	1.00		0.95	1.00	1.00			0.98	1.00		0.96
Satd. Flow (prot)	1762	3539		1770	3539	1536			1828	1533		1763
Flt Permitted	0.95	1.00		0.95	1.00	1.00			0.88	1.00		0.74
Satd. Flow (perm)	1762	3539		1770	3539	1536			1632	1533		1361
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	751	5	3	576	0	45	9	15	37	157	13
RTOR Reduction (vph)	0	0	0	0	0	29	0	0	0	29	0	0
Lane Group Flow (vph)	10	751	0	8	576	16	0	0	24	8	0	184
Confl. Peds. (#/hr)	6						6			3	3	
Confl. Bikes (#/hr)										16		
Turn Type	Prot	NA	Prot	Prot	NA	Perm		Perm	NA	Perm	Perm	NA
Protected Phases	5	2	1	1	6				8			4
Permitted Phases						6		8		8	4	
Actuated Green, G (s)	0.5	24.1		0.5	23.1	23.1			13.3	13.3		13.3
Effective Green, g (s)	0.5	24.1		0.5	23.1	23.1			13.3	13.3		13.3
Actuated g/C Ratio	0.01	0.37		0.01	0.35	0.35			0.20	0.20		0.20
Clearance Time (s)	6.0	6.0		5.0	6.0	6.0			5.0	5.0		5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0			3.0	3.0		3.0
Lane Grp Cap (vph)	13	1300		13	1246	540			330	310		275
v/s Ratio Prot	c0.01	c0.21		0.00	0.16							
v/s Ratio Perm						0.01			0.01	0.00		c0.14
v/c Ratio	0.77	0.58		0.62	0.46	0.03			0.07	0.02		0.67
Uniform Delay, d1	32.5	16.7		32.5	16.4	13.9			21.2	21.0		24.1
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00		1.00
Incremental Delay, d2	128.6	0.6		64.0	0.3	0.0			0.1	0.0		6.1
Delay (s)	161.1	17.3		96.5	16.7	13.9			21.3	21.0		30.2
Level of Service	F	B		F	B	B			C	C		C
Approach Delay (s)		19.2			17.5				21.1			30.2
Approach LOS		B			B				C			C

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	65.6	Sum of lost time (s)	27.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR2	SEL	SER2	NEL2	NEL	NER
Lane Configurations						
Traffic Volume (vph)	13	3	3	1	0	17
Future Volume (vph)	13	3	3	1	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	
Lane Util. Factor		1.00			1.00	
Frpb, ped/bikes		1.00			0.93	
Flpb, ped/bikes		1.00			1.00	
Frt		0.93			0.87	
Flt Protected		0.98			1.00	
Satd. Flow (prot)		1695			1513	
Flt Permitted		0.98			1.00	
Satd. Flow (perm)		1695			1513	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	3	3	1	0	18
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	6	0	0	19	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)	3					
Turn Type		Prot		Perm	Prot	
Protected Phases		7			3	
Permitted Phases				3		
Actuated Green, G (s)		0.7			1.0	
Effective Green, g (s)		0.7			1.0	
Actuated g/C Ratio		0.01			0.02	
Clearance Time (s)		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		18			23	
v/s Ratio Prot		c0.00				
v/s Ratio Perm					0.01	
v/c Ratio		0.33			0.83	
Uniform Delay, d1		32.2			32.2	
Progression Factor		1.00			1.00	
Incremental Delay, d2		10.6			110.0	
Delay (s)		42.8			142.2	
Level of Service		D			F	
Approach Delay (s)		42.8			142.2	
Approach LOS		D			F	

Intersection Summary

HCM 2010 methodology does not support more than 4 approaches.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1047	83	230	619	21	46	1	151	11	0	3
Future Volume (vph)	12	1047	83	230	619	21	46	1	151	11	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (prot)	1768	3496		1770	5055			1763	1546		1767	1545
Flt Permitted	0.95	1.00		0.95	1.00			0.73	1.00		0.72	1.00
Satd. Flow (perm)	1768	3496		1770	5055			1346	1546		1344	1545
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	14	1190	94	261	703	24	52	1	172	12	0	3
RTOR Reduction (vph)	0	5	0	0	2	0	0	0	148	0	0	3
Lane Group Flow (vph)	14	1279	0	261	725	0	0	53	24	0	13	0
Confl. Peds. (#/hr)	1		3	3		1	7		2	2		7
Confl. Bikes (#/hr)			3			13			6			3
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	0.7	38.5		13.1	50.9			10.8	10.8		10.8	10.8
Effective Green, g (s)	0.7	38.5		13.1	50.9			10.8	10.8		10.8	10.8
Actuated g/C Ratio	0.01	0.49		0.17	0.65			0.14	0.14		0.14	0.14
Clearance Time (s)	6.0	6.0		6.0	6.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	15	1716		295	3281			185	212		185	212
v/s Ratio Prot	0.01	c0.37		c0.15	0.14							
v/s Ratio Perm								c0.04	0.02		0.01	0.00
v/c Ratio	0.93	0.75		0.88	0.22			0.29	0.11		0.07	0.00
Uniform Delay, d1	38.8	16.0		31.9	5.6			30.3	29.6		29.4	29.2
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	197.1	1.8		25.4	0.0			0.9	0.2		0.2	0.0
Delay (s)	235.9	17.8		57.3	5.7			31.2	29.8		29.6	29.2
Level of Service	F	B		E	A			C	C		C	C
Approach Delay (s)		20.2			19.3			30.2			29.5	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	78.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	1047	83	230	619	21	46	1	151	11	0	3
Future Volume (veh/h)	12	1047	83	230	619	21	46	1	151	11	0	3
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	14	1190	94	261	703	24	52	1	172	12	0	3
Adj No. of Lanes	1	2	0	1	3	0	0	1	1	0	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	23	1217	96	256	2512	85	80	1	481	81	0	482
Arrive On Green	0.01	0.37	0.37	0.14	0.50	0.50	0.31	0.31	0.31	0.31	0.00	0.31
Sat Flow, veh/h	1774	3319	262	1774	5044	172	3	3	1547	2	0	1551
Grp Volume(v), veh/h	14	634	650	261	472	255	53	0	172	12	0	3
Grp Sat Flow(s),veh/h/ln	1774	1770	1811	1774	1695	1826	5	0	1547	2	0	1551
Q Serve(g_s), s	0.7	31.8	31.9	13.0	7.3	7.3	0.1	0.0	7.8	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.7	31.8	31.9	13.0	7.3	7.3	28.0	0.0	7.8	28.0	0.0	0.1
Prop In Lane	1.00		0.14	1.00		0.09	0.98		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	23	649	664	256	1688	909	81	0	481	81	0	482
V/C Ratio(X)	0.60	0.98	0.98	1.02	0.28	0.28	0.66	0.00	0.36	0.15	0.00	0.01
Avail Cap(c_a), veh/h	79	649	664	256	1688	909	81	0	481	81	0	482
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.2	28.1	28.2	38.5	13.2	13.2	44.6	0.0	24.0	45.0	0.0	21.4
Incr Delay (d2), s/veh	22.5	29.4	29.6	61.0	0.1	0.2	17.4	0.0	0.4	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	28.3	28.9	19.2	6.2	6.7	3.1	0.0	6.0	0.6	0.0	0.1
LnGrp Delay(d),s/veh	66.6	57.5	57.8	99.6	13.3	13.3	62.0	0.0	24.5	45.8	0.0	21.4
LnGrp LOS	E	E	E	F	B	B	E		C	D		C
Approach Vol, veh/h		1298			988			225			15	
Approach Delay, s/veh		57.7			36.1			33.3			40.9	
Approach LOS		E			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.0	39.0		32.0	7.2	50.8		32.0
Change Period (Y+Rc), s	6.0	6.0		4.0	6.0	6.0		4.0
Max Green Setting (Gmax), s	13.0	33.0		28.0	4.0	42.0		28.0
Max Q Clear Time (g_c+I1), s	15.0	33.9		30.0	2.7	9.3		30.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	5.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	47.0
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	1189	87	143	591	34	335	26	500	5	2	10
Future Volume (vph)	18	1189	87	143	591	34	335	26	500	5	2	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		0.95	0.95	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	0.99	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.96	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1770	4986		1641	5035		1547	1563	1468	1681	1661	1553
Flt Permitted	0.95	1.00		0.95	1.00		0.76	0.75	1.00	0.25	0.62	1.00
Satd. Flow (perm)	1770	4986		1641	5035		1230	1229	1468	442	1055	1553
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	20	1336	98	161	664	38	376	29	562	6	2	11
RTOR Reduction (vph)	0	8	0	0	6	0	0	0	249	0	0	9
Lane Group Flow (vph)	20	1426	0	161	696	0	203	202	313	4	4	2
Confl. Peds. (#/hr)	1		5	5		1	4					4
Confl. Bikes (#/hr)			23			14						
Heavy Vehicles (%)	2%	2%	10%	10%	2%	2%	10%	10%	10%	2%	10%	2%
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	Perm
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	2.4	34.9		14.1	46.6		19.0	19.0	33.1	16.0	16.0	16.0
Effective Green, g (s)	2.4	34.9		14.1	46.6		19.0	19.0	33.1	16.0	16.0	16.0
Actuated g/C Ratio	0.02	0.35		0.14	0.47		0.19	0.19	0.33	0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	42	1740		231	2346		233	233	544	70	168	248
v/s Ratio Prot	0.01	c0.29		c0.10	0.14				0.08			
v/s Ratio Perm							c0.17	0.16	0.13	c0.01	0.00	0.00
v/c Ratio	0.48	0.82		0.70	0.30		0.87	0.87	0.58	0.06	0.02	0.01
Uniform Delay, d1	48.2	29.7		40.9	16.5		39.3	39.3	27.6	35.6	35.4	35.3
Progression Factor	1.00	1.00		1.37	0.49		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.3	4.5		7.3	0.3		33.2	32.6	1.5	1.6	0.3	0.1
Delay (s)	56.5	34.1		63.5	8.4		72.5	71.9	29.1	37.2	35.7	35.4
Level of Service	E	C		E	A		E	E	C	D	D	D
Approach Delay (s)		34.4			18.6			47.2			35.8	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	1189	87	143	591	34	335	26	500	5	2	10
Future Volume (veh/h)	18	1189	87	143	591	34	335	26	500	5	2	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1853	1900	1727	1863	1900	1727	1727	1727	1863	1792	1863
Adj Flow Rate, veh/h	20	1336	98	161	664	38	397	0	562	4	5	11
Adj No. of Lanes	1	3	0	1	3	0	2	0	1	1	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	10	2	2	10	10	10	2	10	2
Cap, veh/h	461	2759	202	188	2112	120	626	0	445	232	341	299
Arrive On Green	0.26	0.58	0.58	0.23	0.86	0.86	0.19	0.00	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1774	4794	352	1645	4911	279	2565	0	1459	842	1792	1573
Grp Volume(v), veh/h	20	940	494	161	457	245	397	0	562	4	5	11
Grp Sat Flow(s),veh/h/ln	1774	1686	1774	1645	1695	1801	1282	0	1459	842	1792	1573
Q Serve(g_s), s	0.8	16.4	16.4	9.4	2.6	2.6	14.9	0.0	19.0	0.4	0.2	0.6
Cycle Q Clear(g_c), s	0.8	16.4	16.4	9.4	2.6	2.6	15.1	0.0	19.0	0.4	0.2	0.6
Prop In Lane	1.00		0.20	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	461	1941	1021	188	1458	774	626	0	445	232	341	299
V/C Ratio(X)	0.04	0.48	0.48	0.85	0.31	0.32	0.63	0.00	1.26	0.02	0.01	0.04
Avail Cap(c_a), veh/h	461	1941	1021	263	1458	774	626	0	445	232	341	299
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.76	0.76	0.76	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	12.5	12.5	37.7	4.2	4.2	39.0	0.0	34.8	33.0	32.9	33.0
Incr Delay (d2), s/veh	0.0	0.9	1.6	13.8	0.4	0.8	4.9	0.0	134.9	0.1	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	12.4	13.2	8.1	2.2	2.5	9.6	0.0	52.2	0.2	0.2	0.5
LnGrp Delay(d),s/veh	27.7	13.4	14.1	51.6	4.6	5.0	43.9	0.0	169.7	33.1	33.0	33.3
LnGrp LOS	C	B	B	D	A	A	D		F	C	C	C
Approach Vol, veh/h		1454			863			959			20	
Approach Delay, s/veh		13.8			13.5			117.6			33.2	
Approach LOS		B			B			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.5	61.5		23.0	30.0	47.0		23.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	16.0	33.0		16.0	6.0	43.0		19.0
Max Q Clear Time (g_c+I1), s	11.4	18.4		2.6	2.8	4.6		21.0
Green Ext Time (p_c), s	0.2	8.2		0.0	0.0	5.0		0.0

Intersection Summary			
HCM 2010 Ctrl Delay			44.0
HCM 2010 LOS			D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	529	1165	0	0	645	116	123	2	153	0	0	0
Future Volume (vph)	529	1165	0	0	645	116	123	2	153	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0				
Lane Util. Factor	0.97	0.95			0.95		1.00	1.00				
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.98		1.00	0.85				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3183	3539			3407		1641	1471				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3183	3539			3407		1641	1471				
Peak-hour factor, PHF	0.84	0.84	0.92	0.92	0.84	0.84	0.84	0.84	0.84	0.92	0.92	0.92
Adj. Flow (vph)	630	1387	0	0	768	138	146	2	182	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	72	0	0	0	0
Lane Group Flow (vph)	630	1387	0	0	893	0	146	112	0	0	0	0
Confl. Peds. (#/hr)	1		9	9		1						
Confl. Bikes (#/hr)			10			15						
Heavy Vehicles (%)	10%	2%	2%	2%	2%	10%	10%	10%	10%	2%	2%	2%
Turn Type	Prot	NA			NA		Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases												
Actuated Green, G (s)	30.0	78.0			44.0		14.0	14.0				
Effective Green, g (s)	30.0	78.0			44.0		14.0	14.0				
Actuated g/C Ratio	0.30	0.78			0.44		0.14	0.14				
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	954	2760			1499		229	205				
v/s Ratio Prot	c0.20	0.39			c0.26		c0.09	0.08				
v/s Ratio Perm												
v/c Ratio	0.66	0.50			0.60		0.64	0.55				
Uniform Delay, d1	30.6	4.0			21.2		40.6	40.0				
Progression Factor	0.41	0.28			0.53		1.00	1.00				
Incremental Delay, d2	1.1	0.4			1.7		5.7	2.9				
Delay (s)	13.6	1.5			12.8		46.3	43.0				
Level of Service	B	A			B		D	D				
Approach Delay (s)		5.3			12.8			44.5			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	529	1165	0	0	645	116	123	2	153	0	0	0
Future Volume (veh/h)	529	1165	0	0	645	116	123	2	153	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1727	1863	0	0	1841	1900	1727	1727	1900			
Adj Flow Rate, veh/h	630	1387	0	0	768	138	146	2	182			
Adj No. of Lanes	2	2	0	0	2	0	1	1	0			
Peak Hour Factor	0.84	0.84	0.92	0.92	0.84	0.84	0.84	0.84	0.84			
Percent Heavy Veh, %	10	2	0	0	2	2	10	10	10			
Cap, veh/h	1088	2728	0	0	1151	207	245	2	217			
Arrive On Green	0.68	1.00	0.00	0.00	0.13	0.13	0.15	0.15	0.15			
Sat Flow, veh/h	3191	3632	0	0	3044	530	1645	16	1455			
Grp Volume(v), veh/h	630	1387	0	0	455	451	146	0	184			
Grp Sat Flow(s),veh/h/ln	1596	1770	0	0	1749	1734	1645	0	1471			
Q Serve(g_s), s	10.4	0.0	0.0	0.0	24.8	24.8	8.3	0.0	12.2			
Cycle Q Clear(g_c), s	10.4	0.0	0.0	0.0	24.8	24.8	8.3	0.0	12.2			
Prop In Lane	1.00		0.00	0.00		0.31	1.00		0.99			
Lane Grp Cap(c), veh/h	1088	2728	0	0	682	676	245	0	219			
V/C Ratio(X)	0.58	0.51	0.00	0.00	0.67	0.67	0.59	0.00	0.84			
Avail Cap(c_a), veh/h	1088	2728	0	0	682	676	313	0	279			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.51	0.51	0.00	0.00	0.91	0.91	1.00	0.00	1.00			
Uniform Delay (d), s/veh	12.1	0.0	0.0	0.0	37.4	37.4	39.7	0.0	41.4			
Incr Delay (d2), s/veh	0.4	0.4	0.0	0.0	4.7	4.7	2.3	0.0	16.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	6.9	0.2	0.0	0.0	18.5	18.4	7.1	0.0	9.9			
LnGrp Delay(d),s/veh	12.5	0.4	0.0	0.0	42.0	42.1	42.0	0.0	57.6			
LnGrp LOS	B	A			D	D	D		E			
Approach Vol, veh/h		2017			906			330				
Approach Delay, s/veh		4.2			42.1			50.7				
Approach LOS		A			D			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		81.1			38.1	43.0		18.9
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		73.0			30.0	39.0		19.0
Max Q Clear Time (g_c+I1), s		2.0			12.4	26.8		14.2
Green Ext Time (p_c), s		15.7			2.8	4.5		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	19.4
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	705	33	552	10	13	10	168	315	10	10	450	560
Future Volume (vph)	705	33	552	10	13	10	168	315	10	10	450	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95			0.95	0.88
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00			1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1681	1693	1556	1770	1719		1770	3518			3535	2764
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00			0.94	1.00
Satd. Flow (perm)	1681	1693	1556	1770	1719		1770	3518			3340	2764
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	783	37	613	11	14	11	187	350	11	11	500	622
RTOR Reduction (vph)	0	0	194	0	11	0	0	2	0	0	0	0
Lane Group Flow (vph)	407	413	419	11	14	0	187	359	0	0	511	622
Confl. Peds. (#/hr)			6	6			5		6	6		
Confl. Bikes (#/hr)						3			9			9
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Perm	NA	pm+ov
Protected Phases	8	8	1	4	4		1	6			2	8
Permitted Phases			8							2		2
Actuated Green, G (s)	43.7	43.7	58.2	4.3	4.3		14.5	40.0			21.5	65.2
Effective Green, g (s)	43.7	43.7	58.2	4.3	4.3		14.5	40.0			21.5	65.2
Actuated g/C Ratio	0.44	0.44	0.58	0.04	0.04		0.14	0.40			0.22	0.65
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	734	739	967	76	73		256	1407			718	1802
v/s Ratio Prot	0.24	c0.24	0.06	0.01	c0.01		c0.11	0.10				0.15
v/s Ratio Perm			0.21								c0.15	0.07
v/c Ratio	0.55	0.56	0.43	0.14	0.20		0.73	0.25			0.71	0.35
Uniform Delay, d1	20.9	21.0	11.7	46.1	46.2		40.9	20.0			36.4	7.8
Progression Factor	0.65	0.65	0.51	1.00	1.00		1.00	1.00			0.65	0.45
Incremental Delay, d2	2.6	2.7	0.3	0.9	1.3		10.2	0.4			5.5	0.5
Delay (s)	16.2	16.2	6.3	47.0	47.5		51.1	20.5			29.2	4.0
Level of Service	B	B	A	D	D		D	C			C	A
Approach Delay (s)		11.9			47.4			30.9			15.4	
Approach LOS		B			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	705	33	552	10	13	10	168	315	10	10	450	560
Future Volume (veh/h)	705	33	552	10	13	10	168	315	10	10	450	560
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.96	0.99		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	809	0	613	11	14	11	187	350	11	11	500	622
Adj No. of Lanes	2	0	1	1	1	0	1	2	0	0	2	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	1135	0	701	284	153	120	221	1399	44	44	805	1518
Arrive On Green	0.32	0.00	0.32	0.16	0.16	0.16	0.12	0.40	0.40	0.08	0.08	0.08
Sat Flow, veh/h	3548	0	1574	1774	955	751	1774	3499	110	29	3420	2657
Grp Volume(v), veh/h	809	0	613	11	0	25	187	177	184	273	238	622
Grp Sat Flow(s),veh/h/ln	1774	0	1574	1774	0	1706	1774	1770	1839	1838	1610	1329
Q Serve(g_s), s	20.1	0.0	32.0	0.5	0.0	1.2	10.3	6.7	6.7	0.0	14.3	13.6
Cycle Q Clear(g_c), s	20.1	0.0	32.0	0.5	0.0	1.2	10.3	6.7	6.7	14.2	14.3	13.6
Prop In Lane	1.00		1.00	1.00		0.44	1.00		0.06	0.04		1.00
Lane Grp Cap(c), veh/h	1135	0	701	284	0	273	221	708	735	470	379	1518
V/C Ratio(X)	0.71	0.00	0.87	0.04	0.00	0.09	0.85	0.25	0.25	0.58	0.63	0.41
Avail Cap(c_a), veh/h	1135	0	701	284	0	273	284	708	735	470	379	1518
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.86	0.00	0.86	1.00	0.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90
Uniform Delay (d), s/veh	29.9	0.0	25.3	35.5	0.0	35.8	42.8	20.0	20.0	41.8	41.9	15.6
Incr Delay (d2), s/veh	3.3	0.0	12.5	0.1	0.0	0.1	16.8	0.8	0.8	4.6	6.9	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	15.2	0.0	24.1	0.5	0.0	1.1	10.1	6.1	6.4	12.3	11.3	13.4
LnGrp Delay(d),s/veh	33.2	0.0	37.8	35.6	0.0	35.9	59.7	20.8	20.8	46.4	48.8	16.3
LnGrp LOS	C		D	D		D	E	C	C	D	D	B
Approach Vol, veh/h		1422			36			548			1133	
Approach Delay, s/veh		35.2			35.8			34.1			30.4	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	16.4	27.6		20.0		44.0		36.0
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s	16.0	20.0		16.0		40.0		32.0
Max Q Clear Time (g_c+I1), s	12.3	16.3		3.2		8.7		34.0
Green Ext Time (p_c), s	0.2	2.2		0.1		2.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	33.3
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
7: Higuera & Madonna
Near Term Plus Project AM 2025
02/26/2018

User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Central Coast Transportation Consulting
Synchro 10 Report

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	17	947	77	28	1000
Future Vol, veh/h	26	17	947	77	28	1000
Conflicting Peds, #/hr	0	0	0	8	8	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	175	-	50	60	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	18	1029	84	30	1087

