Initial Study and Mitigated Negative Declaration

FOR THE

320 Airport Way Subdivision Project

December 22, 2021

Prepared for:

City of Manteca – City Hall
1001 West Center Street
Manteca, CA 95337
(209) 456-8000

Prepared by:

De Novo Planning Group
1020 Suncast Lane, Suite 106
El Dorado Hills, CA 95762
(916) 580-9818

De Novo Planning Group

A Land Use Planning, Design, and Environmental Firm

Initial Study and

Mitigated Negative Declaration

for the

320 Airport Way Subdivision Project

December 22, 2021

Prepared for:

City of Manteca – City Hall
1001 West Center Street
Manteca, CA 95337
(209) 456-8000

Prepared by:

De Novo Planning Group
1020 Suncast Lane, Suite 106
El Dorado Hills, CA 95762
(916) 580-9818

Proposed 320 Airport Way Subdivision Project

Lead Agency:
City of Manteca
1215 West Center Street, Suite 201
Manteca, CA 95337
Project Title: 320 Airport Way Subdivision Project

Project Location: The 320 Airport Way Subdivision site (Project site) includes approximately 13.2 acres located in the western portion of the City of Manteca, north of State Route (SR) 120, in San Joaquin, California. The Project site is identified as Assessor's Parcel Number (APN) 200-140-26 by the San Joaquin County Assessor's Office. The Project site is bound by Airport Way to the west, a single-family residence and a park (i.e., Manteca Golf Course) to the north, undeveloped land to the east, and a single-family residence to the south. The Project site is also bounded to the north by a future single-family subdivision (i.e. Yosemite Greens). The surrounding land uses are low-density residential and light industrial to the west, medium-density residential and park uses to the north, medium-density residential to the east, and high-density residential to the south. The surrounding land is mostly undeveloped aside from the single-family residences, light industrial, and golf course.

The Project site currently is mostly undeveloped. The Project site has been used for agricultural purposes in the past. A single-family residence and two barn structures are located on the southwestern corner of the Project site. The remaining land has been tilled and left free of vegetation, except for ruderal grasses. Large mature trees exist in the vicinity of the single-family residence and barn structures. The northern boundary of the parcel is bordered by an irrigation drain (SSJID Drain #5). The Project site is generally flat with a gentle slope to the northeast toward the irrigation drain.

Project Description: The proposed Project includes up to 123 residences, which would be comprised of attached duplexes and some detached single-family homes (it should be noted that the final unit count may be reduced to fewer than 123 residences). The Project site contains approximately 12.8 gross developable acres (GDA), and the density of the Project site would be up to approximately 9.6 units/acre. The typical lot size will be 30 feet by 70 feet or 2,100 square feet. The maximum footprint of the residences would be 70% of the lot size. All existing structures within the Project site would be demolished, and the associated infrastructure removed, including any septic tanks, leach fields, and wells on-site, per City of Manteca requirements.

Findings:

In accordance with the California Environmental Quality Act, the City of Manteca has prepared an Initial Study to determine whether the proposed project may have a significant adverse effect on the environment. The Initial Study and Proposed Mitigated Negative Declaration reflect the independent judgment of City of Manteca staff. On the basis of the Initial Study, the City of Manteca hereby finds:

> *Although the proposed project could have a significant adverse effect