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1641	523	0	0	1121	0
Stage 1	1037	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	91	499	-	-	619	-
Stage 1	303	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	86	495	-	-	614	-
Mov Cap-2 Maneuver	199	-	-	-	-	-
Stage 1	286	-	-	-	-	-
Stage 2	508	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.8	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	199	495	614	-
HCM Lane V/C Ratio	-	-	0.142	0.037	0.05	-
HCM Control Delay (s)	-	-	26.1	12.6	11.2	-
HCM Lane LOS	-	-	D	B	B	-
HCM 95th %tile Q(veh)	-	-	0.5	0.1	0.2	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	2	51	56	3	22	47	941	71	37	998	20
Future Volume (vph)	12	2	51	56	3	22	47	941	71	37	998	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.98		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1754	1863	1583	1770	1585		1769	3539	1544	1769	3539	1553
Flt Permitted	0.74	1.00	1.00	0.76	1.00		0.23	1.00	1.00	0.25	1.00	1.00
Satd. Flow (perm)	1366	1863	1583	1409	1585		420	3539	1544	459	3539	1553
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	2	57	62	3	24	52	1046	79	41	1109	22
RTOR Reduction (vph)	0	0	51	0	22	0	0	0	25	0	0	7
Lane Group Flow (vph)	13	2	6	62	5	0	52	1046	54	41	1109	15
Confl. Peds. (#/hr)	6					6	4		2	2		4
Confl. Bikes (#/hr)												4
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Actuated Green, G (s)	7.8	7.8	7.8	7.8	7.8		57.8	54.2	54.2	56.6	53.6	53.6
Effective Green, g (s)	7.8	7.8	7.8	7.8	7.8		57.8	54.2	54.2	56.6	53.6	53.6
Actuated g/C Ratio	0.10	0.10	0.10	0.10	0.10		0.72	0.68	0.68	0.71	0.67	0.67
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	133	181	154	137	154		364	2397	1046	373	2371	1040
v/s Ratio Prot		0.00			0.00		c0.01	0.30		0.00	c0.31	
v/s Ratio Perm	0.01		0.00	c0.04			0.10		0.03	0.07		0.01
v/c Ratio	0.10	0.01	0.04	0.45	0.03		0.14	0.44	0.05	0.11	0.47	0.01
Uniform Delay, d1	32.9	32.6	32.7	34.1	32.7		5.8	5.9	4.3	5.6	6.3	4.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.0	0.1	2.4	0.1		0.2	0.6	0.1	0.1	0.7	0.0
Delay (s)	33.2	32.6	32.8	36.5	32.8		6.0	6.5	4.4	5.8	7.0	4.4
Level of Service	C	C	C	D	C		A	A	A	A	A	A
Approach Delay (s)		32.9			35.3			6.3			6.9	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	2	51	56	3	22	47	941	71	37	998	20
Future Volume (veh/h)	12	2	51	56	3	22	47	941	71	37	998	20
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	0.98		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	13	2	0	62	3	24	52	1046	79	41	1109	22
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	179	153	130	202	14	115	620	1858	828	610	1814	798
Arrive On Green	0.08	0.08	0.00	0.08	0.08	0.08	0.22	0.52	0.52	0.21	0.51	0.51
Sat Flow, veh/h	1352	1863	1583	1379	175	1403	1774	3539	1577	1774	3539	1558
Grp Volume(v), veh/h	13	2	0	62	0	27	52	1046	79	41	1109	22
Grp Sat Flow(s),veh/h/ln	1352	1863	1583	1379	0	1578	1774	1770	1577	1774	1770	1558
Q Serve(g_s), s	0.7	0.1	0.0	3.5	0.0	1.3	0.0	15.9	2.0	0.0	17.8	0.6
Cycle Q Clear(g_c), s	2.0	0.1	0.0	3.5	0.0	1.3	0.0	15.9	2.0	0.0	17.8	0.6
Prop In Lane	1.00		1.00	1.00		0.89	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	179	153	130	202	0	130	620	1858	828	610	1814	798
V/C Ratio(X)	0.07	0.01	0.00	0.31	0.00	0.21	0.08	0.56	0.10	0.07	0.61	0.03
Avail Cap(c_a), veh/h	372	419	356	399	0	355	620	1858	828	610	1814	798
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	0.83	0.83	0.83	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.2	33.7	0.0	35.4	0.0	34.3	10.8	12.8	9.5	10.1	13.8	9.6
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.9	0.0	0.8	0.0	1.0	0.2	0.0	1.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	0.1	0.0	2.5	0.0	1.1	1.1	12.2	1.6	0.9	13.9	0.5
LnGrp Delay(d),s/veh	35.4	33.8	0.0	36.2	0.0	35.1	10.9	13.8	9.7	10.1	15.4	9.7
LnGrp LOS	D	C		D		D	B	B	A	B	B	A
Approach Vol, veh/h		15			89			1177			1172	
Approach Delay, s/veh		35.2			35.9			13.4			15.1	
Approach LOS		D			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.4	47.0		10.6	21.4	48.0		10.6
Change Period (Y+Rc), s	5.0	6.0		4.0	5.0	6.0		4.0
Max Green Setting (Gmax), s	6.0	41.0		18.0	5.0	42.0		18.0
Max Q Clear Time (g_c+I1), s	2.0	19.8		5.5	2.0	17.9		4.0
Green Ext Time (p_c), s	0.0	7.9		0.2	0.0	8.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	433	210	122	536	1122	105
Future Volume (vph)	433	210	122	536	1122	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	3083		1641	3539	3539	1445
Flt Permitted	0.97		0.95	1.00	1.00	1.00
Satd. Flow (perm)	3083		1641	3539	3539	1445
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	461	223	130	570	1194	112
RTOR Reduction (vph)	62	0	0	0	0	31
Lane Group Flow (vph)	622	0	130	570	1194	81
Confl. Bikes (#/hr)						5
Heavy Vehicles (%)	10%	10%	10%	2%	2%	10%
Turn Type	Prot		Prot	NA	NA	pm+ov
Protected Phases	3		1	6	2	3
Permitted Phases						2
Actuated Green, G (s)	21.6		10.9	61.7	47.3	68.9
Effective Green, g (s)	21.1		10.4	63.7	49.3	67.9
Actuated g/C Ratio	0.21		0.10	0.64	0.49	0.68
Clearance Time (s)	3.5		3.5	6.0	6.0	3.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	650		170	2254	1744	981
v/s Ratio Prot	c0.20		c0.08	0.16	c0.34	0.02
v/s Ratio Perm						0.04
v/c Ratio	0.96		0.76	0.25	0.68	0.08
Uniform Delay, d1	39.0		43.6	7.9	19.4	5.5
Progression Factor	1.00		1.00	1.00	0.39	0.38
Incremental Delay, d2	24.9		18.3	0.3	1.5	0.0
Delay (s)	64.0		61.9	8.1	9.1	2.1
Level of Service	E		E	A	A	A
Approach Delay (s)	64.0			18.1	8.5	
Approach LOS	E			B	A	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	158	84	1100	283	75	571
Future Volume (vph)	158	84	1100	283	75	571
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.98	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.97		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1545	3413		1769	3539
Flt Permitted	0.95	1.00	1.00		0.13	1.00
Satd. Flow (perm)	1770	1545	3413		243	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	172	91	1196	308	82	621
RTOR Reduction (vph)	0	66	20	0	0	0
Lane Group Flow (vph)	172	25	1484	0	82	621
Confl. Peds. (#/hr)		6		1	1	
Confl. Bikes (#/hr)		5		6		
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	12.9	12.9	51.9		51.9	51.9
Effective Green, g (s)	12.9	12.9	51.9		51.9	51.9
Actuated g/C Ratio	0.17	0.17	0.68		0.68	0.68
Clearance Time (s)	5.0	5.0	6.0		6.0	6.0
Vehicle Extension (s)	2.0	2.0	5.5		5.5	5.5
Lane Grp Cap (vph)	301	262	2336		166	2423
v/s Ratio Prot	c0.10		c0.43			0.18
v/s Ratio Perm		0.02			0.34	
v/c Ratio	0.57	0.09	0.64		0.49	0.26
Uniform Delay, d1	28.9	26.5	6.7		5.7	4.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.6	0.1	0.9		5.6	0.1
Delay (s)	30.5	26.6	7.5		11.3	4.7
Level of Service	C	C	A		B	A
Approach Delay (s)	29.2		7.5			5.5
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	75.8	Sum of lost time (s)	11.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	158	84	1100	283	75	571
Future Volume (veh/h)	158	84	1100	283	75	571
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	172	91	1196	308	82	621
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	234	209	1940	492	273	2468
Arrive On Green	0.13	0.13	0.70	0.70	0.70	0.70
Sat Flow, veh/h	1774	1583	2875	706	347	3632
Grp Volume(v), veh/h	172	91	754	750	82	621
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1718	347	1770
Q Serve(g_s), s	6.0	3.4	14.5	15.1	10.7	4.1
Cycle Q Clear(g_c), s	6.0	3.4	14.5	15.1	25.8	4.1
Prop In Lane	1.00	1.00		0.41	1.00	
Lane Grp Cap(c), veh/h	234	209	1234	1198	273	2468
V/C Ratio(X)	0.74	0.44	0.61	0.63	0.30	0.25
Avail Cap(c_a), veh/h	661	590	1512	1468	327	3024
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	25.7	5.1	5.2	12.2	3.6
Incr Delay (d2), s/veh	1.7	0.5	1.4	1.5	1.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.4	2.7	11.8	11.8	2.0	3.7
LnGrp Delay(d),s/veh	28.6	26.3	6.5	6.7	13.8	3.7
LnGrp LOS	C	C	A	A	B	A
Approach Vol, veh/h	263		1504			703
Approach Delay, s/veh	27.8		6.6			4.9
Approach LOS	C		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		50.9				50.9		13.5
Change Period (Y+Rc), s		6.0				6.0		5.0
Max Green Setting (Gmax), s		55.0				55.0		24.0
Max Q Clear Time (g_c+I1), s		17.1				27.8		8.0
Green Ext Time (p_c), s		27.8				11.4		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	8.4
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	10	30	377	10	262	20	530	733	250	355	10
Future Volume (vph)	30	10	30	377	10	262	20	530	733	250	355	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.96	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1796	1556	1681	1690	1556	1770	3539	1569	1770	3521	
Flt Permitted		0.96	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1796	1556	1681	1690	1556	1770	3539	1569	1770	3521	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	11	32	405	11	282	22	570	788	269	382	11
RTOR Reduction (vph)	0	0	30	0	0	224	0	0	323	0	2	0
Lane Group Flow (vph)	0	43	2	207	209	58	22	570	465	269	391	0
Confl. Peds. (#/hr)			1	1			3		3	3		3
Confl. Bikes (#/hr)			1			5						10
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		4	4		5	2	4	1	6	
Permitted Phases			8			4			2			
Actuated Green, G (s)		5.5	5.5	19.0	19.0	19.0	1.7	26.1	45.1	19.3	43.7	
Effective Green, g (s)		5.5	5.5	19.0	19.0	19.0	1.7	26.1	45.1	19.3	43.7	
Actuated g/C Ratio		0.06	0.06	0.20	0.20	0.20	0.02	0.28	0.49	0.21	0.47	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	5.0	2.0	3.5	5.0	
Lane Grp Cap (vph)		106	92	343	345	318	32	994	863	367	1656	
v/s Ratio Prot		c0.02		0.12	0.12		0.01	0.16	c0.11	c0.15	0.11	
v/s Ratio Perm			0.00			0.04			0.19			
v/c Ratio		0.41	0.02	0.60	0.61	0.18	0.69	0.57	0.54	0.73	0.24	
Uniform Delay, d1		42.1	41.2	33.5	33.5	30.5	45.3	28.6	16.7	34.4	14.7	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.9	0.0	2.1	2.1	0.1	39.1	1.3	0.3	7.6	0.2	
Delay (s)		43.0	41.2	35.6	35.6	30.6	84.5	29.9	17.0	42.0	14.8	
Level of Service		D	D	D	D	C	F	C	B	D	B	
Approach Delay (s)		42.3			33.6			23.4			25.9	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	92.9	Sum of lost time (s)	23.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	10	30	377	10	262	20	530	733	250	355	10
Future Volume (veh/h)	30	10	30	377	10	262	20	530	733	250	355	10
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	32	11	32	413	0	0	22	570	788	269	382	11
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	25	83	533	0	238	43	1155	752	322	1698	49
Arrive On Green	0.08	0.05	0.05	0.15	0.00	0.00	0.02	0.33	0.33	0.18	0.48	0.48
Sat Flow, veh/h	1336	459	1551	3548	0	1583	1774	3539	1576	1774	3511	101
Grp Volume(v), veh/h	43	0	32	413	0	0	22	570	788	269	192	201
Grp Sat Flow(s),veh/h/ln	1796	0	1551	1774	0	1583	1774	1770	1576	1774	1770	1843
Q Serve(g_s), s	1.8	0.0	1.6	8.9	0.0	0.0	1.0	10.3	26.0	11.7	5.0	5.0
Cycle Q Clear(g_c), s	1.8	0.0	1.6	8.9	0.0	0.0	1.0	10.3	26.0	11.7	5.0	5.0
Prop In Lane	0.74		1.00	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	96	0	83	533	0	238	43	1155	752	322	856	891
V/C Ratio(X)	0.45	0.00	0.39	0.77	0.00	0.00	0.51	0.49	1.05	0.84	0.22	0.23
Avail Cap(c_a), veh/h	496	0	428	1158	0	517	111	1155	752	512	977	1018
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.8	0.0	36.4	32.5	0.0	0.0	38.4	21.5	17.7	31.5	11.9	11.9
Incr Delay (d2), s/veh	1.2	0.0	1.1	0.9	0.0	0.0	3.5	0.7	45.9	7.7	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	0.0	1.3	7.9	0.0	0.0	0.9	8.8	46.6	10.5	4.5	4.7
LnGrp Delay(d),s/veh	37.1	0.0	37.5	33.5	0.0	0.0	41.9	22.2	63.6	39.2	12.2	12.2
LnGrp LOS	D		D	C			D	C	F	D	B	B
Approach Vol, veh/h		75			413			1380			662	
Approach Delay, s/veh		37.3			33.5			46.2			23.2	
Approach LOS		D			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.4	32.0		18.0	6.9	44.5		10.3
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0
Max Green Setting (Gmax), s	23.0	26.0		26.0	5.0	44.0		22.0
Max Q Clear Time (g_c+I1), s	13.7	28.0		10.9	3.0	7.0		3.8
Green Ext Time (p_c), s	0.8	0.0		0.9	0.0	4.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	37.8
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	102	60	326	120	464	90	1109	402	411	847	37
Future Volume (vph)	45	102	60	326	120	464	90	1109	402	411	847	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.5	5.5	5.5	5.0	6.5	5.5	5.0	6.5	
Lane Util. Factor	1.00	1.00		0.97	0.95	0.95	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99	0.98	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.94		1.00	0.91	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1740		3433	1590	1472	1770	5085	1552	3433	3509	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1740		3433	1590	1472	1770	5085	1552	3433	3509	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	46	105	62	336	124	478	93	1143	414	424	873	38
RTOR Reduction (vph)	0	17	0	0	45	236	0	0	196	0	3	0
Lane Group Flow (vph)	46	150	0	336	265	56	93	1143	218	424	908	0
Confl. Peds. (#/hr)	12		10	10			7		12	12		7
Confl. Bikes (#/hr)			3			8						7
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	2	2		6	6		3	8	6	7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	25.1	25.1		22.5	22.5	22.5	12.1	31.3	53.8	16.6	35.8	
Effective Green, g (s)	25.1	25.1		22.5	22.5	22.5	12.1	31.3	53.8	16.6	35.8	
Actuated g/C Ratio	0.21	0.21		0.19	0.19	0.19	0.10	0.27	0.46	0.14	0.30	
Clearance Time (s)	5.0	5.0		5.5	5.5	5.5	5.0	6.5	5.5	5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	378	371		657	304	281	182	1354	710	485	1069	
v/s Ratio Prot	0.03	c0.09		0.10	c0.17		0.05	0.22	0.06	c0.12	c0.26	
v/s Ratio Perm						0.04			0.08			
v/c Ratio	0.12	0.40		0.51	0.87	0.20	0.51	0.84	0.31	0.87	0.85	
Uniform Delay, d1	37.3	39.8		42.6	46.1	39.9	49.9	40.8	20.1	49.4	38.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	3.2		0.7	22.7	0.3	2.4	5.0	0.2	15.9	6.5	
Delay (s)	38.0	43.0		43.2	68.8	40.3	52.3	45.8	20.3	65.4	44.8	
Level of Service	D	D		D	E	D	D	D	C	E	D	
Approach Delay (s)		41.9			50.8			39.8			51.3	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	22.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	102	60	326	120	464	90	1109	402	411	847	37
Future Volume (veh/h)	45	102	60	326	120	464	90	1109	402	411	847	37
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.99	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	46	105	62	336	390	301	93	1143	414	424	873	38
Adj No. of Lanes	1	1	0	2	1	1	1	3	1	2	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	376	230	136	707	371	304	200	1336	726	479	996	43
Arrive On Green	0.21	0.21	0.21	0.20	0.20	0.20	0.11	0.26	0.26	0.14	0.29	0.29
Sat Flow, veh/h	1774	1085	640	3548	1863	1527	1774	5085	1562	3442	3447	150
Grp Volume(v), veh/h	46	0	167	336	390	301	93	1143	414	424	448	463
Grp Sat Flow(s),veh/h/ln	1774	0	1725	1774	1863	1527	1774	1695	1562	1721	1770	1827
Q Serve(g_s), s	2.5	0.0	10.0	9.9	23.5	23.2	5.8	25.2	22.9	14.3	28.4	28.4
Cycle Q Clear(g_c), s	2.5	0.0	10.0	9.9	23.5	23.2	5.8	25.2	22.9	14.3	28.4	28.4
Prop In Lane	1.00		0.37	1.00		1.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	376	0	366	707	371	304	200	1336	726	479	511	528
V/C Ratio(X)	0.12	0.00	0.46	0.48	1.05	0.99	0.46	0.86	0.57	0.88	0.88	0.88
Avail Cap(c_a), veh/h	376	0	366	707	371	304	200	1402	746	496	593	612
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.6	0.0	40.5	41.7	47.2	47.1	48.9	41.3	23.2	49.8	39.9	39.9
Incr Delay (d2), s/veh	0.7	0.0	4.1	0.5	60.5	48.3	1.7	5.3	1.0	16.8	12.6	12.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	5.1	4.9	18.2	13.8	2.9	12.4	13.5	7.9	15.7	16.2
LnGrp Delay(d),s/veh	38.2	0.0	44.6	42.2	107.7	95.4	50.6	46.6	24.2	66.6	52.5	52.2
LnGrp LOS	D		D	D	F	F	D	D	C	E	D	D
Approach Vol, veh/h		213			1027			1650			1335	
Approach Delay, s/veh		43.2			82.7			41.2			56.9	
Approach LOS		D			F			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		30.0	18.3	40.6		29.0	21.4	37.5
Change Period (Y+Rc), s		5.0	5.0	6.5		5.5	5.0	6.5
Max Green Setting (Gmax), s		25.0	10.0	39.5		23.5	17.0	32.5
Max Q Clear Time (g_c+I1), s		12.0	7.8	30.4		25.5	16.3	27.2
Green Ext Time (p_c), s		0.9	0.0	3.6		0.0	0.2	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	56.3
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	15	913	1	30	18	1047	8	164	4	0	38	113
Future Volume (vph)	15	913	1	30	18	1047	8	164	4	0	38	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0			4.0	4.0	
Lane Util. Factor	1.00	0.95			1.00	0.95	1.00			1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	1.00	0.97			1.00	0.98	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00			1.00	1.00	
Frt	1.00	1.00			1.00	1.00	0.85			1.00	0.85	
Flt Protected	0.95	1.00			0.95	1.00	1.00			0.95	1.00	
Satd. Flow (prot)	1766	3539			1770	3539	1534			1761	1556	
Flt Permitted	0.95	1.00			0.95	1.00	1.00			0.76	1.00	
Satd. Flow (perm)	1766	3539			1770	3539	1534			1418	1556	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	992	1	33	20	1138	9	178	4	0	41	123
RTOR Reduction (vph)	0	0	0	0	0	0	97	0	0	0	35	0
Lane Group Flow (vph)	16	993	0	0	53	1138	90	0	0	4	6	0
Confl. Peds. (#/hr)	6		9				6		6		5	5
Turn Type	Prot	NA		Prot	Prot	NA	Perm		Perm	NA	Perm	Perm
Protected Phases	5	2		1	1	6				8		
Permitted Phases							6		8		8	4
Actuated Green, G (s)	0.5	25.4			2.2	27.1	27.1			8.8	8.8	
Effective Green, g (s)	0.5	25.4			2.2	27.1	27.1			8.8	8.8	
Actuated g/C Ratio	0.01	0.43			0.04	0.45	0.45			0.15	0.15	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0			4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0			3.0	3.0	
Lane Grp Cap (vph)	14	1505			65	1606	696			209	229	
v/s Ratio Prot	0.01	0.28			c0.03	c0.32						
v/s Ratio Perm							0.06			0.00	0.00	
v/c Ratio	1.14	0.66			0.82	0.71	0.13			0.02	0.03	
Uniform Delay, d1	29.6	13.7			28.5	13.1	9.5			21.8	21.8	
Progression Factor	1.00	1.00			1.00	1.00	1.00			1.00	1.00	
Incremental Delay, d2	291.3	1.1			52.3	1.5	0.1			0.0	0.0	
Delay (s)	320.9	14.8			80.8	14.6	9.5			21.8	21.8	
Level of Service	F	B			F	B	A			C	C	
Approach Delay (s)		19.6				16.4				21.8		
Approach LOS		B				B				C		

Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	20.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBT	SBR	SBR2	SEL	SER2	NEL2	NEL	NER
Lane Configurations								
Traffic Volume (vph)	0	2	16	1	4	1	2	23
Future Volume (vph)	0	2	16	1	4	1	2	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0			4.0	
Lane Util. Factor	1.00			1.00			1.00	
Frpb, ped/bikes	1.00			0.98			0.99	
Flpb, ped/bikes	1.00			1.00			1.00	
Frt	0.98			0.89			0.88	
Flt Protected	0.96			0.99			0.99	
Satd. Flow (prot)	1740			1603			1609	
Flt Permitted	0.75			0.99			0.99	
Satd. Flow (perm)	1365			1603			1609	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2	17	1	4	1	2	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	142	0	0	5	0	0	28	0
Confl. Peds. (#/hr)		1		5	6	6		1
Turn Type	NA			Prot		Perm	Prot	
Protected Phases	4			7			3	
Permitted Phases						3		
Actuated Green, G (s)	8.8			0.9			2.4	
Effective Green, g (s)	8.8			0.9			2.4	
Actuated g/C Ratio	0.15			0.02			0.04	
Clearance Time (s)	4.0			4.0			4.0	
Vehicle Extension (s)	3.0			3.0			3.0	
Lane Grp Cap (vph)	201			24			64	
v/s Ratio Prot				c0.00				
v/s Ratio Perm	c0.10						0.02	
v/c Ratio	0.71			0.21			0.44	
Uniform Delay, d1	24.2			29.0			28.0	
Progression Factor	1.00			1.00			1.00	
Incremental Delay, d2	10.8			4.3			4.7	
Delay (s)	35.0			33.3			32.7	
Level of Service	C			C			C	
Approach Delay (s)	35.0			33.3			32.7	
Approach LOS	C			C			C	

Intersection Summary

HCM 2010 methodology does not support more than 4 approaches.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	897	244	395	1040	25	223	1	376	29	9	22
Future Volume (vph)	35	897	244	395	1040	25	223	1	376	29	9	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.91			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00	0.98		1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99	1.00		1.00	1.00
Frt	1.00	0.97		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (prot)	1770	3404		1770	5063			1765	1549		1793	1548
Flt Permitted	0.95	1.00		0.95	1.00			0.70	1.00		0.75	1.00
Satd. Flow (perm)	1770	3404		1770	5063			1294	1549		1393	1548
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	36	925	252	407	1072	26	230	1	388	30	9	23
RTOR Reduction (vph)	0	27	0	0	2	0	0	0	148	0	0	17
Lane Group Flow (vph)	36	1150	0	407	1096	0	0	231	240	0	39	6
Confl. Peds. (#/hr)	1		5	5		1	5		1	1		5
Confl. Bikes (#/hr)			22			22			10			6
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	3.2	34.6		9.3	40.7			20.0	20.0		20.0	20.0
Effective Green, g (s)	3.2	34.6		9.3	40.7			20.0	20.0		20.0	20.0
Actuated g/C Ratio	0.04	0.43		0.12	0.51			0.25	0.25		0.25	0.25
Clearance Time (s)	6.0	6.0		6.0	6.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	70	1474		206	2579			323	387		348	387
v/s Ratio Prot	0.02	c0.34		c0.23	0.22							
v/s Ratio Perm								c0.18	0.16		0.03	0.00
v/c Ratio	0.51	0.78		1.98	0.42			0.72	0.62		0.11	0.01
Uniform Delay, d1	37.6	19.4		35.3	12.3			27.3	26.6		23.1	22.5
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	6.2	2.8		456.1	0.1			7.3	3.1		0.1	0.0
Delay (s)	43.8	22.2		491.4	12.4			34.7	29.7		23.2	22.6
Level of Service	D	C		F	B			C	C		C	C
Approach Delay (s)		22.8			141.9			31.5			23.0	
Approach LOS		C			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	77.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	79.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	897	244	395	1040	25	223	1	376	29	9	22
Future Volume (veh/h)	35	897	244	395	1040	25	223	1	376	29	9	22
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	36	925	252	407	1072	26	230	1	388	30	9	23
Adj No. of Lanes	1	2	0	1	3	0	0	1	1	0	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	47	1059	288	185	2371	57	83	0	500	74	13	502
Arrive On Green	0.03	0.39	0.39	0.10	0.46	0.46	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1774	2733	743	1774	5101	124	0	0	1546	0	40	1551
Grp Volume(v), veh/h	36	598	579	407	712	386	231	0	388	39	0	23
Grp Sat Flow(s),veh/h/ln	1774	1770	1706	1774	1695	1834	0	0	1546	40	0	1551
Q Serve(g_s), s	1.7	27.1	27.2	9.0	12.3	12.3	0.0	0.0	19.6	0.0	0.0	0.9
Cycle Q Clear(g_c), s	1.7	27.1	27.2	9.0	12.3	12.3	28.0	0.0	19.6	28.0	0.0	0.9
Prop In Lane	1.00		0.44	1.00		0.07	1.00		1.00	0.77		1.00
Lane Grp Cap(c), veh/h	47	686	661	185	1575	852	83	0	500	87	0	502
V/C Ratio(X)	0.76	0.87	0.88	2.21	0.45	0.45	2.78	0.00	0.78	0.45	0.00	0.05
Avail Cap(c_a), veh/h	123	757	730	185	1575	852	83	0	500	87	0	502
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.8	24.5	24.6	38.8	15.7	15.7	43.3	0.0	26.4	34.1	0.0	20.1
Incr Delay (d2), s/veh	21.4	10.2	10.9	559.8	0.2	0.4	834.5	0.0	7.5	3.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	15.1	14.7	33.1	5.8	6.3	21.2	0.0	9.4	1.0	0.0	0.4
LnGrp Delay(d),s/veh	63.3	34.7	35.4	598.6	15.9	16.1	877.7	0.0	33.9	37.7	0.0	20.1
LnGrp LOS	E	C	D	F	B	B	F		C	D		C
Approach Vol, veh/h		1213			1505			619			62	
Approach Delay, s/veh		35.9			173.5			348.8			31.2	
Approach LOS		D			F			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	39.5		32.0	8.3	46.2		32.0
Change Period (Y+Rc), s	6.0	6.0		4.0	6.0	6.0		4.0
Max Green Setting (Gmax), s	9.0	37.0		28.0	6.0	40.0		28.0
Max Q Clear Time (g_c+I1), s	11.0	29.2		30.0	3.7	14.3		30.0
Green Ext Time (p_c), s	0.0	4.3		0.0	0.0	7.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	153.7
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	1255	212	185	999	17	584	10	300	20	12	19
Future Volume (vph)	24	1255	212	185	999	17	584	10	300	20	12	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		0.95	0.95	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	0.99	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.95	1.00	0.95	0.99	1.00
Satd. Flow (prot)	1770	4910		1770	5068		1545	1551	1456	1681	1749	1548
Flt Permitted	0.95	1.00		0.95	1.00		0.75	0.72	1.00	0.22	0.58	1.00
Satd. Flow (perm)	1770	4910		1770	5068		1212	1171	1456	393	1033	1548
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	25	1307	221	193	1041	18	608	10	312	21	12	20
RTOR Reduction (vph)	0	23	0	0	2	0	0	0	197	0	0	16
Lane Group Flow (vph)	25	1505	0	193	1057	0	310	308	116	17	17	4
Confl. Peds. (#/hr)	2		12	12		2	5					5
Confl. Bikes (#/hr)			27			23			1			1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	10%	2%	2%	2%
Turn Type	Prot	NA		Prot	NA		Perm	NA	pm+ov	Perm	NA	Perm
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	2.0	29.0		12.0	39.0		25.0	25.0	37.0	18.0	18.0	18.0
Effective Green, g (s)	2.0	29.0		12.0	39.0		25.0	25.0	37.0	18.0	18.0	18.0
Actuated g/C Ratio	0.02	0.29		0.12	0.39		0.25	0.25	0.37	0.18	0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	35	1423		212	1976		303	292	596	70	185	278
v/s Ratio Prot	0.01	c0.31		c0.11	0.21				0.02			
v/s Ratio Perm							0.26	c0.26	0.06	c0.04	0.02	0.00
v/c Ratio	0.71	1.06		0.91	0.54		1.02	1.05	0.19	0.24	0.09	0.01
Uniform Delay, d1	48.7	35.5		43.5	23.5		37.5	37.5	21.4	35.2	34.2	33.7
Progression Factor	1.00	1.00		1.06	0.37		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	51.0	40.6		28.6	0.7		57.8	67.8	0.2	8.1	1.0	0.1
Delay (s)	99.7	76.1		74.7	9.5		95.3	105.3	21.5	43.2	35.2	33.8
Level of Service	F	E		E	A		F	F	C	D	D	C
Approach Delay (s)		76.5			19.5			73.8			37.2	
Approach LOS		E			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	56.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	1255	212	185	999	17	584	10	300	20	12	19
Future Volume (veh/h)	24	1255	212	185	999	17	584	10	300	20	12	19
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.94	0.99		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1727	1727	1727	1863	1863	1863
Adj Flow Rate, veh/h	25	1307	221	193	1041	18	615	0	312	16	18	20
Adj No. of Lanes	1	3	0	1	3	0	2	0	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	10	10	10	2	2	2
Cap, veh/h	479	2215	374	213	1851	32	755	0	536	337	466	388
Arrive On Green	0.27	0.51	0.51	0.24	0.72	0.72	0.25	0.00	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	4343	734	1774	5142	89	2516	0	1441	1059	1863	1554
Grp Volume(v), veh/h	25	1020	508	193	686	373	615	0	312	16	18	20
Grp Sat Flow(s),veh/h/ln	1774	1695	1687	1774	1695	1840	1258	0	1441	1059	1863	1554
Q Serve(g_s), s	1.0	21.1	21.1	10.6	9.5	9.5	24.3	0.0	17.4	1.2	0.7	1.0
Cycle Q Clear(g_c), s	1.0	21.1	21.1	10.6	9.5	9.5	25.0	0.0	17.4	1.2	0.7	1.0
Prop In Lane	1.00		0.44	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	479	1729	860	213	1220	663	755	0	536	337	466	388
V/C Ratio(X)	0.05	0.59	0.59	0.91	0.56	0.56	0.82	0.00	0.58	0.05	0.04	0.05
Avail Cap(c_a), veh/h	479	1729	860	213	1220	663	755	0	536	337	466	388
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.57	0.57	0.57	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.0	17.2	17.2	37.5	10.3	10.3	38.0	0.0	25.3	28.6	28.4	28.5
Incr Delay (d2), s/veh	0.0	1.5	3.0	25.0	1.1	2.0	9.4	0.0	4.6	0.3	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	10.1	10.4	6.6	4.4	4.9	9.4	0.0	7.6	0.4	0.4	0.4
LnGrp Delay(d),s/veh	27.1	18.7	20.1	62.4	11.4	12.3	47.4	0.0	29.9	28.8	28.6	28.7
LnGrp LOS	C	B	C	E	B	B	D		C	C	C	C
Approach Vol, veh/h		1553			1252			927			54	
Approach Delay, s/veh		19.3			19.5			41.5			28.7	
Approach LOS		B			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.0	55.0		29.0	31.0	40.0		29.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	12.0	29.0		18.0	5.0	36.0		25.0
Max Q Clear Time (g_c+I1), s	12.6	23.1		3.2	3.0	11.5		27.0
Green Ext Time (p_c), s	0.0	4.3		0.1	0.0	7.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	24.9
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	640	935	0	0	1057	175	144	3	126	0	0	0
Future Volume (vph)	640	935	0	0	1057	175	144	3	126	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0				
Lane Util. Factor	0.97	0.95			0.95		1.00	1.00				
Frpb, ped/bikes	1.00	1.00			1.00		1.00	0.98				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.98		1.00	0.85				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			3453		1641	1451				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			3453		1641	1451				
Peak-hour factor, PHF	0.97	0.97	0.92	0.92	0.97	0.97	0.97	0.97	0.97	0.92	0.92	0.92
Adj. Flow (vph)	660	964	0	0	1090	180	148	3	130	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	113	0	0	0	0
Lane Group Flow (vph)	660	964	0	0	1257	0	148	20	0	0	0	0
Confl. Peds. (#/hr)			11	11					2	2		
Confl. Bikes (#/hr)			25			23						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	10%	10%	10%	10%
Turn Type	Prot	NA			NA		Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases												
Actuated Green, G (s)	27.0	78.6			47.6		13.4	13.4				
Effective Green, g (s)	27.0	78.6			47.6		13.4	13.4				
Actuated g/C Ratio	0.27	0.79			0.48		0.13	0.13				
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	926	2781			1643		219	194				
v/s Ratio Prot	c0.19	0.27			c0.36		c0.09	0.01				
v/s Ratio Perm												
v/c Ratio	0.71	0.35			0.77		0.68	0.11				
Uniform Delay, d1	33.0	3.1			21.6		41.2	38.0				
Progression Factor	0.51	1.07			0.66		1.00	1.00				
Incremental Delay, d2	1.0	0.1			2.3		8.0	0.2				
Delay (s)	17.8	3.5			16.6		49.2	38.3				
Level of Service	B	A			B		D	D				
Approach Delay (s)		9.3			16.6			44.0			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	640	935	0	0	1057	175	144	3	126	0	0	0
Future Volume (veh/h)	640	935	0	0	1057	175	144	3	126	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900	1727	1727	1900			
Adj Flow Rate, veh/h	660	964	0	0	1090	180	148	3	130			
Adj No. of Lanes	2	2	0	0	2	0	1	1	0			
Peak Hour Factor	0.97	0.97	0.92	0.92	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	10	10	10			
Cap, veh/h	1082	2846	0	0	1364	225	190	4	166			
Arrive On Green	0.63	1.00	0.00	0.00	0.30	0.30	0.12	0.12	0.12			
Sat Flow, veh/h	3442	3632	0	0	3124	499	1645	33	1433			
Grp Volume(v), veh/h	660	964	0	0	635	635	148	0	133			
Grp Sat Flow(s),veh/h/ln	1721	1770	0	0	1770	1761	1645	0	1466			
Q Serve(g_s), s	11.6	0.0	0.0	0.0	33.0	33.2	8.7	0.0	8.8			
Cycle Q Clear(g_c), s	11.6	0.0	0.0	0.0	33.0	33.2	8.7	0.0	8.8			
Prop In Lane	1.00		0.00	0.00		0.28	1.00		0.98			
Lane Grp Cap(c), veh/h	1082	2846	0	0	796	792	190	0	170			
V/C Ratio(X)	0.61	0.34	0.00	0.00	0.80	0.80	0.78	0.00	0.78			
Avail Cap(c_a), veh/h	1082	2846	0	0	796	792	263	0	235			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00			
Upstream Filter(I)	0.22	0.22	0.00	0.00	0.60	0.60	1.00	0.00	1.00			
Uniform Delay (d), s/veh	14.9	0.0	0.0	0.0	30.7	30.8	43.0	0.0	43.0			
Incr Delay (d2), s/veh	0.2	0.1	0.0	0.0	5.0	5.2	9.5	0.0	11.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	5.3	0.0	0.0	0.0	17.2	17.2	4.5	0.0	4.1			
LnGrp Delay(d),s/veh	15.1	0.1	0.0	0.0	35.8	36.0	52.4	0.0	54.1			
LnGrp LOS	B	A			D	D	D		D			
Approach Vol, veh/h		1624			1270			281				
Approach Delay, s/veh		6.2			35.9			53.2				
Approach LOS		A			D			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		84.4			35.4	49.0		15.6
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		76.0			27.0	45.0		16.0
Max Q Clear Time (g_c+I1), s		2.0			13.6	35.2		10.8
Green Ext Time (p_c), s		8.5			2.7	5.6		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	624	20	382	10	94	10	427	609	13	10	537	749
Future Volume (vph)	624	20	382	10	94	10	427	609	13	10	537	749
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95			0.95	0.88
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00			1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1681	1690	1573	1770	1830		1770	3523			3535	2749
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00			0.94	1.00
Satd. Flow (perm)	1681	1690	1573	1770	1830		1770	3523			3319	2749
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	671	22	411	11	101	11	459	655	14	11	577	805
RTOR Reduction (vph)	0	0	198	0	4	0	0	1	0	0	0	0
Lane Group Flow (vph)	349	344	213	11	108	0	459	668	0	0	588	805
Confl. Peds. (#/hr)			1	1			4		10	10		
Confl. Bikes (#/hr)						8			21			12
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Perm	NA	pm+ov
Protected Phases	8	8	1	4	4		1	6			2	8
Permitted Phases			8							2		2
Actuated Green, G (s)	24.9	24.9	51.9	11.1	11.1		27.0	52.0			21.0	45.9
Effective Green, g (s)	24.9	24.9	51.9	11.1	11.1		27.0	52.0			21.0	45.9
Actuated g/C Ratio	0.25	0.25	0.52	0.11	0.11		0.27	0.52			0.21	0.46
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	418	420	879	196	203		477	1831			696	1261
v/s Ratio Prot	c0.21	0.20	0.07	0.01	c0.06		c0.26	0.19				0.16
v/s Ratio Perm			0.07								c0.18	0.13
v/c Ratio	0.83	0.82	0.24	0.06	0.53		0.96	0.36			0.84	0.64
Uniform Delay, d1	35.6	35.4	13.2	39.8	42.0		36.0	14.2			37.9	20.7
Progression Factor	1.25	1.25	1.80	1.00	1.00		1.00	1.00			0.77	0.77
Incremental Delay, d2	16.9	15.5	0.1	0.1	2.5		31.5	0.1			8.1	0.9
Delay (s)	61.6	60.0	23.9	39.9	44.5		67.5	14.3			37.5	16.8
Level of Service	E	E	C	D	D		E	B			D	B
Approach Delay (s)		47.1			44.1			36.0			25.6	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	624	20	382	10	94	10	427	609	13	10	537	749
Future Volume (veh/h)	624	20	382	10	94	10	427	609	13	10	537	749
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.96	0.99		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	687	0	0	11	101	11	459	655	14	11	577	805
Adj No. of Lanes	2	0	1	1	1	0	1	2	0	0	2	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	710	0	744	284	263	29	479	1840	39	43	716	1105
Arrive On Green	0.20	0.00	0.00	0.16	0.16	0.16	0.27	0.52	0.52	0.07	0.07	0.07
Sat Flow, veh/h	3548	0	1583	1774	1646	179	1774	3539	76	25	3411	2608
Grp Volume(v), veh/h	687	0	0	11	0	112	459	327	342	313	275	805
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1826	1774	1770	1845	1826	1610	1304
Q Serve(g_s), s	19.2	0.0	0.0	0.5	0.0	5.5	25.5	10.9	10.9	4.4	16.8	21.0
Cycle Q Clear(g_c), s	19.2	0.0	0.0	0.5	0.0	5.5	25.5	10.9	10.9	16.8	16.8	21.0
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.04	0.04		1.00
Lane Grp Cap(c), veh/h	710	0	744	284	0	292	479	920	960	421	338	1105
V/C Ratio(X)	0.97	0.00	0.00	0.04	0.00	0.38	0.96	0.36	0.36	0.75	0.81	0.73
Avail Cap(c_a), veh/h	710	0	744	284	0	292	479	920	960	421	338	1105
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.95	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.84	0.84	0.84
Uniform Delay (d), s/veh	39.7	0.0	0.0	35.5	0.0	37.6	35.9	14.1	14.1	44.5	44.6	27.8
Incr Delay (d2), s/veh	26.0	0.0	0.0	0.1	0.0	0.8	30.6	0.2	0.2	6.0	12.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	0.0	0.0	0.3	0.0	2.8	16.6	5.3	5.6	9.3	8.6	11.5
LnGrp Delay(d),s/veh	65.6	0.0	0.0	35.6	0.0	38.4	66.6	14.4	14.4	50.5	56.5	29.9
LnGrp LOS	E			D		D	E	B	B	D	E	C
Approach Vol, veh/h		687			123			1128			1393	
Approach Delay, s/veh		65.6			38.2			35.6			39.8	
Approach LOS		E			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	31.0	25.0		20.0		56.0		24.0
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s	27.0	21.0		16.0		52.0		20.0
Max Q Clear Time (g_c+I1), s	27.5	23.0		7.5		12.9		21.2
Green Ext Time (p_c), s	0.0	0.0		0.3		4.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	43.6
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	43	1721	38	27	1502
Future Vol, veh/h	40	43	1721	38	27	1502
Conflicting Peds, #/hr	0	0	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	175	-	50	60	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	47	1871	41	29	1633

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2756	946	0	0	1922	0
Stage 1	1881	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 16	262	-	-	304	-
Stage 1	106	-	-	-	-	-
Stage 2	368	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 14	260	-	-	301	-
Mov Cap-2 Maneuver	72	-	-	-	-	-
Stage 1	95	-	-	-	-	-
Stage 2	368	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	65.6	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	72	260	301	-
HCM Lane V/C Ratio	-	-	0.604	0.18	0.098	-
HCM Control Delay (s)	-	-	112.6	21.9	18.2	-
HCM Lane LOS	-	-	F	C	C	-
HCM 95th %tile Q(veh)	-	-	2.6	0.6	0.3	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	4	46	120	10	69	44	1616	62	46	1417	27
Future Volume (vph)	20	4	46	120	10	69	44	1616	62	46	1417	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1765	1863	1583	1770	1597		1770	3539	1524	1770	3539	1564
Flt Permitted	0.70	1.00	1.00	0.76	1.00		0.11	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1309	1863	1583	1407	1597		211	3539	1524	206	3539	1564
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	21	4	47	124	10	71	45	1666	64	47	1461	28
RTOR Reduction (vph)	0	0	41	0	62	0	0	0	20	0	0	9
Lane Group Flow (vph)	21	4	6	124	19	0	45	1666	44	47	1461	19
Confl. Peds. (#/hr)	2					2			5	5		
Confl. Bikes (#/hr)									10			1
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Actuated Green, G (s)	10.6	10.6	10.6	10.6	10.6		54.9	54.9	54.9	54.2	54.2	54.2
Effective Green, g (s)	10.6	10.6	10.6	10.6	10.6		54.9	54.9	54.9	54.2	54.2	54.2
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13		0.69	0.69	0.69	0.68	0.68	0.68
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	173	246	209	186	211		207	2428	1045	188	2397	1059
v/s Ratio Prot		0.00			0.01		0.01	c0.47		0.01	c0.41	
v/s Ratio Perm	0.02		0.00	c0.09			0.14		0.03	0.16		0.01
v/c Ratio	0.12	0.02	0.03	0.67	0.09		0.22	0.69	0.04	0.25	0.61	0.02
Uniform Delay, d1	30.6	30.2	30.2	33.0	30.5		6.7	7.4	4.1	11.2	7.1	4.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.0	0.1	8.7	0.2		0.5	1.6	0.1	0.7	1.2	0.0
Delay (s)	30.9	30.2	30.3	41.7	30.7		7.2	9.0	4.1	11.9	8.3	4.2
Level of Service	C	C	C	D	C		A	A	A	B	A	A
Approach Delay (s)		30.5			37.4			8.8			8.3	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	4	46	120	10	69	44	1616	62	46	1417	27
Future Volume (veh/h)	20	4	46	120	10	69	44	1616	62	46	1417	27
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	21	4	0	124	10	71	45	1666	64	47	1461	28
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	188	227	193	258	24	171	254	2124	921	379	2466	1087
Arrive On Green	0.12	0.12	0.00	0.12	0.12	0.12	0.03	0.60	0.60	0.13	0.70	0.70
Sat Flow, veh/h	1307	1863	1583	1400	198	1408	1774	3539	1535	1774	3539	1560
Grp Volume(v), veh/h	21	4	0	124	0	81	45	1666	64	47	1461	28
Grp Sat Flow(s),veh/h/ln	1307	1863	1583	1400	0	1606	1774	1770	1535	1774	1770	1560
Q Serve(g_s), s	1.2	0.2	0.0	6.8	0.0	3.7	0.9	28.5	1.4	0.0	17.1	0.4
Cycle Q Clear(g_c), s	4.9	0.2	0.0	7.0	0.0	3.7	0.9	28.5	1.4	0.0	17.1	0.4
Prop In Lane	1.00		1.00	1.00		0.88	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	188	227	193	258	0	196	254	2124	921	379	2466	1087
V/C Ratio(X)	0.11	0.02	0.00	0.48	0.00	0.41	0.18	0.78	0.07	0.12	0.59	0.03
Avail Cap(c_a), veh/h	290	373	317	367	0	321	286	2124	921	379	2466	1087
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	0.71	0.71	0.71	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	30.9	0.0	34.0	0.0	32.5	10.0	12.1	6.7	20.5	6.3	3.7
Incr Delay (d2), s/veh	0.3	0.0	0.0	1.4	0.0	1.4	0.2	2.2	0.1	0.1	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.1	0.0	2.8	0.0	1.7	0.4	14.3	0.6	0.8	8.5	0.2
LnGrp Delay(d),s/veh	35.0	31.0	0.0	35.4	0.0	33.9	10.3	14.2	6.8	20.6	7.3	3.8
LnGrp LOS	D	C		D		C	B	B	A	C	A	A
Approach Vol, veh/h		25			205			1775			1536	
Approach Delay, s/veh		34.4			34.8			13.9			7.7	
Approach LOS		C			C			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.5	59.7		13.7	14.3	52.0		13.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	4.0	48.0		16.0	4.0	48.0		16.0
Max Q Clear Time (g_c+I1), s	2.9	19.1		9.0	2.0	30.5		6.9
Green Ext Time (p_c), s	0.0	13.0		0.5	0.0	12.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.5
HCM 2010 LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	512	108	190	942	777	312
Future Volume (vph)	512	108	190	942	777	312
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5		3.5	6.0	6.0	3.5
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	0.96		0.95	1.00	1.00	1.00
Satd. Flow (prot)	3134		1770	3539	3539	1558
Flt Permitted	0.96		0.95	1.00	1.00	1.00
Satd. Flow (perm)	3134		1770	3539	3539	1558
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	545	115	202	1002	827	332
RTOR Reduction (vph)	18	0	0	0	0	99
Lane Group Flow (vph)	642	0	202	1002	827	233
Confl. Peds. (#/hr)	3					
Confl. Bikes (#/hr)						8
Heavy Vehicles (%)	10%	10%	2%	2%	2%	2%
Turn Type	Prot		Prot	NA	NA	pm+ov
Protected Phases	3		1	6	2	3
Permitted Phases						2
Actuated Green, G (s)	23.6		16.7	66.9	46.7	70.3
Effective Green, g (s)	23.6		16.7	66.9	46.7	70.3
Actuated g/C Ratio	0.24		0.17	0.67	0.47	0.70
Clearance Time (s)	3.5		3.5	6.0	6.0	3.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	739		295	2367	1652	1095
v/s Ratio Prot	c0.20		c0.11	0.28	c0.23	0.05
v/s Ratio Perm						0.10
v/c Ratio	0.87		0.68	0.42	0.50	0.21
Uniform Delay, d1	36.7		39.2	7.6	18.5	5.2
Progression Factor	1.00		1.00	1.00	0.82	5.42
Incremental Delay, d2	10.6		6.4	0.6	1.0	0.1
Delay (s)	47.3		45.6	8.2	16.2	28.2
Level of Service	D		D	A	B	C
Approach Delay (s)	47.3			14.5	19.7	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	504	165	848	200	155	1199
Future Volume (vph)	504	165	848	200	155	1199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	0.95		1.00	0.95
Frpb, ped/bikes	1.00	0.98	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.97		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1549	3421		1770	3539
Flt Permitted	0.95	1.00	1.00		0.19	1.00
Satd. Flow (perm)	1770	1549	3421		347	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	531	174	893	211	163	1262
RTOR Reduction (vph)	0	80	28	0	0	0
Lane Group Flow (vph)	531	94	1076	0	163	1262
Confl. Peds. (#/hr)		9				
Confl. Bikes (#/hr)		3		8		
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	23.1	23.1	36.8		36.8	36.8
Effective Green, g (s)	23.1	23.1	36.8		36.8	36.8
Actuated g/C Ratio	0.33	0.33	0.52		0.52	0.52
Clearance Time (s)	5.0	5.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	576	504	1775		180	1836
v/s Ratio Prot	c0.30		0.31			0.36
v/s Ratio Perm		0.06			c0.47	
v/c Ratio	0.92	0.19	0.61		0.91	0.69
Uniform Delay, d1	23.0	17.2	12.0		15.5	12.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	20.4	0.2	0.6		41.0	1.1
Delay (s)	43.4	17.3	12.6		56.5	13.8
Level of Service	D	B	B		E	B
Approach Delay (s)	37.0		12.6			18.7
Approach LOS	D		B			B

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	70.9	Sum of lost time (s)	11.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	504	165	848	200	155	1199
Future Volume (veh/h)	504	165	848	200	155	1199
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	531	174	893	211	163	1262
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	566	505	1510	357	258	1891
Arrive On Green	0.32	0.32	0.53	0.53	0.53	0.53
Sat Flow, veh/h	1774	1583	2920	667	509	3632
Grp Volume(v), veh/h	531	174	559	545	163	1262
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1724	509	1770
Q Serve(g_s), s	21.8	6.3	16.1	16.1	23.9	19.3
Cycle Q Clear(g_c), s	21.8	6.3	16.1	16.1	40.0	19.3
Prop In Lane	1.00	1.00		0.39	1.00	
Lane Grp Cap(c), veh/h	566	505	945	921	258	1891
V/C Ratio(X)	0.94	0.34	0.59	0.59	0.63	0.67
Avail Cap(c_a), veh/h	569	508	945	921	258	1891
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.8	19.5	11.9	11.9	25.6	12.6
Incr Delay (d2), s/veh	23.6	0.4	1.0	1.0	4.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.3	2.8	8.0	7.8	3.7	9.5
LnGrp Delay(d),s/veh	48.3	19.9	12.9	12.9	30.4	13.5
LnGrp LOS	D	B	B	B	C	B
Approach Vol, veh/h	705		1104			1425
Approach Delay, s/veh	41.3		12.9			15.5
Approach LOS	D		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		46.0				46.0		28.9
Change Period (Y+Rc), s		6.0				6.0		5.0
Max Green Setting (Gmax), s		40.0				40.0		24.0
Max Q Clear Time (g_c+I1), s		18.1				42.0		23.8
Green Ext Time (p_c), s		7.3				0.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	10	20	714	20	331	40	595	473	282	690	30
Future Volume (vph)	10	10	20	714	20	331	40	595	473	282	690	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5	4.5	3.5	4.5	4.5	3.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1817	1542	1681	1690	1560	1770	3539	1570	1770	3511	
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1817	1542	1681	1690	1560	1770	3539	1570	1770	3511	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	10	21	744	21	345	42	620	493	294	719	31
RTOR Reduction (vph)	0	0	20	0	0	248	0	0	194	0	2	0
Lane Group Flow (vph)	0	20	1	379	386	97	42	620	299	294	748	0
Confl. Peds. (#/hr)	1		7	7		1	9		1	1		9
Confl. Bikes (#/hr)			2			2			12			12
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		8	8		5	2	8	1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)		6.3	6.3	27.0	27.0	27.0	3.7	24.5	51.5	21.0	41.8	
Effective Green, g (s)		6.3	6.3	27.0	27.0	27.0	3.7	24.5	51.5	21.0	41.8	
Actuated g/C Ratio		0.07	0.07	0.28	0.28	0.28	0.04	0.26	0.54	0.22	0.44	
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	3.5	4.5	4.5	3.5	4.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	5.0	2.0	3.5	5.0	
Lane Grp Cap (vph)		119	101	473	476	439	68	905	843	387	1531	
v/s Ratio Prot		c0.01		0.23	c0.23		0.02	c0.18	0.10	c0.17	0.21	
v/s Ratio Perm			0.00			0.06			0.09			
v/c Ratio		0.17	0.01	0.80	0.81	0.22	0.62	0.69	0.35	0.76	0.49	
Uniform Delay, d1		42.3	41.8	31.9	32.0	26.3	45.4	32.2	12.7	35.0	19.3	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2	0.0	8.9	9.6	0.1	11.2	2.8	0.1	8.6	0.5	
Delay (s)		42.5	41.9	40.8	41.6	26.4	56.5	35.0	12.7	43.6	19.9	
Level of Service		D	D	D	D	C	E	C	B	D	B	
Approach Delay (s)		42.2			36.6			26.3			26.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	95.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Near Term Plus Project PM 2025
02/26/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	10	20	714	20	331	40	595	473	282	690	30
Future Volume (veh/h)	10	10	20	714	20	331	40	595	473	282	690	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	10	10	21	759	0	0	42	620	493	294	719	31
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	48	48	79	895	0	399	52	1029	846	343	1568	68
Arrive On Green	0.05	0.05	0.05	0.25	0.00	0.00	0.03	0.29	0.29	0.19	0.45	0.45
Sat Flow, veh/h	909	909	1491	3548	0	1583	1774	3539	1536	1774	3450	149
Grp Volume(v), veh/h	20	0	21	759	0	0	42	620	493	294	369	381
Grp Sat Flow(s),veh/h/ln	1817	0	1491	1774	0	1583	1774	1770	1536	1774	1770	1829
Q Serve(g_s), s	0.9	0.0	1.1	16.4	0.0	0.0	1.9	12.2	17.4	12.9	11.6	11.6
Cycle Q Clear(g_c), s	0.9	0.0	1.1	16.4	0.0	0.0	1.9	12.2	17.4	12.9	11.6	11.6
Prop In Lane	0.50		1.00	1.00		1.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	97	0	79	895	0	399	52	1029	846	343	804	831
V/C Ratio(X)	0.21	0.00	0.26	0.85	0.00	0.00	0.80	0.60	0.58	0.86	0.46	0.46
Avail Cap(c_a), veh/h	608	0	499	1341	0	598	156	1083	869	457	842	871
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	0.0	36.7	28.7	0.0	0.0	38.9	24.6	12.4	31.5	15.2	15.2
Incr Delay (d2), s/veh	0.4	0.0	0.7	2.2	0.0	0.0	10.0	1.4	1.6	12.5	0.9	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.5	8.3	0.0	0.0	1.1	6.1	11.2	7.5	5.8	6.0
LnGrp Delay(d),s/veh	37.0	0.0	37.3	30.9	0.0	0.0	48.9	26.0	14.0	44.0	16.0	16.0
LnGrp LOS	D		D	C			D	C	B	D	B	B
Approach Vol, veh/h		41			759			1155			1044	
Approach Delay, s/veh		37.1			30.9			21.7			23.9	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.1	28.0		8.8	5.9	41.2		24.8
Change Period (Y+Rc), s	3.5	4.5		4.5	3.5	4.5		4.5
Max Green Setting (Gmax), s	20.8	24.7		27.0	7.1	38.4		30.5
Max Q Clear Time (g_c+I1), s	14.9	19.4		3.1	3.9	13.6		18.4
Green Ext Time (p_c), s	0.7	3.9		0.1	0.0	8.8		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	25.0
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Mitigated

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	138	30	158	69	130	55	542	134	472	744	39
Future Volume (vph)	95	138	30	158	69	130	55	542	134	472	744	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.5	5.5	5.5	5.0	6.5	5.5	5.0	6.5	
Lane Util. Factor	1.00	1.00		0.97	0.95	0.95	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99	0.98	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.94	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1804		3433	1649	1467	1770	5085	1554	3433	3504	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1804		3433	1649	1467	1770	5085	1554	3433	3504	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	102	148	32	170	74	140	59	583	144	508	800	42
RTOR Reduction (vph)	0	7	0	0	21	79	0	0	96	0	3	0
Lane Group Flow (vph)	102	173	0	170	101	13	59	583	48	508	839	0
Confl. Peds. (#/hr)	26		8	8			7		19	19		7
Confl. Bikes (#/hr)			5			8						10
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	2	2		6	6		3	8	6	7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	14.1	14.1		11.6	11.6	11.6	6.3	16.3	27.9	20.4	30.4	
Effective Green, g (s)	14.1	14.1		11.6	11.6	11.6	6.3	16.3	27.9	20.4	30.4	
Actuated g/C Ratio	0.17	0.17		0.14	0.14	0.14	0.07	0.19	0.33	0.24	0.36	
Clearance Time (s)	5.0	5.0		5.5	5.5	5.5	5.0	6.5	5.5	5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	295	301		471	226	201	132	982	614	829	1262	
v/s Ratio Prot	0.06	c0.10		0.05	c0.06		0.03	0.11	0.01	c0.15	c0.24	
v/s Ratio Perm						0.01			0.02			
v/c Ratio	0.35	0.58		0.36	0.45	0.06	0.45	0.59	0.08	0.61	0.66	
Uniform Delay, d1	31.1	32.4		33.0	33.5	31.7	37.4	31.0	19.4	28.5	22.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	2.7		0.5	1.4	0.1	2.4	1.0	0.1	1.4	1.3	
Delay (s)	31.8	35.1		33.5	34.9	31.8	39.8	32.0	19.5	29.8	24.0	
Level of Service	C	D		C	C	C	D	C	B	C	C	
Approach Delay (s)		33.9			33.5			30.3			26.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	84.4	Sum of lost time (s)	22.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	138	30	158	69	130	55	542	134	472	744	39
Future Volume (veh/h)	95	138	30	158	69	130	55	542	134	472	744	39
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	1.00		0.97	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	102	148	32	170	124	107	59	583	144	508	800	42
Adj No. of Lanes	1	1	0	2	1	1	1	3	1	2	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	319	263	57	466	245	199	157	1050	526	653	1049	55
Arrive On Green	0.18	0.18	0.18	0.13	0.13	0.13	0.09	0.21	0.21	0.19	0.31	0.31
Sat Flow, veh/h	1774	1466	317	3548	1863	1515	1774	5085	1540	3442	3408	179
Grp Volume(v), veh/h	102	0	180	170	124	107	59	583	144	508	415	427
Grp Sat Flow(s),veh/h/ln	1774	0	1783	1774	1863	1515	1774	1695	1540	1721	1770	1817
Q Serve(g_s), s	3.8	0.0	6.9	3.3	4.7	5.0	2.4	7.7	5.1	10.5	16.0	16.0
Cycle Q Clear(g_c), s	3.8	0.0	6.9	3.3	4.7	5.0	2.4	7.7	5.1	10.5	16.0	16.0
Prop In Lane	1.00		0.18	1.00		1.00	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	319	0	320	466	245	199	157	1050	526	653	544	559
V/C Ratio(X)	0.32	0.00	0.56	0.36	0.51	0.54	0.38	0.56	0.27	0.78	0.76	0.76
Avail Cap(c_a), veh/h	567	0	569	1133	595	484	213	1827	761	1054	966	992
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	0.0	28.1	29.8	30.4	30.5	32.3	26.7	18.2	28.9	23.5	23.5
Incr Delay (d2), s/veh	0.6	0.0	1.5	0.5	1.6	2.2	1.5	0.5	0.3	2.0	2.2	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.4	0.0	6.4	2.9	4.5	3.9	2.2	6.6	4.8	8.9	12.7	13.0
LnGrp Delay(d),s/veh	27.4	0.0	29.7	30.3	32.0	32.8	33.8	27.2	18.4	31.0	25.8	25.7
LnGrp LOS	C		C	C	C	C	C	C	B	C	C	C
Approach Vol, veh/h		282			401			786			1350	
Approach Delay, s/veh		28.9			31.5			26.1			27.7	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		18.5	11.7	29.6		15.4	19.3	22.0
Change Period (Y+Rc), s		5.0	5.0	6.5		5.5	5.0	6.5
Max Green Setting (Gmax), s		24.0	9.0	41.0		24.0	23.0	27.0
Max Q Clear Time (g_c+I1), s		8.9	4.4	18.0		7.0	12.5	9.7
Green Ext Time (p_c), s		1.3	0.0	5.2		1.7	1.7	4.1

Intersection Summary	
HCM 2010 Ctrl Delay	27.9
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	9	691	5	3	530	0	41	8	14	34	144	12
Future Volume (vph)	9	691	5	3	530	0	41	8	14	34	144	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		5.0	6.0	6.0			5.0	5.0		5.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00			1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97			1.00	0.97		1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00			1.00	1.00		1.00
Frt	1.00	1.00		1.00	1.00	0.85			1.00	0.85		0.99
Flt Protected	0.95	1.00		0.95	1.00	1.00			0.98	1.00		0.96
Satd. Flow (prot)	1762	3539		1770	3539	1536			1828	1533		1763
Flt Permitted	0.95	1.00		0.95	1.00	1.00			0.88	1.00		0.74
Satd. Flow (perm)	1762	3539		1770	3539	1536			1632	1533		1361
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	751	5	3	576	0	45	9	15	37	157	13
RTOR Reduction (vph)	0	0	0	0	0	29	0	0	0	29	0	0
Lane Group Flow (vph)	10	751	0	8	576	16	0	0	24	8	0	184
Confl. Peds. (#/hr)	6						6			3	3	
Confl. Bikes (#/hr)										16		
Turn Type	Prot	NA	Prot	Prot	NA	Perm		Perm	NA	Perm	Perm	NA
Protected Phases	5	2	1	1	6				8			4
Permitted Phases						6		8		8	4	
Actuated Green, G (s)	0.5	24.1		0.5	23.1	23.1			13.3	13.3		13.3
Effective Green, g (s)	0.5	24.1		0.5	23.1	23.1			13.3	13.3		13.3
Actuated g/C Ratio	0.01	0.37		0.01	0.35	0.35			0.20	0.20		0.20
Clearance Time (s)	6.0	6.0		5.0	6.0	6.0			5.0	5.0		5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0			3.0	3.0		3.0
Lane Grp Cap (vph)	13	1300		13	1246	540			330	310		275
v/s Ratio Prot	c0.01	c0.21		0.00	0.16							
v/s Ratio Perm						0.01			0.01	0.00		c0.14
v/c Ratio	0.77	0.58		0.62	0.46	0.03			0.07	0.02		0.67
Uniform Delay, d1	32.5	16.7		32.5	16.4	13.9			21.2	21.0		24.1
Progression Factor	1.00	1.00		1.00	1.00	1.00			1.00	1.00		1.00
Incremental Delay, d2	128.6	0.6		64.0	0.3	0.0			0.1	0.0		6.1
Delay (s)	161.1	17.3		96.5	16.7	13.9			21.3	21.0		30.2
Level of Service	F	B		F	B	B			C	C		C
Approach Delay (s)		19.2			17.5				21.1			30.2
Approach LOS		B			B				C			C

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	65.6	Sum of lost time (s)	27.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR2	SEL	SER2	NEL2	NEL	NER
Lane Configurations						
Traffic Volume (vph)	13	3	3	1	0	17
Future Volume (vph)	13	3	3	1	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	
Lane Util. Factor		1.00			1.00	
Frpb, ped/bikes		1.00			0.93	
Flpb, ped/bikes		1.00			1.00	
Frt		0.93			0.87	
Flt Protected		0.98			1.00	
Satd. Flow (prot)		1695			1513	
Flt Permitted		0.98			1.00	
Satd. Flow (perm)		1695			1513	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	3	3	1	0	18
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	6	0	0	19	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)	3					
Turn Type		Prot		Perm	Prot	
Protected Phases		7			3	
Permitted Phases				3		
Actuated Green, G (s)		0.7			1.0	
Effective Green, g (s)		0.7			1.0	
Actuated g/C Ratio		0.01			0.02	
Clearance Time (s)		5.0			5.0	
Vehicle Extension (s)		3.0			3.0	
Lane Grp Cap (vph)		18			23	
v/s Ratio Prot		c0.00				
v/s Ratio Perm					0.01	
v/c Ratio		0.33			0.83	
Uniform Delay, d1		32.2			32.2	
Progression Factor		1.00			1.00	
Incremental Delay, d2		10.6			110.0	
Delay (s)		42.8			142.2	
Level of Service		D			F	
Approach Delay (s)		42.8			142.2	
Approach LOS		D			F	

Intersection Summary

HCM 2010 methodology does not support more than 4 approaches.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1047	83	230	619	21	46	1	151	11	0	3
Future Volume (vph)	12	1047	83	230	619	21	46	1	151	11	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0			4.0	6.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00			1.00	0.99		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (prot)	1768	3539	1556	3433	3518			1776	1569		1770	1530
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.95	1.00
Satd. Flow (perm)	1768	3539	1556	3433	3518			1776	1569		1770	1530
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	14	1190	94	261	703	24	52	1	172	12	0	3
RTOR Reduction (vph)	0	0	44	0	1	0	0	0	140	0	0	3
Lane Group Flow (vph)	14	1190	50	261	726	0	0	53	32	0	13	0
Confl. Peds. (#/hr)	1		3	3		1	7		2	2		7
Confl. Bikes (#/hr)			3			13			6			3
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	pm+ov	Split	NA	Perm
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	0.5	44.9	44.9	8.6	53.0			6.9	15.5		4.1	4.1
Effective Green, g (s)	0.5	44.9	44.9	8.6	53.0			6.9	15.5		4.1	4.1
Actuated g/C Ratio	0.01	0.53	0.53	0.10	0.63			0.08	0.18		0.05	0.05
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0			4.0	6.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	10	1880	826	349	2206			145	287		85	74
v/s Ratio Prot	0.01	c0.34		c0.08	0.21			c0.03	0.01		c0.01	
v/s Ratio Perm			0.03						0.01			0.00
v/c Ratio	1.40	0.63	0.06	0.75	0.33			0.37	0.11		0.15	0.00
Uniform Delay, d1	42.0	14.0	9.6	36.9	7.4			36.7	28.8		38.5	38.3
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	438.6	0.7	0.0	8.5	0.1			1.6	0.2		0.8	0.0
Delay (s)	480.6	14.7	9.6	45.4	7.5			38.3	28.9		39.4	38.3
Level of Service	F	B	A	D	A			D	C		D	D
Approach Delay (s)		19.3			17.5			31.1			39.2	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	84.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	1047	83	230	619	21	46	1	151	11	0	3
Future Volume (veh/h)	12	1047	83	230	619	21	46	1	151	11	0	3
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.97	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	14	1190	94	261	703	24	52	1	172	12	0	3
Adj No. of Lanes	1	2	1	2	2	0	0	1	1	0	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	24	1502	661	354	1791	61	267	5	397	61	0	51
Arrive On Green	0.01	0.42	0.42	0.10	0.51	0.51	0.15	0.15	0.15	0.03	0.00	0.03
Sat Flow, veh/h	1774	3539	1559	3442	3488	119	1742	34	1530	1774	0	1490
Grp Volume(v), veh/h	14	1190	94	261	357	370	53	0	172	12	0	3
Grp Sat Flow(s),veh/h/ln	1774	1770	1559	1721	1770	1837	1776	0	1530	1774	0	1490
Q Serve(g_s), s	0.6	20.5	2.6	5.2	8.6	8.6	1.8	0.0	6.6	0.5	0.0	0.1
Cycle Q Clear(g_c), s	0.6	20.5	2.6	5.2	8.6	8.6	1.8	0.0	6.6	0.5	0.0	0.1
Prop In Lane	1.00		1.00	1.00		0.06	0.98		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	24	1502	661	354	909	943	272	0	397	61	0	51
V/C Ratio(X)	0.58	0.79	0.14	0.74	0.39	0.39	0.19	0.00	0.43	0.20	0.00	0.06
Avail Cap(c_a), veh/h	101	1865	821	392	1033	1073	708	0	773	556	0	467
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.4	17.5	12.4	30.6	10.4	10.4	25.9	0.0	21.9	32.9	0.0	32.8
Incr Delay (d2), s/veh	20.1	1.9	0.1	6.4	0.3	0.3	0.3	0.0	0.7	1.5	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	15.6	2.1	5.0	7.6	7.8	1.7	0.0	5.2	0.5	0.0	0.1
LnGrp Delay(d),s/veh	54.5	19.5	12.5	37.0	10.7	10.7	26.3	0.0	22.6	34.5	0.0	33.3
LnGrp LOS	D	B	B	D	B	B	C		C	C		C
Approach Vol, veh/h		1298			988			225			15	
Approach Delay, s/veh		19.3			17.6			23.5			34.2	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.2	35.8		6.4	7.0	42.1		14.8
Change Period (Y+Rc), s	6.0	6.0		4.0	6.0	6.0		4.0
Max Green Setting (Gmax), s	8.0	37.0		22.0	4.0	41.0		28.0
Max Q Clear Time (g_c+I1), s	7.2	22.5		2.5	2.6	10.6		8.6
Green Ext Time (p_c), s	0.1	7.3		0.0	0.0	4.7		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	1189	87	143	591	34	335	26	500	5	2	10
Future Volume (vph)	18	1189	87	143	591	34	335	26	500	5	2	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.95	0.95	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	0.99	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1770	5085	1381	1641	5035		1547	1563	1468	1681	1661	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.76	0.75	1.00	0.25	0.62	1.00
Satd. Flow (perm)	1770	5085	1381	1641	5035		1230	1229	1468	442	1055	1553
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	20	1336	98	161	664	38	376	29	562	6	2	11
RTOR Reduction (vph)	0	0	64	0	6	0	0	0	249	0	0	9
Lane Group Flow (vph)	20	1336	34	161	696	0	203	202	313	4	4	2
Confl. Peds. (#/hr)	1		5	5		1	4					4
Confl. Bikes (#/hr)			23			14						
Heavy Vehicles (%)	2%	2%	10%	10%	2%	2%	10%	10%	10%	2%	10%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	pm+ov	Perm	NA	Perm
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases			2				8		8	4		4
Actuated Green, G (s)	2.4	34.9	34.9	14.1	46.6		19.0	19.0	33.1	16.0	16.0	16.0
Effective Green, g (s)	2.4	34.9	34.9	14.1	46.6		19.0	19.0	33.1	16.0	16.0	16.0
Actuated g/C Ratio	0.02	0.35	0.35	0.14	0.47		0.19	0.19	0.33	0.16	0.16	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	42	1774	481	231	2346		233	233	544	70	168	248
v/s Ratio Prot	0.01	c0.26		c0.10	0.14				0.08			
v/s Ratio Perm			0.02				c0.17	0.16	0.13	c0.01	0.00	0.00
v/c Ratio	0.48	0.75	0.07	0.70	0.30		0.87	0.87	0.58	0.06	0.02	0.01
Uniform Delay, d1	48.2	28.7	21.7	40.9	16.5		39.3	39.3	27.6	35.6	35.4	35.3
Progression Factor	1.00	1.00	1.00	1.38	0.45		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.3	3.0	0.3	7.3	0.3		33.2	32.6	1.5	1.6	0.3	0.1
Delay (s)	56.5	31.8	22.0	63.8	7.7		72.5	71.9	29.1	37.2	35.7	35.4
Level of Service	E	C	C	E	A		E	E	C	D	D	D
Approach Delay (s)		31.4			18.1			47.2			35.8	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	32.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	1189	87	143	591	34	335	26	500	5	2	10
Future Volume (veh/h)	18	1189	87	143	591	34	335	26	500	5	2	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.99		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1727	1727	1863	1900	1727	1727	1727	1863	1792	1863
Adj Flow Rate, veh/h	20	1336	98	161	664	38	397	0	562	4	5	11
Adj No. of Lanes	1	3	1	1	3	0	2	0	1	1	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	10	10	2	2	10	10	10	2	10	2
Cap, veh/h	461	2926	812	188	2112	120	626	0	445	232	341	299
Arrive On Green	0.26	0.58	0.58	0.23	0.86	0.86	0.19	0.00	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1774	5085	1411	1645	4911	279	2565	0	1459	842	1792	1573
Grp Volume(v), veh/h	20	1336	98	161	457	245	397	0	562	4	5	11
Grp Sat Flow(s),veh/h/ln	1774	1695	1411	1645	1695	1801	1282	0	1459	842	1792	1573
Q Serve(g_s), s	0.8	15.1	3.2	9.4	2.6	2.6	14.9	0.0	19.0	0.4	0.2	0.6
Cycle Q Clear(g_c), s	0.8	15.1	3.2	9.4	2.6	2.6	15.1	0.0	19.0	0.4	0.2	0.6
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	461	2926	812	188	1458	774	626	0	445	232	341	299
V/C Ratio(X)	0.04	0.46	0.12	0.85	0.31	0.32	0.63	0.00	1.26	0.02	0.01	0.04
Avail Cap(c_a), veh/h	461	2926	812	263	1458	774	626	0	445	232	341	299
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.76	0.76	0.76	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	12.2	9.7	37.7	4.2	4.2	39.0	0.0	34.8	33.0	32.9	33.0
Incr Delay (d2), s/veh	0.0	0.5	0.3	13.8	0.4	0.8	4.9	0.0	134.9	0.1	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	11.6	2.3	8.1	2.2	2.5	9.6	0.0	52.2	0.2	0.2	0.5
LnGrp Delay(d),s/veh	27.7	12.7	10.0	51.6	4.6	5.0	43.9	0.0	169.7	33.1	33.0	33.3
LnGrp LOS	C	B	A	D	A	A	D		F	C	C	C
Approach Vol, veh/h		1454			863			959			20	
Approach Delay, s/veh		12.8			13.5			117.6			33.2	
Approach LOS		B			B			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.5	61.5		23.0	30.0	47.0		23.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	16.0	33.0		16.0	6.0	43.0		19.0
Max Q Clear Time (g_c+I1), s	11.4	17.1		2.6	2.8	4.6		21.0
Green Ext Time (p_c), s	0.2	8.7		0.0	0.0	5.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	43.6
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	529	1165	0	0	645	116	123	2	153	0	0	0
Future Volume (vph)	529	1165	0	0	645	116	123	2	153	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0				
Lane Util. Factor	0.97	0.95			0.95		1.00	1.00				
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.98		1.00	0.85				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3183	3539			3407		1641	1471				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3183	3539			3407		1641	1471				
Peak-hour factor, PHF	0.84	0.84	0.92	0.92	0.84	0.84	0.84	0.84	0.84	0.92	0.92	0.92
Adj. Flow (vph)	630	1387	0	0	768	138	146	2	182	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	72	0	0	0	0
Lane Group Flow (vph)	630	1387	0	0	893	0	146	112	0	0	0	0
Confl. Peds. (#/hr)	1		9	9		1						
Confl. Bikes (#/hr)			10			15						
Heavy Vehicles (%)	10%	2%	2%	2%	2%	10%	10%	10%	10%	2%	2%	2%
Turn Type	Prot	NA			NA		Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases												
Actuated Green, G (s)	30.0	78.0			44.0		14.0	14.0				
Effective Green, g (s)	30.0	78.0			44.0		14.0	14.0				
Actuated g/C Ratio	0.30	0.78			0.44		0.14	0.14				
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	954	2760			1499		229	205				
v/s Ratio Prot	c0.20	0.39			c0.26		c0.09	0.08				
v/s Ratio Perm												
v/c Ratio	0.66	0.50			0.60		0.64	0.55				
Uniform Delay, d1	30.6	4.0			21.2		40.6	40.0				
Progression Factor	0.40	0.41			0.54		1.00	1.00				
Incremental Delay, d2	1.2	0.5			1.7		5.7	2.9				
Delay (s)	13.6	2.1			13.3		46.3	43.0				
Level of Service	B	A			B		D	D				
Approach Delay (s)		5.7			13.3			44.5			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Signalized Intersection Summary — Mitigated Near Term Plus Project AM 2025
6: Hwy 101 NB & Madonna — 04/11/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	529	1165	0	0	645	116	123	2	153	0	0	0
Future Volume (veh/h)	529	1165	0	0	645	116	123	2	153	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1727	1863	0	0	1841	1900	1727	1727	1900			
Adj Flow Rate, veh/h	630	1387	0	0	768	138	146	2	182			
Adj No. of Lanes	2	2	0	0	2	0	1	1	0			
Peak Hour Factor	0.84	0.84	0.92	0.92	0.84	0.84	0.84	0.84	0.84			
Percent Heavy Veh, %	10	2	0	0	2	2	10	10	10			
Cap, veh/h	1088	2728	0	0	1151	207	245	2	217			
Arrive On Green	0.68	1.00	0.00	0.00	0.13	0.13	0.15	0.15	0.15			
Sat Flow, veh/h	3191	3632	0	0	3044	530	1645	16	1455			
Grp Volume(v), veh/h	630	1387	0	0	455	451	146	0	184			
Grp Sat Flow(s),veh/h/ln	1596	1770	0	0	1749	1734	1645	0	1471			
Q Serve(g_s), s	10.4	0.0	0.0	0.0	24.8	24.8	8.3	0.0	12.2			
Cycle Q Clear(g_c), s	10.4	0.0	0.0	0.0	24.8	24.8	8.3	0.0	12.2			
Prop In Lane	1.00		0.00	0.00		0.31	1.00		0.99			
Lane Grp Cap(c), veh/h	1088	2728	0	0	682	676	245	0	219			
V/C Ratio(X)	0.58	0.51	0.00	0.00	0.67	0.67	0.59	0.00	0.84			
Avail Cap(c_a), veh/h	1088	2728	0	0	682	676	313	0	279			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.59	0.59	0.00	0.00	0.95	0.95	1.00	0.00	1.00			
Uniform Delay (d), s/veh	12.1	0.0	0.0	0.0	37.4	37.4	39.7	0.0	41.4			
Incr Delay (d2), s/veh	0.5	0.4	0.0	0.0	4.8	4.9	2.3	0.0	16.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	7.1	0.3	0.0	0.0	18.7	18.5	7.1	0.0	9.9			
LnGrp Delay(d),s/veh	12.6	0.4	0.0	0.0	42.2	42.3	42.0	0.0	57.6			
LnGrp LOS	B	A			D	D	D		E			
Approach Vol, veh/h		2017			906			330				
Approach Delay, s/veh		4.2			42.2			50.7				
Approach LOS		A			D			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		81.1			38.1	43.0		18.9
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		73.0			30.0	39.0		19.0
Max Q Clear Time (g_c+I1), s		2.0			12.4	26.8		14.2
Green Ext Time (p_c), s		15.7			2.8	4.5		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B

HCM Signalized Intersection Capacity Analysis — Mitigated Near Term Plus Project AM 2025
7: Higuera & Madonna — 04/11/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	705	33	552	10	13	10	168	315	10	10	450	560
Future Volume (vph)	705	33	552	10	13	10	168	315	10	10	450	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	1.00			0.95	0.88
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00			1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1681	1693	1555	1770	1719		3433	1852			3535	2762
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00			0.94	1.00
Satd. Flow (perm)	1681	1693	1555	1770	1719		3433	1852			3343	2762
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	783	37	613	11	14	11	187	350	11	11	500	622
RTOR Reduction (vph)	0	0	206	0	11	0	0	1	0	0	0	0
Lane Group Flow (vph)	407	413	407	11	14	0	187	360	0	0	511	622
Confl. Peds. (#/hr)			6	6			5		6	6		
Confl. Bikes (#/hr)						3			9			9
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Perm	NA	pm+ov
Protected Phases	8	8	1	4	4		1	6			2	8
Permitted Phases			8							2		2
Actuated Green, G (s)	43.7	43.7	55.7	4.3	4.3		12.0	40.0			24.0	67.7
Effective Green, g (s)	43.7	43.7	55.7	4.3	4.3		12.0	40.0			24.0	67.7
Actuated g/C Ratio	0.44	0.44	0.56	0.04	0.04		0.12	0.40			0.24	0.68
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	734	739	928	76	73		411	740			802	1869
v/s Ratio Prot	0.24	c0.24	0.05	0.01	c0.01		0.05	c0.19				0.15
v/s Ratio Perm			0.21								c0.15	0.08
v/c Ratio	0.55	0.56	0.44	0.14	0.20		0.45	0.49			0.64	0.33
Uniform Delay, d1	20.9	21.0	13.0	46.1	46.2		41.0	22.3			34.1	6.7
Progression Factor	0.65	0.65	0.47	1.00	1.00		1.00	1.00			0.64	0.42
Incremental Delay, d2	2.6	2.7	0.3	0.9	1.3		0.8	2.3			3.6	0.4
Delay (s)	16.2	16.3	6.4	47.0	47.5		41.8	24.6			25.3	3.3
Level of Service	B	B	A	D	D		D	C			C	A
Approach Delay (s)		12.0			47.4			30.5			13.2	
Approach LOS		B			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	705	33	552	10	13	10	168	315	10	10	450	560
Future Volume (veh/h)	705	33	552	10	13	10	168	315	10	10	450	560
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.96	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	809	0	613	11	14	11	187	350	11	11	500	622
Adj No. of Lanes	2	0	1	1	1	0	2	1	0	0	2	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	1135	0	626	284	153	120	265	718	23	45	968	1647
Arrive On Green	0.32	0.00	0.32	0.16	0.16	0.16	0.08	0.40	0.40	0.09	0.09	0.09
Sat Flow, veh/h	3548	0	1574	1774	955	751	3442	1794	56	28	3422	2670
Grp Volume(v), veh/h	809	0	613	11	0	25	187	0	361	273	238	622
Grp Sat Flow(s),veh/h/ln	1774	0	1574	1774	0	1706	1721	0	1850	1839	1610	1335
Q Serve(g_s), s	20.1	0.0	32.0	0.5	0.0	1.2	5.3	0.0	14.5	0.0	14.1	12.7
Cycle Q Clear(g_c), s	20.1	0.0	32.0	0.5	0.0	1.2	5.3	0.0	14.5	14.0	14.1	12.7
Prop In Lane	1.00		1.00	1.00		0.44	1.00		0.03	0.04		1.00
Lane Grp Cap(c), veh/h	1135	0	626	284	0	273	265	0	740	558	456	1647
V/C Ratio(X)	0.71	0.00	0.98	0.04	0.00	0.09	0.71	0.00	0.49	0.49	0.52	0.38
Avail Cap(c_a), veh/h	1135	0	626	284	0	273	551	0	740	558	456	1647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.86	0.00	0.86	1.00	0.00	1.00	1.00	0.00	1.00	0.90	0.90	0.90
Uniform Delay (d), s/veh	29.9	0.0	29.8	35.5	0.0	35.8	45.0	0.0	22.4	38.8	38.9	13.1
Incr Delay (d2), s/veh	3.3	0.0	28.7	0.1	0.0	0.1	3.4	0.0	2.3	2.7	3.8	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	15.2	0.0	28.6	0.5	0.0	1.1	4.8	0.0	12.5	11.9	10.8	13.2
LnGrp Delay(d),s/veh	33.2	0.0	58.4	35.6	0.0	35.9	48.5	0.0	24.7	41.6	42.7	13.7
LnGrp LOS	C		E	D		D	D		C	D	D	B
Approach Vol, veh/h		1422			36			548			1133	
Approach Delay, s/veh		44.1			35.8			32.8			26.5	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	11.7	32.3		20.0		44.0		36.0
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s	16.0	20.0		16.0		40.0		32.0
Max Q Clear Time (g_c+I1), s	7.3	16.1		3.2		16.5		34.0
Green Ext Time (p_c), s	0.4	2.3		0.1		2.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	35.7
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary Mitigated Near Term Plus Project AM 2025
7: Higuera & Madonna 04/11/2018

User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Central Coast Transportation Consulting Synchro 10 Report

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	26	17	947	77	28	1000
Future Volume (vph)	26	17	947	77	28	1000
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1536	1766	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.27	1.00
Satd. Flow (perm)	1770	1583	3539	1536	509	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	18	1029	84	30	1087
RTOR Reduction (vph)	0	17	0	19	0	0
Lane Group Flow (vph)	28	1	1029	65	30	1087
Confl. Peds. (#/hr)				8	8	
Confl. Bikes (#/hr)				2		
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	2.3	2.3	26.9	26.9	26.9	26.9
Effective Green, g (s)	2.3	2.3	26.9	26.9	26.9	26.9
Actuated g/C Ratio	0.06	0.06	0.72	0.72	0.72	0.72
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	109	97	2559	1110	368	2559
v/s Ratio Prot	c0.02		0.29			c0.31
v/s Ratio Perm		0.00		0.04	0.06	
v/c Ratio	0.26	0.01	0.40	0.06	0.08	0.42
Uniform Delay, d1	16.6	16.4	2.0	1.5	1.5	2.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.0	0.1	0.0	0.1	0.1
Delay (s)	17.9	16.4	2.1	1.5	1.6	2.2
Level of Service	B	B	A	A	A	A
Approach Delay (s)	17.3		2.1			2.2
Approach LOS	B		A			A

Intersection Summary			
HCM 2000 Control Delay	2.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	26	17	947	77	28	1000
Future Volume (veh/h)	26	17	947	77	28	1000
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	28	18	1029	84	30	1087
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	80	71	2007	873	545	2007
Arrive On Green	0.04	0.04	0.57	0.57	0.57	0.57
Sat Flow, veh/h	1774	1583	3632	1539	504	3632
Grp Volume(v), veh/h	28	18	1029	84	30	1087
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1539	504	1770
Q Serve(g_s), s	0.3	0.2	3.7	0.5	0.8	4.0
Cycle Q Clear(g_c), s	0.3	0.2	3.7	0.5	4.5	4.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	80	71	2007	873	545	2007
V/C Ratio(X)	0.35	0.25	0.51	0.10	0.06	0.54
Avail Cap(c_a), veh/h	1376	1228	2746	1194	650	2746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.6	9.5	2.7	2.0	4.1	2.8
Incr Delay (d2), s/veh	2.6	1.8	0.2	0.0	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.2	3.2	0.4	0.2	3.4
LnGrp Delay(d),s/veh	12.2	11.4	2.9	2.1	4.1	3.0
LnGrp LOS	B	B	A	A	A	A
Approach Vol, veh/h	46		1113			1117
Approach Delay, s/veh	11.9		2.9			3.0
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		15.7				15.7		4.9
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		16.0				16.0		16.0
Max Q Clear Time (g_c+I1), s		5.7				6.5		2.3
Green Ext Time (p_c), s		5.0				5.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	3.1
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	2	51	56	3	22	47	941	71	37	998	20
Future Volume (vph)	12	2	51	56	3	22	47	941	71	37	998	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.98		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1754	1863	1583	1770	1585		1769	3539	1544	1769	3539	1553
Flt Permitted	0.74	1.00	1.00	0.76	1.00		0.23	1.00	1.00	0.25	1.00	1.00
Satd. Flow (perm)	1366	1863	1583	1409	1585		420	3539	1544	459	3539	1553
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	2	57	62	3	24	52	1046	79	41	1109	22
RTOR Reduction (vph)	0	0	51	0	22	0	0	0	25	0	0	7
Lane Group Flow (vph)	13	2	6	62	5	0	52	1046	54	41	1109	15
Confl. Peds. (#/hr)	6					6	4		2	2		4
Confl. Bikes (#/hr)												4
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Actuated Green, G (s)	7.8	7.8	7.8	7.8	7.8		57.8	54.2	54.2	56.6	53.6	53.6
Effective Green, g (s)	7.8	7.8	7.8	7.8	7.8		57.8	54.2	54.2	56.6	53.6	53.6
Actuated g/C Ratio	0.10	0.10	0.10	0.10	0.10		0.72	0.68	0.68	0.71	0.67	0.67
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	133	181	154	137	154		364	2397	1046	373	2371	1040
v/s Ratio Prot		0.00			0.00		c0.01	0.30		0.00	c0.31	
v/s Ratio Perm	0.01		0.00	c0.04			0.10		0.03	0.07		0.01
v/c Ratio	0.10	0.01	0.04	0.45	0.03		0.14	0.44	0.05	0.11	0.47	0.01
Uniform Delay, d1	32.9	32.6	32.7	34.1	32.7		5.8	5.9	4.3	5.6	6.3	4.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.0	0.1	2.4	0.1		0.2	0.6	0.1	0.1	0.7	0.0
Delay (s)	33.2	32.6	32.8	36.5	32.8		6.0	6.5	4.4	5.8	7.0	4.4
Level of Service	C	C	C	D	C		A	A	A	A	A	A
Approach Delay (s)		32.9			35.3			6.3			6.9	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	2	51	56	3	22	47	941	71	37	998	20
Future Volume (veh/h)	12	2	51	56	3	22	47	941	71	37	998	20
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	0.98		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	13	2	0	62	3	24	52	1046	79	41	1109	22
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	179	153	130	202	14	115	620	1858	828	610	1814	798
Arrive On Green	0.08	0.08	0.00	0.08	0.08	0.08	0.22	0.52	0.52	0.21	0.51	0.51
Sat Flow, veh/h	1352	1863	1583	1379	175	1403	1774	3539	1577	1774	3539	1558
Grp Volume(v), veh/h	13	2	0	62	0	27	52	1046	79	41	1109	22
Grp Sat Flow(s),veh/h/ln	1352	1863	1583	1379	0	1578	1774	1770	1577	1774	1770	1558
Q Serve(g_s), s	0.7	0.1	0.0	3.5	0.0	1.3	0.0	15.9	2.0	0.0	17.8	0.6
Cycle Q Clear(g_c), s	2.0	0.1	0.0	3.5	0.0	1.3	0.0	15.9	2.0	0.0	17.8	0.6
Prop In Lane	1.00		1.00	1.00		0.89	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	179	153	130	202	0	130	620	1858	828	610	1814	798
V/C Ratio(X)	0.07	0.01	0.00	0.31	0.00	0.21	0.08	0.56	0.10	0.07	0.61	0.03
Avail Cap(c_a), veh/h	372	419	356	399	0	355	620	1858	828	610	1814	798
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	0.83	0.83	0.83	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.2	33.7	0.0	35.4	0.0	34.3	10.8	12.8	9.5	10.1	13.8	9.6
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.9	0.0	0.8	0.0	1.0	0.2	0.0	1.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	0.1	0.0	2.5	0.0	1.1	1.1	12.2	1.6	0.9	13.9	0.5
LnGrp Delay(d),s/veh	35.4	33.8	0.0	36.2	0.0	35.1	10.9	13.8	9.7	10.1	15.4	9.7
LnGrp LOS	D	C		D		D	B	B	A	B	B	A
Approach Vol, veh/h		15			89			1177			1172	
Approach Delay, s/veh		35.2			35.9			13.4			15.1	
Approach LOS		D			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.4	47.0		10.6	21.4	48.0		10.6
Change Period (Y+Rc), s	5.0	6.0		4.0	5.0	6.0		4.0
Max Green Setting (Gmax), s	6.0	41.0		18.0	5.0	42.0		18.0
Max Q Clear Time (g_c+I1), s	2.0	19.8		5.5	2.0	17.9		4.0
Green Ext Time (p_c), s	0.0	7.9		0.2	0.0	8.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	433	210	122	536	1122	105
Future Volume (vph)	433	210	122	536	1122	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	0.97		0.95	1.00	1.00	1.00
Satd. Flow (prot)	3083		1641	3539	3539	1445
Flt Permitted	0.97		0.95	1.00	1.00	1.00
Satd. Flow (perm)	3083		1641	3539	3539	1445
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	461	223	130	570	1194	112
RTOR Reduction (vph)	62	0	0	0	0	36
Lane Group Flow (vph)	622	0	130	570	1194	76
Confl. Bikes (#/hr)						5
Heavy Vehicles (%)	10%	10%	10%	2%	2%	10%
Turn Type	Prot		Prot	NA	NA	pm+ov
Protected Phases	3		1	6	2	3
Permitted Phases						2
Actuated Green, G (s)	21.6		10.9	61.7	47.3	68.9
Effective Green, g (s)	21.1		10.4	63.7	49.3	67.9
Actuated g/C Ratio	0.21		0.10	0.64	0.49	0.68
Clearance Time (s)	3.5		3.5	6.0	6.0	3.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	650		170	2254	1744	981
v/s Ratio Prot	c0.20		c0.08	0.16	c0.34	0.02
v/s Ratio Perm						0.04
v/c Ratio	0.96		0.76	0.25	0.68	0.08
Uniform Delay, d1	39.0		43.6	7.9	19.4	5.4
Progression Factor	1.00		1.00	1.00	0.39	0.38
Incremental Delay, d2	24.9		18.3	0.3	1.5	0.0
Delay (s)	64.0		61.9	8.1	9.1	2.1
Level of Service	E		E	A	A	A
Approach Delay (s)	64.0			18.1	8.5	
Approach LOS	E			B	A	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	158	84	1100	283	75	571
Future Volume (vph)	158	84	1100	283	75	571
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		6.0		6.0	6.0
Lane Util. Factor	0.97		0.95		1.00	0.95
Frpb, ped/bikes	0.99		0.99		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.95		0.97		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	3270		3413		1769	3539
Flt Permitted	0.97		1.00		0.13	1.00
Satd. Flow (perm)	3270		3413		251	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	172	91	1196	308	82	621
RTOR Reduction (vph)	68	0	20	0	0	0
Lane Group Flow (vph)	195	0	1484	0	82	621
Confl. Peds. (#/hr)		6		1	1	
Confl. Bikes (#/hr)		5		6		
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Actuated Green, G (s)	10.4		49.2		49.2	49.2
Effective Green, g (s)	10.4		49.2		49.2	49.2
Actuated g/C Ratio	0.15		0.70		0.70	0.70
Clearance Time (s)	5.0		6.0		6.0	6.0
Vehicle Extension (s)	2.0		5.5		5.5	5.5
Lane Grp Cap (vph)	481		2378		174	2466
v/s Ratio Prot	c0.06		c0.43			0.18
v/s Ratio Perm					0.33	
v/c Ratio	0.40		0.62		0.47	0.25
Uniform Delay, d1	27.3		5.7		4.8	3.9
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	0.2		0.8		4.9	0.1
Delay (s)	27.5		6.5		9.7	4.1
Level of Service	C		A		A	A
Approach Delay (s)	27.5		6.5			4.7
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.6	Sum of lost time (s)	11.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	158	84	1100	283	75	571
Future Volume (veh/h)	158	84	1100	283	75	571
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1900	1863	1863
Adj Flow Rate, veh/h	132	134	1196	308	82	621
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	212	193	1964	498	280	2499
Arrive On Green	0.12	0.12	0.71	0.71	0.71	0.71
Sat Flow, veh/h	1774	1615	2875	706	347	3632
Grp Volume(v), veh/h	132	134	754	750	82	621
Grp Sat Flow(s),veh/h/ln	1774	1615	1770	1718	347	1770
Q Serve(g_s), s	4.5	5.0	13.8	14.4	10.2	3.9
Cycle Q Clear(g_c), s	4.5	5.0	13.8	14.4	24.5	3.9
Prop In Lane	1.00	1.00		0.41	1.00	
Lane Grp Cap(c), veh/h	212	193	1249	1213	280	2499
V/C Ratio(X)	0.62	0.69	0.60	0.62	0.29	0.25
Avail Cap(c_a), veh/h	675	614	1542	1497	338	3084
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.4	26.7	4.8	4.8	11.2	3.3
Incr Delay (d2), s/veh	1.1	1.7	1.3	1.4	1.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.0	4.2	11.3	11.5	1.9	3.5
LnGrp Delay(d),s/veh	27.5	28.3	6.1	6.3	12.8	3.4
LnGrp LOS	C	C	A	A	B	A
Approach Vol, veh/h	266		1504			703
Approach Delay, s/veh	27.9		6.2			4.5
Approach LOS	C		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		50.6				50.6		12.6
Change Period (Y+Rc), s		6.0				6.0		5.0
Max Green Setting (Gmax), s		55.0				55.0		24.0
Max Q Clear Time (g_c+I1), s		16.4				26.5		7.0
Green Ext Time (p_c), s		28.2				11.7		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	10	30	377	10	262	20	530	733	250	355	10
Future Volume (vph)	30	10	30	377	10	262	20	530	733	250	355	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.96	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1796	1556	1681	1690	1556	1770	3539	1569	1770	3521	
Flt Permitted		0.96	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1796	1556	1681	1690	1556	1770	3539	1569	1770	3521	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	32	11	32	405	11	282	22	570	788	269	382	11
RTOR Reduction (vph)	0	0	30	0	0	224	0	0	323	0	2	0
Lane Group Flow (vph)	0	43	2	207	209	58	22	570	465	269	391	0
Confl. Peds. (#/hr)			1	1			3		3	3		3
Confl. Bikes (#/hr)			1			5						10
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	8	8		4	4		5	2	4	1	6	
Permitted Phases			8			4			2			
Actuated Green, G (s)		5.5	5.5	19.0	19.0	19.0	1.7	26.1	45.1	19.3	43.7	
Effective Green, g (s)		5.5	5.5	19.0	19.0	19.0	1.7	26.1	45.1	19.3	43.7	
Actuated g/C Ratio		0.06	0.06	0.20	0.20	0.20	0.02	0.28	0.49	0.21	0.47	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	5.0	2.0	3.5	5.0	
Lane Grp Cap (vph)		106	92	343	345	318	32	994	863	367	1656	
v/s Ratio Prot		c0.02		0.12	0.12		0.01	0.16	c0.11	c0.15	0.11	
v/s Ratio Perm			0.00			0.04			0.19			
v/c Ratio		0.41	0.02	0.60	0.61	0.18	0.69	0.57	0.54	0.73	0.24	
Uniform Delay, d1		42.1	41.2	33.5	33.5	30.5	45.3	28.6	16.7	34.4	14.7	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.9	0.0	2.1	2.1	0.1	39.1	1.3	0.3	7.6	0.2	
Delay (s)		43.0	41.2	35.6	35.6	30.6	84.5	29.9	17.0	42.0	14.8	
Level of Service		D	D	D	D	C	F	C	B	D	B	
Approach Delay (s)		42.3			33.6			23.4			25.9	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	92.9	Sum of lost time (s)	23.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	10	30	377	10	262	20	530	733	250	355	10
Future Volume (veh/h)	30	10	30	377	10	262	20	530	733	250	355	10
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	32	11	32	413	0	0	22	570	788	269	382	11
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	25	83	533	0	238	43	1155	752	322	1698	49
Arrive On Green	0.08	0.05	0.05	0.15	0.00	0.00	0.02	0.33	0.33	0.18	0.48	0.48
Sat Flow, veh/h	1336	459	1551	3548	0	1583	1774	3539	1576	1774	3511	101
Grp Volume(v), veh/h	43	0	32	413	0	0	22	570	788	269	192	201
Grp Sat Flow(s),veh/h/ln	1796	0	1551	1774	0	1583	1774	1770	1576	1774	1770	1843
Q Serve(g_s), s	1.8	0.0	1.6	8.9	0.0	0.0	1.0	10.3	26.0	11.7	5.0	5.0
Cycle Q Clear(g_c), s	1.8	0.0	1.6	8.9	0.0	0.0	1.0	10.3	26.0	11.7	5.0	5.0
Prop In Lane	0.74		1.00	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	96	0	83	533	0	238	43	1155	752	322	856	891
V/C Ratio(X)	0.45	0.00	0.39	0.77	0.00	0.00	0.51	0.49	1.05	0.84	0.22	0.23
Avail Cap(c_a), veh/h	496	0	428	1158	0	517	111	1155	752	512	977	1018
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.8	0.0	36.4	32.5	0.0	0.0	38.4	21.5	17.7	31.5	11.9	11.9
Incr Delay (d2), s/veh	1.2	0.0	1.1	0.9	0.0	0.0	3.5	0.7	45.9	7.7	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	0.0	1.3	7.9	0.0	0.0	0.9	8.8	46.6	10.5	4.5	4.7
LnGrp Delay(d),s/veh	37.1	0.0	37.5	33.5	0.0	0.0	41.9	22.2	63.6	39.2	12.2	12.2
LnGrp LOS	D		D	C			D	C	F	D	B	B
Approach Vol, veh/h		75			413			1380			662	
Approach Delay, s/veh		37.3			33.5			46.2			23.2	
Approach LOS		D			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.4	32.0		18.0	6.9	44.5		10.3
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0
Max Green Setting (Gmax), s	23.0	26.0		26.0	5.0	44.0		22.0
Max Q Clear Time (g_c+I1), s	13.7	28.0		10.9	3.0	7.0		3.8
Green Ext Time (p_c), s	0.8	0.0		0.9	0.0	4.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	37.8
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
16: Higuera & Tank Farm

Mitigated Near Term Plus Project AM 2025
04/11/2018

User approved volume balancing among the lanes for turning movement.

Central Coast Transportation Consulting
Synchro 10 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	102	60	326	120	464	90	1109	402	411	847	37
Future Volume (vph)	45	102	60	326	120	464	90	1109	402	411	847	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.5	5.5	5.5	5.0	6.5	5.5	5.0	6.5	
Lane Util. Factor	1.00	1.00		0.97	0.95	0.95	1.00	0.91	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99	0.98	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.94		1.00	0.91	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1740		3433	1590	1472	1770	5085	1552	3433	3509	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1740		3433	1590	1472	1770	5085	1552	3433	3509	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	46	105	62	336	124	478	93	1143	414	424	873	38
RTOR Reduction (vph)	0	17	0	0	45	236	0	0	196	0	3	0
Lane Group Flow (vph)	46	150	0	336	265	56	93	1143	218	424	908	0
Confl. Peds. (#/hr)	12		10	10			7		12	12		7
Confl. Bikes (#/hr)			3			8						7
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	2	2		6	6		3	8	6	7	4	
Permitted Phases						6			8			
Actuated Green, G (s)	25.1	25.1		22.5	22.5	22.5	12.1	31.3	53.8	16.6	35.8	
Effective Green, g (s)	25.1	25.1		22.5	22.5	22.5	12.1	31.3	53.8	16.6	35.8	
Actuated g/C Ratio	0.21	0.21		0.19	0.19	0.19	0.10	0.27	0.46	0.14	0.30	
Clearance Time (s)	5.0	5.0		5.5	5.5	5.5	5.0	6.5	5.5	5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	378	371		657	304	281	182	1354	710	485	1069	
v/s Ratio Prot	0.03	c0.09		0.10	c0.17		0.05	0.22	0.06	c0.12	c0.26	
v/s Ratio Perm						0.04			0.08			
v/c Ratio	0.12	0.40		0.51	0.87	0.20	0.51	0.84	0.31	0.87	0.85	
Uniform Delay, d1	37.3	39.8		42.6	46.1	39.9	49.9	40.8	20.1	49.4	38.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	3.2		0.7	22.7	0.3	2.4	5.0	0.2	15.9	6.5	
Delay (s)	38.0	43.0		43.2	68.8	40.3	52.3	45.8	20.3	65.4	44.8	
Level of Service	D	D		D	E	D	D	D	C	E	D	
Approach Delay (s)		41.9			50.8			39.8			51.3	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	22.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	102	60	326	120	464	90	1109	402	411	847	37
Future Volume (veh/h)	45	102	60	326	120	464	90	1109	402	411	847	37
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.99	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	46	105	62	336	390	301	93	1143	414	424	873	38
Adj No. of Lanes	1	1	0	2	1	1	1	3	1	2	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	376	230	136	707	371	304	200	1336	726	479	996	43
Arrive On Green	0.21	0.21	0.21	0.20	0.20	0.20	0.11	0.26	0.26	0.14	0.29	0.29
Sat Flow, veh/h	1774	1085	640	3548	1863	1527	1774	5085	1562	3442	3447	150
Grp Volume(v), veh/h	46	0	167	336	390	301	93	1143	414	424	448	463
Grp Sat Flow(s),veh/h/ln	1774	0	1725	1774	1863	1527	1774	1695	1562	1721	1770	1827
Q Serve(g_s), s	2.5	0.0	10.0	9.9	23.5	23.2	5.8	25.2	22.9	14.3	28.4	28.4
Cycle Q Clear(g_c), s	2.5	0.0	10.0	9.9	23.5	23.2	5.8	25.2	22.9	14.3	28.4	28.4
Prop In Lane	1.00		0.37	1.00		1.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	376	0	366	707	371	304	200	1336	726	479	511	528
V/C Ratio(X)	0.12	0.00	0.46	0.48	1.05	0.99	0.46	0.86	0.57	0.88	0.88	0.88
Avail Cap(c_a), veh/h	376	0	366	707	371	304	200	1402	746	496	593	612
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.6	0.0	40.5	41.7	47.2	47.1	48.9	41.3	23.2	49.8	39.9	39.9
Incr Delay (d2), s/veh	0.7	0.0	4.1	0.5	60.5	48.3	1.7	5.3	1.0	16.8	12.6	12.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	5.1	4.9	18.2	13.8	2.9	12.4	13.5	7.9	15.7	16.2
LnGrp Delay(d),s/veh	38.2	0.0	44.6	42.2	107.7	95.4	50.6	46.6	24.2	66.6	52.5	52.2
LnGrp LOS	D		D	D	F	F	D	D	C	E	D	D
Approach Vol, veh/h		213			1027			1650			1335	
Approach Delay, s/veh		43.2			82.7			41.2			56.9	
Approach LOS		D			F			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		30.0	18.3	40.6		29.0	21.4	37.5
Change Period (Y+Rc), s		5.0	5.0	6.5		5.5	5.0	6.5
Max Green Setting (Gmax), s		25.0	10.0	39.5		23.5	17.0	32.5
Max Q Clear Time (g_c+I1), s		12.0	7.8	30.4		25.5	16.3	27.2
Green Ext Time (p_c), s		0.9	0.0	3.6		0.0	0.2	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	56.3
HCM 2010 LOS	E

Notes

HCM 2010 Signalized Intersection Summary	Mitigated Near Term Plus Project PM 2025
1: LOVR & Madonna	04/11/2018

User approved volume balancing among the lanes for turning movement.

Central Coast Transportation Consulting	Synchro 10 Report

Movement	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (vph)	15	913	1	30	18	1047	8	164	4	0	38	113
Future Volume (vph)	15	913	1	30	18	1047	8	164	4	0	38	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0			4.0	4.0	
Lane Util. Factor	1.00	0.95			1.00	0.95	1.00			1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	1.00	0.97			1.00	0.98	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00			1.00	1.00	
Frt	1.00	1.00			1.00	1.00	0.85			1.00	0.85	
Flt Protected	0.95	1.00			0.95	1.00	1.00			0.95	1.00	
Satd. Flow (prot)	1766	3539			1770	3539	1534			1761	1556	
Flt Permitted	0.95	1.00			0.95	1.00	1.00			0.76	1.00	
Satd. Flow (perm)	1766	3539			1770	3539	1534			1418	1556	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	992	1	33	20	1138	9	178	4	0	41	123
RTOR Reduction (vph)	0	0	0	0	0	0	97	0	0	0	35	0
Lane Group Flow (vph)	16	993	0	0	53	1138	90	0	0	4	6	0
Confl. Peds. (#/hr)	6		9				6		6		5	5
Turn Type	Prot	NA		Prot	Prot	NA	Perm		Perm	NA	Perm	Perm
Protected Phases	5	2		1	1	6				8		
Permitted Phases							6		8		8	4
Actuated Green, G (s)	0.5	25.4			2.2	27.1	27.1			8.8	8.8	
Effective Green, g (s)	0.5	25.4			2.2	27.1	27.1			8.8	8.8	
Actuated g/C Ratio	0.01	0.43			0.04	0.45	0.45			0.15	0.15	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0			4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0			3.0	3.0	
Lane Grp Cap (vph)	14	1505			65	1606	696			209	229	
v/s Ratio Prot	0.01	0.28			c0.03	c0.32						
v/s Ratio Perm							0.06			0.00	0.00	
v/c Ratio	1.14	0.66			0.82	0.71	0.13			0.02	0.03	
Uniform Delay, d1	29.6	13.7			28.5	13.1	9.5			21.8	21.8	
Progression Factor	1.00	1.00			1.00	1.00	1.00			1.00	1.00	
Incremental Delay, d2	291.3	1.1			52.3	1.5	0.1			0.0	0.0	
Delay (s)	320.9	14.8			80.8	14.6	9.5			21.8	21.8	
Level of Service	F	B			F	B	A			C	C	
Approach Delay (s)		19.6				16.4				21.8		
Approach LOS		B				B				C		

Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	20.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
2: Oceanaire & Madonna
Mitigated Near Term Plus Project PM 2025
04/11/2018

Movement	SBT	SBR	SBR2	SEL	SER2	NEL2	NEL	NER
Lane Configurations								
Traffic Volume (vph)	0	2	16	1	4	1	2	23
Future Volume (vph)	0	2	16	1	4	1	2	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0			4.0	
Lane Util. Factor	1.00			1.00			1.00	
Frpb, ped/bikes	1.00			0.98			0.99	
Flpb, ped/bikes	1.00			1.00			1.00	
Frt	0.98			0.89			0.88	
Flt Protected	0.96			0.99			0.99	
Satd. Flow (prot)	1740			1603			1609	
Flt Permitted	0.75			0.99			0.99	
Satd. Flow (perm)	1365			1603			1609	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2	17	1	4	1	2	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	142	0	0	5	0	0	28	0
Confl. Peds. (#/hr)		1		5	6	6		1
Turn Type	NA			Prot		Perm	Prot	
Protected Phases	4			7			3	
Permitted Phases						3		
Actuated Green, G (s)	8.8			0.9			2.4	
Effective Green, g (s)	8.8			0.9			2.4	
Actuated g/C Ratio	0.15			0.02			0.04	
Clearance Time (s)	4.0			4.0			4.0	
Vehicle Extension (s)	3.0			3.0			3.0	
Lane Grp Cap (vph)	201			24			64	
v/s Ratio Prot				c0.00				
v/s Ratio Perm	c0.10						0.02	
v/c Ratio	0.71			0.21			0.44	
Uniform Delay, d1	24.2			29.0			28.0	
Progression Factor	1.00			1.00			1.00	
Incremental Delay, d2	10.8			4.3			4.7	
Delay (s)	35.0			33.3			32.7	
Level of Service	C			C			C	
Approach Delay (s)	35.0			33.3			32.7	
Approach LOS	C			C			C	

Intersection Summary

HCM 2010 methodology does not support more than 4 approaches.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	897	244	395	1040	25	223	1	376	29	9	22
Future Volume (vph)	35	897	244	395	1040	25	223	1	376	29	9	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0			4.0	6.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00			1.00	0.99		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (prot)	1770	3539	1533	3433	3523			1774	1564		1794	1528
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (perm)	1770	3539	1533	3433	3523			1774	1564		1794	1528
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	36	925	252	407	1072	26	230	1	388	30	9	23
RTOR Reduction (vph)	0	0	75	0	1	0	0	0	263	0	0	21
Lane Group Flow (vph)	36	925	177	407	1097	0	0	231	125	0	39	2
Confl. Peds. (#/hr)	1		5	5		1	5		1	1		5
Confl. Bikes (#/hr)			22			22			10			6
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	pm+ov	Split	NA	Perm
Protected Phases	5	2		1	6		8	8	1	4	4	
Permitted Phases			2						8			4
Actuated Green, G (s)	2.2	29.1	29.1	10.4	37.3			15.8	26.2		6.2	6.2
Effective Green, g (s)	2.2	29.1	29.1	10.4	37.3			15.8	26.2		6.2	6.2
Actuated g/C Ratio	0.03	0.36	0.36	0.13	0.46			0.19	0.32		0.08	0.08
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0			4.0	6.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	47	1263	547	438	1612			343	502		136	116
v/s Ratio Prot	0.02	0.26		c0.12	c0.31			c0.13	0.03		c0.02	
v/s Ratio Perm			0.12						0.05			0.00
v/c Ratio	0.77	0.73	0.32	0.93	0.68			0.67	0.25		0.29	0.02
Uniform Delay, d1	39.4	22.8	19.1	35.2	17.4			30.5	20.4		35.6	34.8
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	52.3	2.2	0.3	25.9	1.2			5.1	0.3		1.2	0.1
Delay (s)	91.7	25.0	19.4	61.1	18.6			35.6	20.7		36.7	34.9
Level of Service	F	C	B	E	B			D	C		D	C
Approach Delay (s)		25.8			30.1			26.2			36.0	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	28.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	81.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	897	244	395	1040	25	223	1	376	29	9	22
Future Volume (veh/h)	35	897	244	395	1040	25	223	1	376	29	9	22
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.95	1.00		0.97	1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	36	925	252	407	1072	26	230	1	388	30	9	23
Adj No. of Lanes	1	2	1	2	2	0	0	1	1	0	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	49	1065	461	438	1412	34	471	2	613	70	21	75
Arrive On Green	0.03	0.30	0.30	0.13	0.40	0.40	0.27	0.27	0.27	0.05	0.05	0.05
Sat Flow, veh/h	1774	3539	1531	3442	3527	86	1767	8	1543	1380	414	1479
Grp Volume(v), veh/h	36	925	252	407	538	560	231	0	388	39	0	23
Grp Sat Flow(s),veh/h/ln	1774	1770	1531	1721	1770	1843	1774	0	1543	1794	0	1479
Q Serve(g_s), s	1.6	19.5	10.8	9.2	20.6	20.6	8.6	0.0	16.0	1.7	0.0	1.2
Cycle Q Clear(g_c), s	1.6	19.5	10.8	9.2	20.6	20.6	8.6	0.0	16.0	1.7	0.0	1.2
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	0.77		1.00
Lane Grp Cap(c), veh/h	49	1065	461	438	708	738	474	0	613	91	0	75
V/C Ratio(X)	0.73	0.87	0.55	0.93	0.76	0.76	0.49	0.00	0.63	0.43	0.00	0.31
Avail Cap(c_a), veh/h	90	1125	487	438	708	738	632	0	750	502	0	414
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.0	26.0	23.0	34.0	20.3	20.3	24.3	0.0	19.3	36.2	0.0	36.0
Incr Delay (d2), s/veh	18.8	7.2	1.1	26.5	4.8	4.6	0.8	0.0	1.2	3.1	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	10.6	4.7	6.0	10.9	11.4	4.3	0.0	7.0	0.9	0.0	0.5
LnGrp Delay(d),s/veh	56.7	33.2	24.2	60.5	25.1	24.9	25.1	0.0	20.5	39.4	0.0	38.3
LnGrp LOS	E	C	C	E	C	C	C		C	D		D
Approach Vol, veh/h		1213			1505			619			62	
Approach Delay, s/veh		32.0			34.6			22.2			39.0	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.0	29.7		8.0	8.2	37.5		25.0
Change Period (Y+Rc), s	6.0	6.0		4.0	6.0	6.0		4.0
Max Green Setting (Gmax), s	10.0	25.0		22.0	4.0	31.0		28.0
Max Q Clear Time (g_c+I1), s	11.2	21.5		3.7	3.6	22.6		18.0
Green Ext Time (p_c), s	0.0	2.2		0.2	0.0	4.3		2.6

Intersection Summary	
HCM 2010 Ctrl Delay	31.5
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	1255	212	185	999	17	584	10	300	20	12	19
Future Volume (vph)	24	1255	212	185	999	17	584	10	300	20	12	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.95	0.95	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.91	1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		0.99	0.99	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	0.99	1.00
Satd. Flow (prot)	1770	5085	1441	1770	5068		1545	1551	1456	1681	1749	1548
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.75	0.72	1.00	0.22	0.58	1.00
Satd. Flow (perm)	1770	5085	1441	1770	5068		1212	1171	1456	393	1033	1548
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	25	1307	221	193	1041	18	608	10	312	21	12	20
RTOR Reduction (vph)	0	0	83	0	2	0	0	0	197	0	0	16
Lane Group Flow (vph)	25	1307	138	193	1057	0	310	308	116	17	17	4
Confl. Peds. (#/hr)	2		12	12		2	5					5
Confl. Bikes (#/hr)			27			23			1			1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	10%	2%	2%	2%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	pm+ov	Perm	NA	Perm
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases			2				8		8	4		4
Actuated Green, G (s)	2.0	29.0	29.0	12.0	39.0		25.0	25.0	37.0	18.0	18.0	18.0
Effective Green, g (s)	2.0	29.0	29.0	12.0	39.0		25.0	25.0	37.0	18.0	18.0	18.0
Actuated g/C Ratio	0.02	0.29	0.29	0.12	0.39		0.25	0.25	0.37	0.18	0.18	0.18
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	35	1474	417	212	1976		303	292	596	70	185	278
v/s Ratio Prot	0.01	c0.26		c0.11	0.21				0.02			
v/s Ratio Perm			0.10				0.26	c0.26	0.06	c0.04	0.02	0.00
v/c Ratio	0.71	0.89	0.33	0.91	0.54		1.02	1.05	0.19	0.24	0.09	0.01
Uniform Delay, d1	48.7	33.9	27.9	43.5	23.5		37.5	37.5	21.4	35.2	34.2	33.7
Progression Factor	1.00	1.00	1.00	1.07	0.34		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	51.0	8.2	2.1	28.6	0.7		57.8	67.8	0.2	8.1	1.0	0.1
Delay (s)	99.7	42.2	30.0	75.0	8.8		95.3	105.3	21.5	43.2	35.2	33.8
Level of Service	F	D	C	E	A		F	F	C	D	D	C
Approach Delay (s)		41.4			19.0			73.8			37.2	
Approach LOS		D			B			E			D	

Intersection Summary			
HCM 2000 Control Delay	41.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	1255	212	185	999	17	584	10	300	20	12	19
Future Volume (veh/h)	24	1255	212	185	999	17	584	10	300	20	12	19
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.94	0.99		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1727	1727	1727	1863	1863	1863
Adj Flow Rate, veh/h	25	1307	221	193	1041	18	615	0	312	16	18	20
Adj No. of Lanes	1	3	1	1	3	0	2	0	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	10	10	10	2	2	2
Cap, veh/h	479	2594	766	213	1851	32	755	0	536	337	466	388
Arrive On Green	0.27	0.51	0.51	0.24	0.72	0.72	0.25	0.00	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	5085	1503	1774	5142	89	2516	0	1441	1059	1863	1554
Grp Volume(v), veh/h	25	1307	221	193	686	373	615	0	312	16	18	20
Grp Sat Flow(s),veh/h/ln	1774	1695	1503	1774	1695	1840	1258	0	1441	1059	1863	1554
Q Serve(g_s), s	1.0	17.0	8.4	10.6	9.5	9.5	24.3	0.0	17.4	1.2	0.7	1.0
Cycle Q Clear(g_c), s	1.0	17.0	8.4	10.6	9.5	9.5	25.0	0.0	17.4	1.2	0.7	1.0
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	479	2594	766	213	1220	663	755	0	536	337	466	388
V/C Ratio(X)	0.05	0.50	0.29	0.91	0.56	0.56	0.82	0.00	0.58	0.05	0.04	0.05
Avail Cap(c_a), veh/h	479	2594	766	213	1220	663	755	0	536	337	466	388
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.57	0.57	0.57	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.0	16.2	14.1	37.5	10.3	10.3	38.0	0.0	25.3	28.6	28.4	28.5
Incr Delay (d2), s/veh	0.0	0.7	0.9	25.0	1.1	2.0	9.4	0.0	4.6	0.3	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	8.0	3.7	6.6	4.4	4.9	9.4	0.0	7.6	0.4	0.4	0.4
LnGrp Delay(d),s/veh	27.1	16.9	15.0	62.4	11.4	12.3	47.4	0.0	29.9	28.8	28.6	28.7
LnGrp LOS	C	B	B	E	B	B	D		C	C	C	C
Approach Vol, veh/h		1553			1252			927			54	
Approach Delay, s/veh		16.8			19.5			41.5			28.7	
Approach LOS		B			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.0	55.0		29.0	31.0	40.0		29.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	12.0	29.0		18.0	5.0	36.0		25.0
Max Q Clear Time (g_c+I1), s	12.6	19.0		3.2	3.0	11.5		27.0
Green Ext Time (p_c), s	0.0	6.5		0.1	0.0	7.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.9
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
5: Hwy 101 SB/Madonna Inn & Madonna
Mitigated Near Term Plus Project PM 2025
04/11/2018

User approved volume balancing among the lanes for turning movement.

Central Coast Transportation Consulting
Synchro 10 Report

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	640	935	0	0	1057	175	144	3	126	0	0	0
Future Volume (vph)	640	935	0	0	1057	175	144	3	126	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0				
Lane Util. Factor	0.97	0.95			0.95		1.00	1.00				
Frpb, ped/bikes	1.00	1.00			1.00		1.00	0.98				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.98		1.00	0.85				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	3539			3453		1641	1451				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	3539			3453		1641	1451				
Peak-hour factor, PHF	0.97	0.97	0.92	0.92	0.97	0.97	0.97	0.97	0.97	0.92	0.92	0.92
Adj. Flow (vph)	660	964	0	0	1090	180	148	3	130	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	113	0	0	0	0
Lane Group Flow (vph)	660	964	0	0	1257	0	148	20	0	0	0	0
Confl. Peds. (#/hr)			11	11					2	2		
Confl. Bikes (#/hr)			25			23						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	10%	10%	10%	10%
Turn Type	Prot	NA			NA		Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases												
Actuated Green, G (s)	27.0	78.6			47.6		13.4	13.4				
Effective Green, g (s)	27.0	78.6			47.6		13.4	13.4				
Actuated g/C Ratio	0.27	0.79			0.48		0.13	0.13				
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	926	2781			1643		219	194				
v/s Ratio Prot	c0.19	0.27			c0.36		c0.09	0.01				
v/s Ratio Perm												
v/c Ratio	0.71	0.35			0.77		0.68	0.11				
Uniform Delay, d1	33.0	3.1			21.6		41.2	38.0				
Progression Factor	0.41	0.82			0.73		1.00	1.00				
Incremental Delay, d2	1.6	0.2			3.0		8.0	0.2				
Delay (s)	15.2	2.8			18.8		49.2	38.3				
Level of Service	B	A			B		D	D				
Approach Delay (s)		7.8			18.8			44.0			0.0	
Approach LOS		A			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	640	935	0	0	1057	175	144	3	126	0	0	0
Future Volume (veh/h)	640	935	0	0	1057	175	144	3	126	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1863	1900	1727	1727	1900			
Adj Flow Rate, veh/h	660	964	0	0	1090	180	148	3	130			
Adj No. of Lanes	2	2	0	0	2	0	1	1	0			
Peak Hour Factor	0.97	0.97	0.92	0.92	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	10	10	10			
Cap, veh/h	1082	2846	0	0	1364	225	190	4	166			
Arrive On Green	0.63	1.00	0.00	0.00	0.30	0.30	0.12	0.12	0.12			
Sat Flow, veh/h	3442	3632	0	0	3124	499	1645	33	1433			
Grp Volume(v), veh/h	660	964	0	0	635	635	148	0	133			
Grp Sat Flow(s),veh/h/ln	1721	1770	0	0	1770	1761	1645	0	1466			
Q Serve(g_s), s	11.6	0.0	0.0	0.0	33.0	33.2	8.7	0.0	8.8			
Cycle Q Clear(g_c), s	11.6	0.0	0.0	0.0	33.0	33.2	8.7	0.0	8.8			
Prop In Lane	1.00		0.00	0.00		0.28	1.00		0.98			
Lane Grp Cap(c), veh/h	1082	2846	0	0	796	792	190	0	170			
V/C Ratio(X)	0.61	0.34	0.00	0.00	0.80	0.80	0.78	0.00	0.78			
Avail Cap(c_a), veh/h	1082	2846	0	0	796	792	263	0	235			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00			
Upstream Filter(I)	0.51	0.51	0.00	0.00	0.78	0.78	1.00	0.00	1.00			
Uniform Delay (d), s/veh	14.9	0.0	0.0	0.0	30.7	30.8	43.0	0.0	43.0			
Incr Delay (d2), s/veh	0.5	0.2	0.0	0.0	6.4	6.6	9.5	0.0	11.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	5.4	0.1	0.0	0.0	17.5	17.6	4.5	0.0	4.1			
LnGrp Delay(d),s/veh	15.4	0.2	0.0	0.0	37.2	37.4	52.4	0.0	54.1			
LnGrp LOS	B	A			D	D	D		D			
Approach Vol, veh/h		1624			1270			281				
Approach Delay, s/veh		6.4			37.3			53.2				
Approach LOS		A			D			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		84.4			35.4	49.0		15.6
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		76.0			27.0	45.0		16.0
Max Q Clear Time (g_c+I1), s		2.0			13.6	35.2		10.8
Green Ext Time (p_c), s		8.5			2.7	5.6		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	22.9
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	624	20	382	10	94	10	427	609	13	10	537	749
Future Volume (vph)	624	20	382	10	94	10	427	609	13	10	537	749
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	1.00			0.95	0.88
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00			1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00			1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1681	1690	1571	1770	1830		3433	1854			3535	2749
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00			0.94	1.00
Satd. Flow (perm)	1681	1690	1571	1770	1830		3433	1854			3325	2749
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	671	22	411	11	101	11	459	655	14	11	577	805
RTOR Reduction (vph)	0	0	215	0	4	0	0	1	0	0	0	0
Lane Group Flow (vph)	349	344	196	11	108	0	459	668	0	0	588	805
Confl. Peds. (#/hr)			1	1			4		10	10		
Confl. Bikes (#/hr)						8			21			12
Turn Type	Split	NA	pm+ov	Split	NA		Prot	NA		Perm	NA	pm+ov
Protected Phases	8	8	1	4	4		1	6			2	8
Permitted Phases			8							2		2
Actuated Green, G (s)	27.8	27.8	47.6	11.1	11.1		19.8	49.1			25.3	53.1
Effective Green, g (s)	27.8	27.8	47.6	11.1	11.1		19.8	49.1			25.3	53.1
Actuated g/C Ratio	0.28	0.28	0.48	0.11	0.11		0.20	0.49			0.25	0.53
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	467	469	810	196	203		679	910			841	1459
v/s Ratio Prot	c0.21	0.20	0.05	0.01	c0.06		0.13	c0.36				0.15
v/s Ratio Perm			0.08								0.18	0.14
v/c Ratio	0.75	0.73	0.24	0.06	0.53		0.68	0.73			0.70	0.55
Uniform Delay, d1	32.9	32.7	15.5	39.8	42.0		37.1	20.3			33.9	15.6
Progression Factor	1.27	1.27	1.38	1.00	1.00		1.00	1.00			0.80	0.83
Incremental Delay, d2	10.0	9.3	0.1	0.1	2.5		2.7	3.1			2.2	0.4
Delay (s)	51.9	51.1	21.5	39.9	44.5		39.8	23.4			29.4	13.3
Level of Service	D	D	C	D	D		D	C			C	B
Approach Delay (s)		40.3			44.1			30.0			20.1	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	624	20	382	10	94	10	427	609	13	10	537	749
Future Volume (veh/h)	624	20	382	10	94	10	427	609	13	10	537	749
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.95	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	687	0	0	11	101	11	459	655	14	11	577	805
Adj No. of Lanes	2	0	1	1	1	0	2	1	0	0	2	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	710	0	578	470	437	48	567	753	16	43	714	1105
Arrive On Green	0.20	0.00	0.00	0.27	0.27	0.27	0.16	0.41	0.41	0.07	0.07	0.07
Sat Flow, veh/h	3548	0	1583	1774	1647	179	3442	1815	39	25	3398	2608
Grp Volume(v), veh/h	687	0	0	11	0	112	459	0	669	312	276	805
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1774	0	1827	1721	0	1853	1813	1610	1304
Q Serve(g_s), s	19.2	0.0	0.0	0.5	0.0	4.8	12.9	0.0	33.0	4.4	16.9	21.0
Cycle Q Clear(g_c), s	19.2	0.0	0.0	0.5	0.0	4.8	12.9	0.0	33.0	16.9	16.9	21.0
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.02	0.04		1.00
Lane Grp Cap(c), veh/h	710	0	578	470	0	484	567	0	769	418	338	1105
V/C Ratio(X)	0.97	0.00	0.00	0.02	0.00	0.23	0.81	0.00	0.87	0.75	0.81	0.73
Avail Cap(c_a), veh/h	710	0	578	470	0	484	929	0	964	418	338	1105
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.95	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	0.84	0.84	0.84
Uniform Delay (d), s/veh	39.7	0.0	0.0	27.2	0.0	28.8	40.2	0.0	26.8	44.5	44.6	27.8
Incr Delay (d2), s/veh	26.0	0.0	0.0	0.0	0.0	0.2	2.8	0.0	7.3	6.2	12.2	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	0.0	0.0	0.2	0.0	2.5	6.3	0.0	18.5	9.2	8.7	11.5
LnGrp Delay(d),s/veh	65.6	0.0	0.0	27.2	0.0	29.0	43.0	0.0	34.0	50.7	56.8	29.9
LnGrp LOS	E			C		C	D		C	D	E	C
Approach Vol, veh/h		687			123			1128			1393	
Approach Delay, s/veh		65.6			28.8			37.7			39.9	
Approach LOS		E			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	20.5	25.0		30.5		45.5		24.0
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s	27.0	21.0		16.0		52.0		20.0
Max Q Clear Time (g_c+I1), s	14.9	23.0		6.8		35.0		21.2
Green Ext Time (p_c), s	1.6	0.0		0.4		4.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	44.1
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	40	43	1721	38	27	1502
Future Volume (vph)	40	43	1721	38	27	1502
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.96	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1524	1768	3539
Flt Permitted	0.95	1.00	1.00	1.00	0.09	1.00
Satd. Flow (perm)	1770	1583	3539	1524	176	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	47	1871	41	29	1633
RTOR Reduction (vph)	0	14	0	4	0	0
Lane Group Flow (vph)	43	33	1871	37	29	1633
Confl. Peds. (#/hr)				10	10	
Confl. Bikes (#/hr)				2		
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	4.1	4.1	42.3	42.3	42.3	42.3
Effective Green, g (s)	4.1	4.1	42.3	42.3	42.3	42.3
Actuated g/C Ratio	0.08	0.08	0.78	0.78	0.78	0.78
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	133	119	2751	1185	136	2751
v/s Ratio Prot	c0.02		c0.53			0.46
v/s Ratio Perm		0.02		0.02	0.16	
v/c Ratio	0.32	0.28	0.68	0.03	0.21	0.59
Uniform Delay, d1	23.8	23.8	2.9	1.4	1.6	2.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	1.3	0.7	0.0	0.8	0.3
Delay (s)	25.3	25.0	3.6	1.4	2.4	2.8
Level of Service	C	C	A	A	A	A
Approach Delay (s)	25.1		3.5			2.8
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	3.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	54.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	40	43	1721	38	27	1502
Future Volume (veh/h)	40	43	1721	38	27	1502
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	43	47	1871	41	29	1633
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	112	100	2603	1132	284	2603
Arrive On Green	0.06	0.06	0.74	0.74	0.74	0.74
Sat Flow, veh/h	1774	1583	3632	1540	234	3632
Grp Volume(v), veh/h	43	47	1871	41	29	1633
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1540	234	1770
Q Serve(g_s), s	0.9	1.1	11.8	0.3	3.2	9.0
Cycle Q Clear(g_c), s	0.9	1.1	11.8	0.3	15.0	9.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	112	100	2603	1132	284	2603
V/C Ratio(X)	0.38	0.47	0.72	0.04	0.10	0.63
Avail Cap(c_a), veh/h	713	637	3202	1393	323	3202
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	18.0	3.0	1.4	7.1	2.6
Incr Delay (d2), s/veh	2.1	3.4	0.6	0.0	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.6	5.7	0.1	0.2	4.2
LnGrp Delay(d),s/veh	20.0	21.4	3.6	1.4	7.3	2.9
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	90		1912			1662
Approach Delay, s/veh	20.7		3.5			2.9
Approach LOS	C		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		33.3				33.3		6.5
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		36.0				36.0		16.0
Max Q Clear Time (g_c+I1), s		13.8				17.0		3.1
Green Ext Time (p_c), s		15.1				12.3		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	3.7
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	4	46	120	10	69	44	1616	62	46	1417	27
Future Volume (vph)	20	4	46	120	10	69	44	1616	62	46	1417	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99		1.00	1.00	0.96	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1765	1863	1583	1770	1597		1770	3539	1524	1770	3539	1564
Flt Permitted	0.70	1.00	1.00	0.76	1.00		0.11	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	1309	1863	1583	1407	1597		211	3539	1524	206	3539	1564
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	21	4	47	124	10	71	45	1666	64	47	1461	28
RTOR Reduction (vph)	0	0	41	0	62	0	0	0	20	0	0	9
Lane Group Flow (vph)	21	4	6	124	19	0	45	1666	44	47	1461	19
Confl. Peds. (#/hr)	2					2			5	5		
Confl. Bikes (#/hr)									10			1
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		8			4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Actuated Green, G (s)	10.6	10.6	10.6	10.6	10.6		54.9	54.9	54.9	54.2	54.2	54.2
Effective Green, g (s)	10.6	10.6	10.6	10.6	10.6		54.9	54.9	54.9	54.2	54.2	54.2
Actuated g/C Ratio	0.13	0.13	0.13	0.13	0.13		0.69	0.69	0.69	0.68	0.68	0.68
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	173	246	209	186	211		207	2428	1045	188	2397	1059
v/s Ratio Prot		0.00			0.01		0.01	c0.47		0.01	c0.41	
v/s Ratio Perm	0.02		0.00	c0.09			0.14		0.03	0.16		0.01
v/c Ratio	0.12	0.02	0.03	0.67	0.09		0.22	0.69	0.04	0.25	0.61	0.02
Uniform Delay, d1	30.6	30.2	30.2	33.0	30.5		6.7	7.4	4.1	11.2	7.1	4.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.0	0.1	8.7	0.2		0.5	1.6	0.1	0.7	1.2	0.0
Delay (s)	30.9	30.2	30.3	41.7	30.7		7.2	9.0	4.1	11.9	8.3	4.2
Level of Service	C	C	C	D	C		A	A	A	B	A	A
Approach Delay (s)		30.5			37.4			8.8			8.3	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	4	46	120	10	69	44	1616	62	46	1417	27
Future Volume (veh/h)	20	4	46	120	10	69	44	1616	62	46	1417	27
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	21	4	0	124	10	71	45	1666	64	47	1461	28
Adj No. of Lanes	1	1	1	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	188	227	193	258	24	171	254	2124	921	379	2466	1087
Arrive On Green	0.12	0.12	0.00	0.12	0.12	0.12	0.03	0.60	0.60	0.13	0.70	0.70
Sat Flow, veh/h	1307	1863	1583	1400	198	1408	1774	3539	1535	1774	3539	1560
Grp Volume(v), veh/h	21	4	0	124	0	81	45	1666	64	47	1461	28
Grp Sat Flow(s),veh/h/ln	1307	1863	1583	1400	0	1606	1774	1770	1535	1774	1770	1560
Q Serve(g_s), s	1.2	0.2	0.0	6.8	0.0	3.7	0.9	28.5	1.4	0.0	17.1	0.4
Cycle Q Clear(g_c), s	4.9	0.2	0.0	7.0	0.0	3.7	0.9	28.5	1.4	0.0	17.1	0.4
Prop In Lane	1.00		1.00	1.00		0.88	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	188	227	193	258	0	196	254	2124	921	379	2466	1087
V/C Ratio(X)	0.11	0.02	0.00	0.48	0.00	0.41	0.18	0.78	0.07	0.12	0.59	0.03
Avail Cap(c_a), veh/h	290	373	317	367	0	321	286	2124	921	379	2466	1087
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	0.71	0.71	0.71	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	30.9	0.0	34.0	0.0	32.5	10.0	12.1	6.7	20.5	6.3	3.7
Incr Delay (d2), s/veh	0.3	0.0	0.0	1.4	0.0	1.4	0.2	2.2	0.1	0.1	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.1	0.0	2.8	0.0	1.7	0.4	14.3	0.6	0.8	8.5	0.2
LnGrp Delay(d),s/veh	35.0	31.0	0.0	35.4	0.0	33.9	10.3	14.2	6.8	20.6	7.3	3.8
LnGrp LOS	D	C		D		C	B	B	A	C	A	A
Approach Vol, veh/h		25			205			1775			1536	
Approach Delay, s/veh		34.4			34.8			13.9			7.7	
Approach LOS		C			C			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.5	59.7		13.7	14.3	52.0		13.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	4.0	48.0		16.0	4.0	48.0		16.0
Max Q Clear Time (g_c+I1), s	2.9	19.1		9.0	2.0	30.5		6.9
Green Ext Time (p_c), s	0.0	13.0		0.5	0.0	12.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.5
HCM 2010 LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	512	108	190	942	777	312
Future Volume (vph)	512	108	190	942	777	312
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5		3.5	6.0	6.0	3.5
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	0.96		0.95	1.00	1.00	1.00
Satd. Flow (prot)	3134		1770	3539	3539	1558
Flt Permitted	0.96		0.95	1.00	1.00	1.00
Satd. Flow (perm)	3134		1770	3539	3539	1558
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	545	115	202	1002	827	332
RTOR Reduction (vph)	18	0	0	0	0	99
Lane Group Flow (vph)	642	0	202	1002	827	233
Confl. Peds. (#/hr)	3					
Confl. Bikes (#/hr)						8
Heavy Vehicles (%)	10%	10%	2%	2%	2%	2%
Turn Type	Prot		Prot	NA	NA	pm+ov
Protected Phases	3		1	6	2	3
Permitted Phases						2
Actuated Green, G (s)	23.6		16.7	66.9	46.7	70.3
Effective Green, g (s)	23.6		16.7	66.9	46.7	70.3
Actuated g/C Ratio	0.24		0.17	0.67	0.47	0.70
Clearance Time (s)	3.5		3.5	6.0	6.0	3.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	739		295	2367	1652	1095
v/s Ratio Prot	c0.20		c0.11	0.28	c0.23	0.05
v/s Ratio Perm						0.10
v/c Ratio	0.87		0.68	0.42	0.50	0.21
Uniform Delay, d1	36.7		39.2	7.6	18.5	5.2
Progression Factor	1.00		1.00	1.00	0.82	5.42
Incremental Delay, d2	10.6		6.4	0.6	1.0	0.1
Delay (s)	47.3		45.6	8.2	16.2	28.2
Level of Service	D		D	A	B	C
Approach Delay (s)	47.3			14.5	19.7	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 methodology does not support exclusive ped or hold phases.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	504	165	848	200	155	1199
Future Volume (vph)	504	165	848	200	155	1199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		6.0		6.0	6.0
Lane Util. Factor	0.97		0.95		1.00	0.95
Frpb, ped/bikes	0.99		1.00		1.00	1.00
Flpb, ped/bikes	1.00		1.00		1.00	1.00
Frt	0.96		0.97		1.00	1.00
Flt Protected	0.96		1.00		0.95	1.00
Satd. Flow (prot)	3324		3421		1770	3539
Flt Permitted	0.96		1.00		0.20	1.00
Satd. Flow (perm)	3324		3421		374	3539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	531	174	893	211	163	1262
RTOR Reduction (vph)	47	0	26	0	0	0
Lane Group Flow (vph)	658	0	1078	0	163	1262
Confl. Peds. (#/hr)		9				
Confl. Bikes (#/hr)		3		8		
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Actuated Green, G (s)	18.7		36.5		36.5	36.5
Effective Green, g (s)	18.7		36.5		36.5	36.5
Actuated g/C Ratio	0.28		0.55		0.55	0.55
Clearance Time (s)	5.0		6.0		6.0	6.0
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	938		1886		206	1951
v/s Ratio Prot	c0.20		0.31			0.36
v/s Ratio Perm					c0.44	
v/c Ratio	0.70		0.57		0.79	0.65
Uniform Delay, d1	21.3		9.7		11.8	10.4
Progression Factor	1.00		1.00		1.00	1.00
Incremental Delay, d2	2.4		0.4		18.4	0.7
Delay (s)	23.7		10.1		30.3	11.1
Level of Service	C		B		C	B
Approach Delay (s)	23.7		10.1			13.3
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	66.2	Sum of lost time (s)	11.0
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	504	165	848	200	155	1199
Future Volume (veh/h)	504	165	848	200	155	1199
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1900	1863	1900	1863	1863
Adj Flow Rate, veh/h	352	365	893	211	163	1262
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	483	440	1606	379	292	2011
Arrive On Green	0.27	0.27	0.57	0.57	0.57	0.57
Sat Flow, veh/h	1774	1615	2920	667	509	3632
Grp Volume(v), veh/h	352	365	559	545	163	1262
Grp Sat Flow(s),veh/h/ln	1774	1615	1770	1725	509	1770
Q Serve(g_s), s	12.4	14.6	13.7	13.8	20.5	16.5
Cycle Q Clear(g_c), s	12.4	14.6	13.7	13.8	34.3	16.5
Prop In Lane	1.00	1.00		0.39	1.00	
Lane Grp Cap(c), veh/h	483	440	1005	980	292	2011
V/C Ratio(X)	0.73	0.83	0.56	0.56	0.56	0.63
Avail Cap(c_a), veh/h	618	562	1027	1001	298	2054
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.8	23.6	9.4	9.4	20.2	10.0
Incr Delay (d2), s/veh	3.2	8.1	0.6	0.7	2.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	7.5	6.9	6.7	3.0	8.1
LnGrp Delay(d),s/veh	25.9	31.7	10.0	10.1	22.5	10.6
LnGrp LOS	C	C	B	B	C	B
Approach Vol, veh/h	717		1104			1425
Approach Delay, s/veh	28.9		10.0			11.9
Approach LOS	C		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		45.2				45.2		23.8
Change Period (Y+Rc), s		6.0				6.0		5.0
Max Green Setting (Gmax), s		40.0				40.0		24.0
Max Q Clear Time (g_c+I1), s		15.8				36.3		16.6
Green Ext Time (p_c), s		7.6				2.9		2.1

Intersection Summary		
HCM 2010 Ctrl Delay		15.0
HCM 2010 LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	10	20	714	20	331	40	595	473	282	690	30
Future Volume (vph)	10	10	20	714	20	331	40	595	473	282	690	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5	4.5	3.5	4.5	4.5	3.5	4.5	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frpb, ped/bikes		1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1817	1542	1681	1690	1560	1770	3539	1570	1770	3511	
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1817	1542	1681	1690	1560	1770	3539	1570	1770	3511	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	10	21	744	21	345	42	620	493	294	719	31
RTOR Reduction (vph)	0	0	20	0	0	248	0	0	228	0	2	0
Lane Group Flow (vph)	0	20	1	379	386	97	42	620	265	294	748	0
Confl. Peds. (#/hr)	1		7	7		1	9		1	1		9
Confl. Bikes (#/hr)			2			2			12			12
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	
Protected Phases	4	4		8	8		5	2	8	1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)		6.3	6.3	27.0	27.0	27.0	3.7	24.5	51.5	21.0	41.8	
Effective Green, g (s)		6.3	6.3	27.0	27.0	27.0	3.7	24.5	51.5	21.0	41.8	
Actuated g/C Ratio		0.07	0.07	0.28	0.28	0.28	0.04	0.26	0.54	0.22	0.44	
Clearance Time (s)		4.5	4.5	4.5	4.5	4.5	3.5	4.5	4.5	3.5	4.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0	2.0	5.0	2.0	3.5	5.0	
Lane Grp Cap (vph)		119	101	473	476	439	68	905	843	387	1531	
v/s Ratio Prot		c0.01		0.23	c0.23		0.02	c0.18	0.09	c0.17	0.21	
v/s Ratio Perm			0.00			0.06			0.08			
v/c Ratio		0.17	0.01	0.80	0.81	0.22	0.62	0.69	0.31	0.76	0.49	
Uniform Delay, d1		42.3	41.8	31.9	32.0	26.3	45.4	32.2	12.3	35.0	19.3	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2	0.0	8.9	9.6	0.1	11.2	2.8	0.1	8.6	0.5	
Delay (s)		42.5	41.9	40.8	41.6	26.4	56.5	35.0	12.4	43.6	19.9	
Level of Service		D	D	D	D	C	E	C	B	D	B	
Approach Delay (s)		42.2			36.6			26.1			26.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	95.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	10	20	714	20	331	40	595	473	282	690	30
Future Volume (veh/h)	10	10	20	714	20	331	40	595	473	282	690	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	10	10	21	759	0	0	42	620	493	294	719	31
Adj No. of Lanes	0	1	1	2	0	1	1	2	1	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	48	48	79	895	0	399	52	1029	846	343	1568	68
Arrive On Green	0.05	0.05	0.05	0.25	0.00	0.00	0.03	0.29	0.29	0.19	0.45	0.45
Sat Flow, veh/h	909	909	1491	3548	0	1583	1774	3539	1536	1774	3450	149
Grp Volume(v), veh/h	20	0	21	759	0	0	42	620	493	294	369	381
Grp Sat Flow(s),veh/h/ln	1817	0	1491	1774	0	1583	1774	1770	1536	1774	1770	1829
Q Serve(g_s), s	0.9	0.0	1.1	16.4	0.0	0.0	1.9	12.2	17.4	12.9	11.6	11.6
Cycle Q Clear(g_c), s	0.9	0.0	1.1	16.4	0.0	0.0	1.9	12.2	17.4	12.9	11.6	11.6
Prop In Lane	0.50		1.00	1.00		1.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	97	0	79	895	0	399	52	1029	846	343	804	831
V/C Ratio(X)	0.21	0.00	0.26	0.85	0.00	0.00	0.80	0.60	0.58	0.86	0.46	0.46
Avail Cap(c_a), veh/h	608	0	499	1341	0	598	156	1083	869	457	842	871
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	0.0	36.7	28.7	0.0	0.0	38.9	24.6	12.4	31.5	15.2	15.2
Incr Delay (d2), s/veh	0.4	0.0	0.7	2.2	0.0	0.0	10.0	1.4	1.6	12.5	0.9	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.5	8.3	0.0	0.0	1.1	6.1	11.2	7.5	5.8	6.0
LnGrp Delay(d),s/veh	37.0	0.0	37.3	30.9	0.0	0.0	48.9	26.0	14.0	44.0	16.0	16.0
LnGrp LOS	D		D	C			D	C	B	D	B	B
Approach Vol, veh/h		41			759			1155			1044	
Approach Delay, s/veh		37.1			30.9			21.7			23.9	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.1	28.0		8.8	5.9	41.2		24.8
Change Period (Y+Rc), s	3.5	4.5		4.5	3.5	4.5		4.5
Max Green Setting (Gmax), s	20.8	24.7		27.0	7.1	38.4		30.5
Max Q Clear Time (g_c+I1), s	14.9	19.4		3.1	3.9	13.6		18.4
Green Ext Time (p_c), s	0.7	3.9		0.1	0.0	8.8		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	25.0
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Appendix B: SimTraffic Output Sheets

Near Term

Intersection: 1: LOVR & Madonna

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	TR	L	L	TR	R	L	T	T	T	R	L
Maximum Queue (ft)	147	199	95	118	112	93	100	168	188	200	155	163
Average Queue (ft)	62	89	36	49	49	26	32	73	97	105	42	79
95th Queue (ft)	122	165	75	98	91	62	79	138	160	174	105	144
Link Distance (ft)		317	320	320				373	373	373		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	230				170	170	200				175	350
Storage Blk Time (%)		0		0				0		1	0	
Queuing Penalty (veh)		0		0				0		1	0	

Intersection: 1: LOVR & Madonna

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	186	252	244
Average Queue (ft)	110	145	151
95th Queue (ft)	165	223	237
Link Distance (ft)		843	843
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	350		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Oceanaire & Madonna

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SE	NE
Directions Served	<L	T	TR	<L	T	T	R>	<LT	R	LTR>	<LR>	<LR
Maximum Queue (ft)	28	114	160	31	132	162	72	39	39	150	40	30
Average Queue (ft)	3	51	83	5	41	68	12	11	14	61	6	6
95th Queue (ft)	16	105	142	22	98	125	45	35	36	111	27	21
Link Distance (ft)		1699	1699		580	580		228		246	154	152
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	115			115			100		50			
Storage Blk Time (%)		0			0	2		1	0			
Queuing Penalty (veh)		0			0	1		0	0			

Intersection: 3: Dalidio & Madonna

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	27	146	194	76	70	107	13	36	56	38	22
Average Queue (ft)	6	55	82	20	13	25	1	11	23	11	2
95th Queue (ft)	22	123	167	51	47	74	7	34	50	35	13
Link Distance (ft)		242	242		581	581	581	249		131	
Upstream Blk Time (%)			0								
Queuing Penalty (veh)			0								
Storage Bay Dist (ft)	112			275					150		50
Storage Blk Time (%)		1								0	
Queuing Penalty (veh)		0								0	

Intersection: 5: Hwy 101 SB/Madonna Inn & Madonna

Movement	EB	EB	EB	EB	B305	B305	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	T	T	L	T	T	TR	L	LT
Maximum Queue (ft)	157	326	360	401	18	56	207	65	82	62	144	147
Average Queue (ft)	20	176	194	263	1	3	96	7	17	11	108	88
95th Queue (ft)	80	281	316	387	13	26	164	34	56	41	142	147
Link Distance (ft)		355	355	355	632	632			976	976		
Upstream Blk Time (%)		0	0	3								
Queuing Penalty (veh)		1	1	12								
Storage Bay Dist (ft)	100						260	260				
Storage Blk Time (%)	0	27					0					
Queuing Penalty (veh)	0	4					0					

Intersection: 5: Hwy 101 SB/Madonna Inn & Madonna

Movement	NB	SB	SB	SB
Directions Served	R	L	LT	R
Maximum Queue (ft)	154	13	20	14
Average Queue (ft)	122	1	2	2
95th Queue (ft)	154	7	11	9
Link Distance (ft)		222		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	275		100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Hwy 101 NB & Madonna

Movement	EB	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	TR	L	TR
Maximum Queue (ft)	152	182	131	259	177	196	188	145
Average Queue (ft)	56	84	19	107	100	108	76	56
95th Queue (ft)	130	155	78	214	164	173	147	117
Link Distance (ft)		976	976	976	875	875		908
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	435						185	
Storage Blk Time (%)							0	0
Queuing Penalty (veh)							0	0

Intersection: 7: Higuera & Madonna/Shopping Center

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	LT	R	L	TR	L	T	TR	LT	T
Maximum Queue (ft)	140	290	255	47	65	181	143	173	182	194
Average Queue (ft)	65	154	60	11	15	84	51	70	98	98
95th Queue (ft)	124	256	221	38	44	155	106	134	157	163
Link Distance (ft)	875	875		85	85		302	302		
Upstream Blk Time (%)					0					
Queuing Penalty (veh)					0					
Storage Bay Dist (ft)			150			160			250	250
Storage Blk Time (%)		9	3			1	0			0
Queuing Penalty (veh)		48	10			2	0			0

Intersection: 10: LOVR & Autopark

Movement	WB	WB	NB	SB	B44	B44
Directions Served	L	R	R	L	T	T
Maximum Queue (ft)	66	24	15	50	134	304
Average Queue (ft)	17	9	1	13	4	15
95th Queue (ft)	47	25	8	40	95	186
Link Distance (ft)	259				717	717
Upstream Blk Time (%)						0
Queuing Penalty (veh)						0
Storage Bay Dist (ft)		175	50	60		
Storage Blk Time (%)				0		
Queuing Penalty (veh)				1		

Intersection: 11: LOVR & Calle Joaquin

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	T	R	L	T	T
Maximum Queue (ft)	24	17	50	108	33	92	210	205	64	63	181	246
Average Queue (ft)	6	1	4	37	9	23	47	55	6	20	66	112
95th Queue (ft)	21	7	28	81	29	61	143	152	47	48	157	231
Link Distance (ft)	325	325		395			224	224			194	194
Upstream Blk Time (%)							0	0			0	3
Queuing Penalty (veh)							1	0			0	13
Storage Bay Dist (ft)			260		150	115			105	115		
Storage Blk Time (%)				0			1	2			2	9
Queuing Penalty (veh)				0			1	1			1	2

Intersection: 11: LOVR & Calle Joaquin

Movement	SB	B25
Directions Served	R	T
Maximum Queue (ft)	88	66
Average Queue (ft)	4	4
95th Queue (ft)	39	36
Link Distance (ft)		967
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)	115	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: LOVR & 101 NB

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	LR	L	T	T	T	T	R
Maximum Queue (ft)	400	449	182	119	127	426	459	195
Average Queue (ft)	212	274	93	53	62	159	197	54
95th Queue (ft)	370	426	161	103	114	318	367	181
Link Distance (ft)		1251		698	698	943	943	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	625		395					135
Storage Blk Time (%)							19	0
Queuing Penalty (veh)							19	0

Intersection: 15: Higuera & Suburban

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	TR	L	T	T
Maximum Queue (ft)	138	88	220	330	161	123	148
Average Queue (ft)	75	35	81	208	73	40	53
95th Queue (ft)	126	68	186	346	141	99	114
Link Distance (ft)	760		271	271		1010	1010
Upstream Blk Time (%)			0	12			
Queuing Penalty (veh)			0	81			
Storage Bay Dist (ft)		170			200		
Storage Blk Time (%)	0				0		
Queuing Penalty (veh)	0				0		

Intersection: 16: Higuera & Tank Farm

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	TR
Maximum Queue (ft)	68	67	203	167	75	96	264	380	160	211	188	141
Average Queue (ft)	29	21	113	82	4	18	131	152	123	122	55	55
95th Queue (ft)	64	51	179	155	45	60	210	300	192	197	132	109
Link Distance (ft)	140	140	727	727			1010	1010			1734	1734
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)					250	140			100	165		
Storage Blk Time (%)						0	6	12	9	4	0	
Queuing Penalty (veh)						0	1	85	24	7	0	

Zone Summary

Zone wide Queuing Penalty: 318

Intersection: 1: LOVR & Madonna

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	B50
Directions Served	L	TR	L	L	TR	R	L	T	T	T	R	T
Maximum Queue (ft)	84	208	218	188	342	331	300	374	388	372	210	121
Average Queue (ft)	27	88	107	98	228	162	97	282	298	267	138	13
95th Queue (ft)	66	165	178	166	346	312	263	396	403	391	246	75
Link Distance (ft)		322	332	332	332			315	315	315		1294
Upstream Blk Time (%)		0			1	0	0	8	10	5		
Queuing Penalty (veh)		0			5	0	0	48	60	26		
Storage Bay Dist (ft)	230					170	200				175	
Storage Blk Time (%)		0			36	5		31		12	1	
Queuing Penalty (veh)		0			80	15		28		50	3	

Intersection: 1: LOVR & Madonna

Movement	B50	B50	SB	SB	SB	SB
Directions Served	T	T	L	L	T	TR
Maximum Queue (ft)	135	78	282	350	406	398
Average Queue (ft)	19	7	135	168	261	234
95th Queue (ft)	88	61	218	282	365	341
Link Distance (ft)	1294	1294			977	977
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			350	350		
Storage Blk Time (%)				0	1	
Queuing Penalty (veh)				0	3	

Intersection: 2: Oceanaire & Madonna

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SE	NE
Directions Served	<L	T	TR	<L	T	T	R>	<LT	R	LTR>	<LR>	<LR
Maximum Queue (ft)	32	207	255	65	256	340	170	41	50	102	34	36
Average Queue (ft)	6	68	103	27	83	146	63	2	14	50	5	10
95th Queue (ft)	20	150	200	59	196	276	163	16	39	88	25	29
Link Distance (ft)		1668	1668		560	560		228		246	156	149
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	115			115			100		50			
Storage Blk Time (%)		1			2	13	0	0	0			
Queuing Penalty (veh)		0			1	21	0	0	0			

Intersection: 3: Dalidio & Madonna

Movement	EB	EB	EB	B62	B62	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	T	T	L	T	T	TR	LT	R	LT
Maximum Queue (ft)	86	258	290	30	61	155	319	375	69	144	74	77
Average Queue (ft)	22	121	176	1	4	64	102	156	9	68	37	25
95th Queue (ft)	59	216	280	17	30	127	232	309	38	120	64	58
Link Distance (ft)		230	230	470	470		581	581	581	269		131
Upstream Blk Time (%)		0	3									0
Queuing Penalty (veh)		2	17									0
Storage Bay Dist (ft)	112					275					150	
Storage Blk Time (%)		7					0			0		3
Queuing Penalty (veh)		2					0			0		1

Intersection: 3: Dalidio & Madonna

Movement	SB
Directions Served	R
Maximum Queue (ft)	45
Average Queue (ft)	14
95th Queue (ft)	40
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	50
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Hwy 101 SB/Madonna Inn & Madonna

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	LT	R	L
Maximum Queue (ft)	142	454	677	724	364	392	305	206	215	199	188	42
Average Queue (ft)	29	234	338	427	203	102	69	37	174	133	87	7
95th Queue (ft)	96	422	644	737	389	340	250	124	222	213	161	29
Link Distance (ft)		1024	1024	1024			970	970				194
Upstream Blk Time (%)				0								
Queuing Penalty (veh)				0								
Storage Bay Dist (ft)	100				260	260					275	
Storage Blk Time (%)		36			22	0						
Queuing Penalty (veh)		7			60	0						

Intersection: 5: Hwy 101 SB/Madonna Inn & Madonna

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	57	42
Average Queue (ft)	19	13
95th Queue (ft)	48	39
Link Distance (ft)		
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Hwy 101 NB & Madonna

Movement	EB	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	TR	L	TR
Maximum Queue (ft)	216	252	154	259	556	547	197	141
Average Queue (ft)	126	156	51	140	161	157	88	37
95th Queue (ft)	197	225	117	230	367	370	164	100
Link Distance (ft)		970	970	970	877	877		908
Upstream Blk Time (%)					0			
Queuing Penalty (veh)					0			
Storage Bay Dist (ft)	435						185	
Storage Blk Time (%)							1	0
Queuing Penalty (veh)							1	0

Intersection: 7: Higuera & Madonna/Shopping Center

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	L	TR	L	T	TR	LT	T	R	R
Maximum Queue (ft)	234	334	247	42	129	319	510	322	236	245	76	30
Average Queue (ft)	131	182	43	7	67	244	165	108	137	149	4	1
95th Queue (ft)	205	285	186	29	120	349	410	230	209	221	46	21
Link Distance (ft)	877	877		114	114		1511	1511			386	386
Upstream Blk Time (%)					3							
Queuing Penalty (veh)					0							
Storage Bay Dist (ft)			150			160			250	250		
Storage Blk Time (%)		16	1			35	1		0	0		
Queuing Penalty (veh)		58	3			107	4		0	1		

Intersection: 10: LOVR & Autopark

Movement	WB	WB	NB	NB	SB	SB	SB	B44	B44	B44
Directions Served	L	R	T	R	L	T	T	T	T	
Maximum Queue (ft)	127	59	4	5	60	14	7	130	441	139
Average Queue (ft)	45	19	0	1	18	0	0	4	19	5
95th Queue (ft)	103	42	3	7	48	10	5	92	208	98
Link Distance (ft)	260		1031			271	271	829	829	829
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		175		50	60					
Storage Blk Time (%)					1	0				
Queuing Penalty (veh)					5	0				

Intersection: 11: LOVR & Calle Joaquin

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	L	TR	L	T	T	R	L	T	T	R
Maximum Queue (ft)	40	30	158	103	157	260	266	173	95	216	268	175
Average Queue (ft)	10	4	76	37	38	139	141	24	30	102	205	30
95th Queue (ft)	33	20	131	76	96	256	258	99	67	215	301	134
Link Distance (ft)	344	344	390			248	248			176	176	
Upstream Blk Time (%)						0	0			1	22	0
Queuing Penalty (veh)						3	4			11	167	0
Storage Bay Dist (ft)				150	115			105	115			115
Storage Blk Time (%)			0	0	0	6	8			3	28	
Queuing Penalty (veh)			0	0	0	3	5			1	6	

Intersection: 11: LOVR & Calle Joaquin

Movement	B60	B60
Directions Served	T	T
Maximum Queue (ft)	216	390
Average Queue (ft)	19	100
95th Queue (ft)	125	295
Link Distance (ft)	1031	1031
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: LOVR & 101 NB

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	LR	L	T	T	T	T	R
Maximum Queue (ft)	290	326	264	269	210	299	388	195
Average Queue (ft)	162	204	132	117	122	96	127	69
95th Queue (ft)	261	305	216	197	193	211	279	179
Link Distance (ft)		1056		667	667	929	929	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	625		395					135
Storage Blk Time (%)				0			5	0
Queuing Penalty (veh)				0			14	1

Intersection: 15: Higuera & Suburban

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	TR	L	T	T
Maximum Queue (ft)	619	230	241	351	259	610	589
Average Queue (ft)	301	126	102	172	166	245	251
95th Queue (ft)	563	274	199	311	288	572	569
Link Distance (ft)	711		359	359		1033	1033
Upstream Blk Time (%)	0			0		1	1
Queuing Penalty (veh)	0			1		5	4
Storage Bay Dist (ft)		170			200		
Storage Blk Time (%)	31	0			22	4	
Queuing Penalty (veh)	52	0			133	6	

Intersection: 16: Higuera & Tank Farm

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	TR
Maximum Queue (ft)	57	48	307	278	163	150	252	256	160	224	385	302
Average Queue (ft)	18	17	182	162	12	32	134	113	84	146	132	121
95th Queue (ft)	47	43	263	250	78	92	222	217	173	231	300	246
Link Distance (ft)	149	149	687	687			1033	1033			1682	1682
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)					250	140			100	165		
Storage Blk Time (%)				1		0	9	12	2	9	3	
Queuing Penalty (veh)				3		0	4	55	6	31	8	

Zone Summary

Zone wide Queuing Penalty: 1133

Near Term Plus Project

Intersection: 1: LOVR & Madonna

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	TR	L	L	TR	R	L	T	T	T	R	L
Maximum Queue (ft)	157	203	101	100	140	95	71	168	199	238	150	238
Average Queue (ft)	62	94	48	40	52	29	27	78	99	113	47	125
95th Queue (ft)	121	171	90	83	101	63	60	142	167	185	106	198
Link Distance (ft)		311	313	313				361	361	361		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	230				170	170	200				175	350
Storage Blk Time (%)		0			0			0		1		
Queuing Penalty (veh)		0			0			0		2		

Intersection: 1: LOVR & Madonna

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	277	298	281
Average Queue (ft)	151	171	146
95th Queue (ft)	226	262	238
Link Distance (ft)		830	830
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	350		
Storage Blk Time (%)	0	0	
Queuing Penalty (veh)	0	0	

Intersection: 2: Oceanaire & Madonna

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SE	NE
Directions Served	<L	T	TR	<L	T	T	R>	<LT	R	LTR>	<LR>	<LR
Maximum Queue (ft)	19	143	170	32	128	177	92	47	47	125	39	28
Average Queue (ft)	3	59	91	6	50	81	18	12	14	60	7	6
95th Queue (ft)	14	118	159	24	106	148	62	36	36	102	28	20
Link Distance (ft)		1704	1704		591	591		222		241	150	140
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	115			115			100		50			
Storage Blk Time (%)		1			0	4		1	0			
Queuing Penalty (veh)		0			0	2		0	0			

Intersection: 3: Dalidio & Madonna

Movement	EB	EB	EB	B76	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	T	L	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	57	252	300	4	205	120	157	15	80	114	33	28
Average Queue (ft)	13	137	183	0	105	33	58	1	29	50	9	3
95th Queue (ft)	43	232	278	3	177	90	132	8	63	89	31	17
Link Distance (ft)		248	248	338		568	568	568	237	237	125	
Upstream Blk Time (%)		0	2									
Queuing Penalty (veh)		1	9									
Storage Bay Dist (ft)	112				275							50
Storage Blk Time (%)		11									0	
Queuing Penalty (veh)		1									0	

Intersection: 5: Hwy 101 SB/Madonna Inn & Madonna

Movement	EB	EB	EB	EB	B305	B305	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	T	T	L	T	T	TR	L	LT
Maximum Queue (ft)	139	338	364	425	16	68	203	72	75	67	190	186
Average Queue (ft)	24	196	222	291	1	5	100	14	16	9	150	128
95th Queue (ft)	84	317	351	422	13	33	173	46	52	38	200	195
Link Distance (ft)		342	342	342	620	620			961	961		
Upstream Blk Time (%)		0	1	6								
Queuing Penalty (veh)		1	3	23								
Storage Bay Dist (ft)	100						260	260				
Storage Blk Time (%)		28										
Queuing Penalty (veh)		5										

Intersection: 5: Hwy 101 SB/Madonna Inn & Madonna

Movement	NB	SB	SB	SB
Directions Served	R	L	LT	R
Maximum Queue (ft)	213	12	14	8
Average Queue (ft)	164	0	1	1
95th Queue (ft)	223	5	7	6
Link Distance (ft)		213		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	275		100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Hwy 101 NB & Madonna

Movement	EB	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	TR	L	TR
Maximum Queue (ft)	167	198	125	252	240	246	178	186
Average Queue (ft)	68	98	22	123	139	137	84	75
95th Queue (ft)	139	167	76	232	216	214	150	149
Link Distance (ft)		961	961	961	861	861		906
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	435						185	
Storage Blk Time (%)							0	0
Queuing Penalty (veh)							1	1

Intersection: 7: Higuera & Madonna

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	LT	R	L	TR	L	T	TR	LT	T
Maximum Queue (ft)	175	404	260	42	71	205	161	164	154	178
Average Queue (ft)	85	193	69	10	22	95	55	73	97	104
95th Queue (ft)	154	322	247	33	57	167	119	138	145	162
Link Distance (ft)	861	861		79	79		290	290		
Upstream Blk Time (%)				0	0					
Queuing Penalty (veh)				0	0					
Storage Bay Dist (ft)			150			160			250	250
Storage Blk Time (%)		15	1			2	0			
Queuing Penalty (veh)		82	5			3	0			

Intersection: 10: LOVR & Autopark

Movement	WB	WB	NB	SB	SB	B44
Directions Served	L	R	R	L	T	T
Maximum Queue (ft)	77	25	21	47	6	169
Average Queue (ft)	19	10	1	13	0	6
95th Queue (ft)	53	26	12	39	4	119
Link Distance (ft)	253				280	795
Upstream Blk Time (%)						0
Queuing Penalty (veh)						0
Storage Bay Dist (ft)		175	50	60		
Storage Blk Time (%)			0	0		
Queuing Penalty (veh)			0	0		

Intersection: 11: LOVR & Calle Joaquin

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	T	R	L	T	T
Maximum Queue (ft)	48	26	21	114	35	105	202	214	126	94	216	234
Average Queue (ft)	11	2	1	37	12	30	65	76	15	22	82	141
95th Queue (ft)	35	13	15	83	33	74	166	179	69	67	190	254
Link Distance (ft)	311	311		418			224	224			148	148
Upstream Blk Time (%)							0	0		0	4	13
Queuing Penalty (veh)							0	1		0	21	67
Storage Bay Dist (ft)			260		150	115			105	115		
Storage Blk Time (%)				0			2	3	0		6	17
Queuing Penalty (veh)				0			1	2	0		2	3

Intersection: 11: LOVR & Calle Joaquin

Movement	SB	B92	B92
Directions Served	R	T	T
Maximum Queue (ft)	148	271	351
Average Queue (ft)	17	23	40
95th Queue (ft)	89	168	220
Link Distance (ft)		1048	1048
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)	115		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: LOVR & 101 NB

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	LR	L	T	T	T	T	R
Maximum Queue (ft)	465	501	181	142	180	680	705	195
Average Queue (ft)	230	290	90	56	65	238	283	68
95th Queue (ft)	396	449	159	110	129	629	662	204
Link Distance (ft)		1216		708	708	919	919	
Upstream Blk Time (%)						1	1	
Queuing Penalty (veh)						4	6	
Storage Bay Dist (ft)	625		395					135
Storage Blk Time (%)							29	0
Queuing Penalty (veh)							31	0

Intersection: 15: Higuera & Suburban

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	TR	L	T	T
Maximum Queue (ft)	165	113	212	374	245	388	320
Average Queue (ft)	75	40	61	173	105	77	67
95th Queue (ft)	136	83	143	311	229	286	244
Link Distance (ft)	670		354	354		1021	1021
Upstream Blk Time (%)				1			
Queuing Penalty (veh)				10			
Storage Bay Dist (ft)		170			200		
Storage Blk Time (%)	0				15	0	
Queuing Penalty (veh)	0				41	0	

Intersection: 16: Higuera & Tank Farm

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	TR
Maximum Queue (ft)	87	54	218	174	88	48	211	318	160	214	155	104
Average Queue (ft)	31	19	114	77	3	11	111	127	108	128	48	48
95th Queue (ft)	72	47	181	148	38	32	184	251	186	201	113	98
Link Distance (ft)	147	147	720	720			1021	1021			1677	1677
Upstream Blk Time (%)	0											
Queuing Penalty (veh)	0											
Storage Bay Dist (ft)					250	140			100	165		
Storage Blk Time (%)							4	10	8	5	0	
Queuing Penalty (veh)							1	71	22	8	0	

Zone Summary

Zone wide Queuing Penalty: 431

Intersection: 1: LOVR & Madonna

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	B50
Directions Served	L	TR	L	L	TR	R	L	T	T	T	R	T
Maximum Queue (ft)	86	199	155	153	184	163	195	325	330	349	210	16
Average Queue (ft)	32	89	87	79	95	74	62	192	213	239	166	1
95th Queue (ft)	72	163	141	135	160	136	141	300	326	369	264	7
Link Distance (ft)		411	301	301	301			283	283	283		1309
Upstream Blk Time (%)							0	1	3	6		
Queuing Penalty (veh)							0	6	16	37		
Storage Bay Dist (ft)	230					170	200				175	
Storage Blk Time (%)		0			1	0	0	8		18	1	
Queuing Penalty (veh)		0			3	1	1	7		72	5	

Intersection: 1: LOVR & Madonna

Movement	B50	B50	SB	SB	SB	SB
Directions Served	T	T	L	L	T	TR
Maximum Queue (ft)	23	124	217	364	417	380
Average Queue (ft)	1	13	131	176	250	223
95th Queue (ft)	13	65	198	281	372	338
Link Distance (ft)	1309	1309			993	993
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			350	350		
Storage Blk Time (%)				0	1	
Queuing Penalty (veh)				0	5	

Intersection: 2: Oceanaire & Madonna

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SE	NE
Directions Served	<L	T	TR	<L	T	T	R>	<LT	R	LTR>	<LR>	<LR
Maximum Queue (ft)	42	232	239	59	200	254	170	21	51	114	27	36
Average Queue (ft)	8	81	116	21	64	113	45	2	17	49	3	7
95th Queue (ft)	28	179	209	50	151	215	122	14	40	87	17	24
Link Distance (ft)		1674	1674		641	641		228		247	140	147
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	115			115			100		50			
Storage Blk Time (%)		4			2	10	0		0			
Queuing Penalty (veh)		1			1	17	1		0			

Queuing and Blocking Report
Near Term Plus Project PM 2025 02/27/2018

Intersection: 3: Dalidio & Madonna

Movement	EB	EB	EB	B62	B62	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	T	T	L	T	T	TR	LT	R	LT
Maximum Queue (ft)	150	264	286	82	162	335	608	604	456	220	202	81
Average Queue (ft)	36	164	226	4	28	335	590	234	39	111	100	24
95th Queue (ft)	102	254	303	33	102	335	602	532	243	184	170	61
Link Distance (ft)		201	201	417	417		580	580	580	252	252	131
Upstream Blk Time (%)		4	17				62	1	0	0		
Queuing Penalty (veh)		20	92				304	6	0	0		
Storage Bay Dist (ft)	112					275						
Storage Blk Time (%)	0	18				99	0					5
Queuing Penalty (veh)	0	6				342	1					1

Intersection: 3: Dalidio & Madonna

Movement	SB
Directions Served	R
Maximum Queue (ft)	33
Average Queue (ft)	13
95th Queue (ft)	36
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	50
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Central Coast Transportation Consulting SimTraffic Report

Intersection: 5: Hwy 101 SB/Madonna Inn & Madonna

Movement	EB	EB	EB	EB	B305	B305	B305	B306	B306	B306	WB	WB
Directions Served	L	T	T	TR	T	T	T	T	T	T	L	T
Maximum Queue (ft)	159	271	267	274	302	315	326	308	421	433	410	560
Average Queue (ft)	36	232	229	244	163	203	260	115	188	215	256	487
95th Queue (ft)	123	283	287	265	348	380	399	415	534	559	546	752
Link Distance (ft)		186	186	186	248	248	248	502	502	502		
Upstream Blk Time (%)		38	40	72	7	13	53	0	2	6		
Queuing Penalty (veh)		198	206	368	38	68	274	1	8	29		
Storage Bay Dist (ft)	100										260	260
Storage Blk Time (%)		51									0	84
Queuing Penalty (veh)		12									0	278

Intersection: 5: Hwy 101 SB/Madonna Inn & Madonna

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	T	TR	L	LT	R	L	LT	R
Maximum Queue (ft)	1045	1031	189	194	154	51	71	58
Average Queue (ft)	852	547	164	149	40	7	19	16
95th Queue (ft)	1448	1195	183	206	113	30	51	47
Link Distance (ft)	984	984				192		
Upstream Blk Time (%)	53	7						
Queuing Penalty (veh)	318	42						
Storage Bay Dist (ft)					275		100	100
Storage Blk Time (%)	4					0	0	0
Queuing Penalty (veh)	22					0	0	0

Intersection: 6: Hwy 101 NB & Madonna

Movement	EB	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	TR	L	TR
Maximum Queue (ft)	164	185	155	225	1036	1032	244	639
Average Queue (ft)	79	104	42	120	772	689	147	148
95th Queue (ft)	147	171	109	204	1341	1300	265	521
Link Distance (ft)		984	984	984	862	862		927
Upstream Blk Time (%)					56	34		2
Queuing Penalty (veh)					357	216		0
Storage Bay Dist (ft)	435						185	
Storage Blk Time (%)							21	0
Queuing Penalty (veh)							27	0

Intersection: 7: Higuera & Madonna

Movement	EB	EB	EB	WB	WB	NB	NB	NB	B61	B61	B300	B300
Directions Served	L	LT	R	L	TR	L	T	TR	T	T	T	T
Maximum Queue (ft)	374	540	260	34	140	320	1579	1545	1698	1689	789	794
Average Queue (ft)	162	232	75	6	97	287	925	725	592	588	172	171
95th Queue (ft)	328	448	265	24	158	372	2003	1849	1822	1818	700	699
Link Distance (ft)	862	862		118	118		1509	1509	1632	1632	827	827
Upstream Blk Time (%)		0			42		44	27	24	24	14	14
Queuing Penalty (veh)		1			0		179	111	98	98	59	58
Storage Bay Dist (ft)			150			160						
Storage Blk Time (%)		33	0			74	1					
Queuing Penalty (veh)		124	1			226	2					

Intersection: 7: Higuera & Madonna

Movement	SB	SB	SB	SB
Directions Served	LT	T	R	R
Maximum Queue (ft)	269	350	445	450
Average Queue (ft)	106	200	250	225
95th Queue (ft)	233	414	585	558
Link Distance (ft)			398	398
Upstream Blk Time (%)			42	33
Queuing Penalty (veh)			281	219
Storage Bay Dist (ft)	250	250		
Storage Blk Time (%)	0	1	55	
Queuing Penalty (veh)	1	5	298	

Intersection: 10: LOVR & Autopark

Movement	WB	WB	NB	SB	SB	B44	B44
Directions Served	L	R	R	L	T	T	T
Maximum Queue (ft)	130	53	23	61	6	316	326
Average Queue (ft)	45	21	1	16	0	13	19
95th Queue (ft)	104	45	11	47	4	174	210
Link Distance (ft)	354				271	844	844
Upstream Blk Time (%)							0
Queuing Penalty (veh)							0
Storage Bay Dist (ft)		175	50	60			
Storage Blk Time (%)			0	0			
Queuing Penalty (veh)			0	1			

Intersection: 11: LOVR & Calle Joaquin

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	T	R	L	T	T
Maximum Queue (ft)	47	27	27	149	92	162	237	241	150	115	244	296
Average Queue (ft)	13	4	2	71	33	34	138	150	25	31	111	229
95th Queue (ft)	37	18	31	127	71	103	254	259	96	74	236	344
Link Distance (ft)	334	334		456			228	228			217	217
Upstream Blk Time (%)							1	1			1	24
Queuing Penalty (veh)							10	12			9	187
Storage Bay Dist (ft)			260		150	115			105	115		
Storage Blk Time (%)				0	0	0	7	9			3	32
Queuing Penalty (veh)				0	0	0	3	5			2	9

Intersection: 11: LOVR & Calle Joaquin

Movement	SB	B29	B29
Directions Served	R	T	T
Maximum Queue (ft)	175	409	549
Average Queue (ft)	30	105	173
95th Queue (ft)	133	451	599
Link Distance (ft)		1002	1002
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)	115		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: LOVR & 101 NB

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	LR	L	T	T	T	T	R
Maximum Queue (ft)	328	386	220	205	214	250	318	195
Average Queue (ft)	167	212	117	102	115	97	126	61
95th Queue (ft)	274	322	187	175	190	204	269	173
Link Distance (ft)		1202		705	705	936	936	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	625		395					135
Storage Blk Time (%)							5	0
Queuing Penalty (veh)							15	0

Queuing and Blocking Report
Near Term Plus Project PM 2025 02/27/2018

Intersection: 15: Higuera & Suburban

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	TR	L	T	T
Maximum Queue (ft)	616	230	226	335	259	502	464
Average Queue (ft)	326	138	98	169	141	188	190
95th Queue (ft)	593	286	195	307	261	398	377
Link Distance (ft)	705		353	353		1032	1032
Upstream Blk Time (%)	1			0			
Queuing Penalty (veh)	0			1			
Storage Bay Dist (ft)		170			200		
Storage Blk Time (%)	37	0			17	2	
Queuing Penalty (veh)	61	1			103	2	

Intersection: 16: Higuera & Tank Farm

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	TR
Maximum Queue (ft)	51	44	294	285	145	147	250	298	160	221	292	247
Average Queue (ft)	17	16	182	160	8	29	124	109	69	137	109	105
95th Queue (ft)	48	42	268	255	68	85	213	222	155	224	243	204
Link Distance (ft)	149	149	688	688			1032	1032			1522	1522
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)					250	140			100	165		
Storage Blk Time (%)				1			7	9	1	7	1	
Queuing Penalty (veh)				3			3	42	3	25	4	

Zone Summary

Zone wide Queuing Penalty: 5671

Central Coast Transportation Consulting SimTraffic Report

Mitigated

Intersection: 1: LOVR & Madonna

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	TR	L	L	TR	R	L	T	T	T	R	L
Maximum Queue (ft)	133	210	115	115	116	99	99	155	210	240	191	212
Average Queue (ft)	56	100	58	43	49	29	34	86	103	120	49	118
95th Queue (ft)	109	173	108	88	92	65	78	149	171	201	124	194
Link Distance (ft)		311	313	313				361	361	361		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	230				170	170	200				175	350
Storage Blk Time (%)		0			0			0		2	0	
Queuing Penalty (veh)		0			0			0		2	0	

Intersection: 1: LOVR & Madonna

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	265	313	301
Average Queue (ft)	152	177	156
95th Queue (ft)	232	270	256
Link Distance (ft)		830	830
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	350		
Storage Blk Time (%)	0	0	
Queuing Penalty (veh)	0	0	

Intersection: 2: Oceanaire & Madonna

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SE	NE
Directions Served	<L	T	TR	<L	T	T	R>	<LT	R	LTR>	<LR>	<LR
Maximum Queue (ft)	19	183	224	36	136	180	52	38	45	137	34	31
Average Queue (ft)	3	58	90	6	49	78	15	11	15	59	6	5
95th Queue (ft)	12	130	174	25	107	143	45	34	36	105	24	18
Link Distance (ft)		1704	1704		591	591		222		241	150	140
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	115			115			200		50			
Storage Blk Time (%)		1			1	0		0	0			
Queuing Penalty (veh)		0			0	0		0	0			

Intersection: 3: Dalidio & Madonna

Movement	EB	EB	EB	EB	B76	B76	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	R	T	T	L	L	T	TR	LT	R
Maximum Queue (ft)	117	235	280	125	11	21	115	127	163	176	74	91
Average Queue (ft)	15	98	135	38	0	1	44	63	31	49	29	45
95th Queue (ft)	59	189	238	110	8	18	94	110	99	126	61	77
Link Distance (ft)		248	248		338	338			568	568	237	237
Upstream Blk Time (%)		0	1									
Queuing Penalty (veh)		1	4									
Storage Bay Dist (ft)	112			100			310	310				
Storage Blk Time (%)		5	10	0								
Queuing Penalty (veh)		1	8	0								

Intersection: 3: Dalidio & Madonna

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	42	28
Average Queue (ft)	8	5
95th Queue (ft)	31	21
Link Distance (ft)	137	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		50
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Queuing and Blocking Report
Mitigated Near Term Plus Project AM 2025 04/11/2018

Intersection: 5: Hwy 101 SB/Madonna Inn & Madonna

Movement	EB	EB	EB	EB	EB	B305	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	R	T	L	T	T	TR	L	LT
Maximum Queue (ft)	208	314	346	407	125	71	202	64	69	40	192	186
Average Queue (ft)	32	187	203	261	76	4	103	14	18	3	151	123
95th Queue (ft)	120	290	326	396	161	34	176	46	53	20	199	198
Link Distance (ft)		343	343	343		620		960	960			
Upstream Blk Time (%)		0	0	3								
Queuing Penalty (veh)		0	0	12								
Storage Bay Dist (ft)	150				100		260			260		
Storage Blk Time (%)	0	13		42	0		0					
Queuing Penalty (veh)	0	2		37	1		1					

Intersection: 5: Hwy 101 SB/Madonna Inn & Madonna

Movement	NB	SB	SB	SB
Directions Served	R	L	LT	R
Maximum Queue (ft)	212	20	18	7
Average Queue (ft)	159	1	2	2
95th Queue (ft)	220	9	10	7
Link Distance (ft)		212		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	275		100	100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Hwy 101 NB & Madonna

Movement	EB	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	TR	L	TR
Maximum Queue (ft)	157	186	131	258	231	240	206	225
Average Queue (ft)	59	88	30	125	131	143	83	63
95th Queue (ft)	128	156	94	234	211	214	158	145
Link Distance (ft)		960	960	960	853	853		906
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	435						275	
Storage Blk Time (%)							0	0
Queuing Penalty (veh)							0	0

Queuing and Blocking Report
Mitigated Near Term Plus Project AM 2025 04/11/2018

Intersection: 7: Higuera & Madonna

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	LT	R	L	TR	L	L	TR	LT	T
Maximum Queue (ft)	212	313	251	42	52	134	131	234	172	167
Average Queue (ft)	84	176	35	8	19	45	48	111	99	102
95th Queue (ft)	160	271	158	31	48	94	98	202	153	159
Link Distance (ft)	853	853		82	82		287	287		
Upstream Blk Time (%)					0			0		
Queuing Penalty (veh)					0			0		
Storage Bay Dist (ft)			275			160			250	250
Storage Blk Time (%)		1				0	0			
Queuing Penalty (veh)		4				0	0			

Intersection: 10: LOVR & Autopark

Movement	WB	WB	NB	NB	NB	SB	SB	SB	B44	B44
Directions Served	L	R	T	T	R	L	T	T	T	T
Maximum Queue (ft)	45	20	108	128	70	64	144	178	53	46
Average Queue (ft)	14	7	19	25	9	19	27	39	5	5
95th Queue (ft)	37	23	70	86	38	53	129	148	56	60
Link Distance (ft)	253		1048	1048			280	280	795	795
Upstream Blk Time (%)							2	2		
Queuing Penalty (veh)							9	12		
Storage Bay Dist (ft)		175			50	60				
Storage Blk Time (%)				2	0	0	3			
Queuing Penalty (veh)				1	0	1	1			

Intersection: 11: LOVR & Calle Joaquin

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	L	TR	L	T	T	R	L	T	T	R
Maximum Queue (ft)	48	15	82	40	134	227	230	146	90	206	227	148
Average Queue (ft)	8	1	39	12	29	66	80	14	26	94	151	17
95th Queue (ft)	30	10	74	35	76	175	195	69	84	207	254	91
Link Distance (ft)	311	311	418			224	224			148	148	
Upstream Blk Time (%)						0	0		0	8	16	0
Queuing Penalty (veh)						1	2		0	39	82	0
Storage Bay Dist (ft)				150	115			105	115			325
Storage Blk Time (%)					0	2	3			10	16	0
Queuing Penalty (veh)					0	1	2			4	3	0

Intersection: 11: LOVR & Calle Joaquin

Movement	B92	B92
Directions Served	T	T
Maximum Queue (ft)	276	346
Average Queue (ft)	66	84
95th Queue (ft)	435	469
Link Distance (ft)	1048	1048
Upstream Blk Time (%)	2	2
Queuing Penalty (veh)	8	10
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: LOVR & 101 NB

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	LR	L	T	T	T	T	R
Maximum Queue (ft)	457	520	198	127	152	643	677	310
Average Queue (ft)	248	314	86	54	66	290	332	98
95th Queue (ft)	415	475	157	106	127	713	747	317
Link Distance (ft)		1216		708	708	919	919	
Upstream Blk Time (%)						1	1	
Queuing Penalty (veh)						4	8	
Storage Bay Dist (ft)	625		395					250
Storage Blk Time (%)							27	0
Queuing Penalty (veh)							28	0

Intersection: 15: Higuera & Suburban

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	LR	T	TR	L	T	T
Maximum Queue (ft)	119	158	221	354	184	138	142
Average Queue (ft)	34	76	65	179	81	40	49
95th Queue (ft)	80	134	150	322	158	106	112
Link Distance (ft)	672		347	347		1027	1027
Upstream Blk Time (%)			0	2			
Queuing Penalty (veh)			0	13			
Storage Bay Dist (ft)		170			200		
Storage Blk Time (%)	0	0			2	0	
Queuing Penalty (veh)	0	0			5	0	

Intersection: 16: Higuera & Tank Farm

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	TR
Maximum Queue (ft)	99	62	193	179	31	57	226	285	220	240	127	128
Average Queue (ft)	35	23	115	88	2	14	116	116	110	136	47	50
95th Queue (ft)	76	51	177	154	29	39	194	222	215	223	101	102
Link Distance (ft)	147	147	720	720			1027	1027			1677	1677
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)					250	140			160	260		
Storage Blk Time (%)							5	2	3	0		
Queuing Penalty (veh)							1	14	7	0		

Zone Summary

Zone wide Queuing Penalty: 333

Intersection: 1: LOVR & Madonna

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	B50
Directions Served	L	TR	L	L	TR	R	L	T	T	T	R	T
Maximum Queue (ft)	83	199	213	197	251	216	277	322	340	353	210	51
Average Queue (ft)	31	90	109	96	124	102	78	216	242	263	178	3
95th Queue (ft)	71	160	177	162	204	182	184	315	340	386	269	29
Link Distance (ft)		411	301	301	301			283	283	283		1309
Upstream Blk Time (%)					0		0	2	5	10		
Queuing Penalty (veh)					0		0	13	28	60		
Storage Bay Dist (ft)	230					170	200				175	
Storage Blk Time (%)		0			4	2		12		24	2	
Queuing Penalty (veh)		0			9	6		11		97	9	

Intersection: 1: LOVR & Madonna

Movement	B50	B50	SB	SB	SB	SB
Directions Served	T	T	L	L	T	TR
Maximum Queue (ft)	87	166	285	352	392	368
Average Queue (ft)	7	29	156	195	249	227
95th Queue (ft)	47	114	244	299	347	329
Link Distance (ft)	1309	1309			993	993
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			350	350		
Storage Blk Time (%)			0	0	0	
Queuing Penalty (veh)			0	0	2	

Intersection: 2: Oceanaire & Madonna

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SE	NE
Directions Served	<L	T	TR	<L	T	T	R>	<LT	R	LTR>	<LR>	<LR
Maximum Queue (ft)	69	234	282	69	293	384	231	38	47	118	27	37
Average Queue (ft)	9	90	142	29	106	167	54	3	16	54	3	7
95th Queue (ft)	43	191	250	61	225	308	163	21	40	96	16	22
Link Distance (ft)		1674	1674		641	641		228		247	140	147
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	115			115			200		50			
Storage Blk Time (%)		4			5	5		0	0			
Queuing Penalty (veh)		1			2	9		0	0			

Intersection: 3: Dalidio & Madonna

Movement	EB	EB	EB	EB	B62	B62	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	R	T	T	L	L	T	TR	LT	R
Maximum Queue (ft)	171	277	268	160	218	255	212	240	352	382	209	184
Average Queue (ft)	36	170	208	120	20	44	114	130	132	172	113	91
95th Queue (ft)	109	271	303	202	131	183	193	213	275	317	189	153
Link Distance (ft)		202	202		418	418			580	580	252	252
Upstream Blk Time (%)		8	16		0	0						
Queuing Penalty (veh)		42	88		0	1						
Storage Bay Dist (ft)	112			100			310	310				
Storage Blk Time (%)		24	36	1					0			
Queuing Penalty (veh)		8	88	4					1			

Intersection: 3: Dalidio & Madonna

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	89	41
Average Queue (ft)	29	15
95th Queue (ft)	67	40
Link Distance (ft)	143	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		50
Storage Blk Time (%)	6	0
Queuing Penalty (veh)	1	0

Intersection: 5: Hwy 101 SB/Madonna Inn & Madonna

Movement	EB	EB	EB	EB	EB	B305	B305	B305	B306	B306	B306	WB
Directions Served	L	T	T	T	R	T	T	T	T	T	T	L
Maximum Queue (ft)	166	253	249	266	160	211	196	251	11	6	59	240
Average Queue (ft)	31	218	200	220	122	54	45	80	0	0	3	137
95th Queue (ft)	120	283	275	292	214	173	165	226	8	5	33	232
Link Distance (ft)		186	186	186		248	248	248	502	502	502	
Upstream Blk Time (%)	0	26	16	26		0	0	2				
Queuing Penalty (veh)	0	132	83	136		1	0	10				
Storage Bay Dist (ft)	150				100							260
Storage Blk Time (%)		35		47	0							0
Queuing Penalty (veh)		8		100	2							0

Intersection: 5: Hwy 101 SB/Madonna Inn & Madonna

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	T	T	TR	L	LT	R	L	LT	R
Maximum Queue (ft)	208	170	84	188	181	169	33	54	35
Average Queue (ft)	70	55	10	156	135	81	9	16	11
95th Queue (ft)	157	119	48	182	187	152	30	45	35
Link Distance (ft)	984	984					192		
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			260			275		100	100
Storage Blk Time (%)	0								
Queuing Penalty (veh)	0								

Intersection: 6: Hwy 101 NB & Madonna

Movement	EB	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	L	T	T	T	TR	L	TR
Maximum Queue (ft)	187	357	158	240	579	436	197	119
Average Queue (ft)	113	138	55	141	184	182	96	37
95th Queue (ft)	170	266	126	232	363	326	174	88
Link Distance (ft)		984	984	984	855	855		927
Upstream Blk Time (%)		0			0			
Queuing Penalty (veh)		0			0			
Storage Bay Dist (ft)	435						275	
Storage Blk Time (%)							0	
Queuing Penalty (veh)							0	

Intersection: 7: Higuera & Madonna

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	L	TR	L	L	TR	LT	T	R	R
Maximum Queue (ft)	314	490	385	42	142	204	223	420	270	314	216	179
Average Queue (ft)	175	236	56	9	76	117	125	209	144	160	13	12
95th Queue (ft)	277	383	246	32	131	185	192	361	237	262	114	101
Link Distance (ft)	855	855		124	124		1505	1505			398	398
Upstream Blk Time (%)					2						0	0
Queuing Penalty (veh)					0						1	0
Storage Bay Dist (ft)			275			160			250	250		
Storage Blk Time (%)		8	0			2	2		1	2		
Queuing Penalty (veh)		31	0			3	4		4	9		

Intersection: 10: LOVR & Autopark

Movement	WB	WB	NB	NB	NB	SB	SB	SB	B44	B44
Directions Served	L	R	T	T	R	L	T	T	T	T
Maximum Queue (ft)	51	66	163	160	59	69	182	237	168	496
Average Queue (ft)	21	23	64	60	5	24	59	104	6	17
95th Queue (ft)	46	50	127	121	31	59	142	212	119	208
Link Distance (ft)	354		1002	1002			271	271	844	844
Upstream Blk Time (%)								0		0
Queuing Penalty (veh)								2		0
Storage Bay Dist (ft)		175			50	60				
Storage Blk Time (%)				5	0	1	2			
Queuing Penalty (veh)				2	0	5	1			

Intersection: 11: LOVR & Calle Joaquin

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	L	TR	L	T	T	R	L	T	T	R
Maximum Queue (ft)	60	27	194	120	160	251	248	151	144	280	313	217
Average Queue (ft)	16	4	79	32	34	150	160	29	36	145	261	44
95th Queue (ft)	45	17	148	74	97	262	267	114	93	285	341	183
Link Distance (ft)	334	334	456			228	228			217	217	
Upstream Blk Time (%)						2	2			4	35	0
Queuing Penalty (veh)						14	15			28	272	0
Storage Bay Dist (ft)				150	115			105	115			325
Storage Blk Time (%)			2			8	11	0	0	6	35	0
Queuing Penalty (veh)			1			4	7	0	1	3	10	1

Intersection: 11: LOVR & Calle Joaquin

Movement	B29	B29
Directions Served	T	T
Maximum Queue (ft)	626	743
Average Queue (ft)	163	275
95th Queue (ft)	590	733
Link Distance (ft)	1002	1002
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	2
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: LOVR & 101 NB

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	LR	L	T	T	T	T	R
Maximum Queue (ft)	309	368	213	220	230	239	278	244
Average Queue (ft)	165	209	120	118	125	103	122	53
95th Queue (ft)	257	309	196	190	207	196	227	142
Link Distance (ft)		1202		705	705	936	936	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	625		395					250
Storage Blk Time (%)							0	
Queuing Penalty (veh)							1	

Intersection: 15: Higuera & Suburban

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	LR	T	TR	L	T	T
Maximum Queue (ft)	395	230	237	337	259	440	432
Average Queue (ft)	149	167	93	163	140	176	192
95th Queue (ft)	314	244	196	309	262	330	337
Link Distance (ft)	707		347	347		1039	1039
Upstream Blk Time (%)				0			
Queuing Penalty (veh)				1			
Storage Bay Dist (ft)		170			200		
Storage Blk Time (%)	2	11			16	2	
Queuing Penalty (veh)	10	28			94	3	

Intersection: 16: Higuera & Tank Farm

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	TR
Maximum Queue (ft)	53	43	285	264	170	187	273	282	218	288	246	237
Average Queue (ft)	18	17	184	161	9	35	139	116	68	162	119	119
95th Queue (ft)	47	42	269	244	70	109	240	224	160	264	231	214
Link Distance (ft)	149	149	688	688			1039	1039			1522	1522
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)					250	140			160	260		
Storage Blk Time (%)				1		0	11	4	0	2	0	
Queuing Penalty (veh)				2		0	4	18	1	7	1	

Zone Summary

Zone wide Queuing Penalty: 1542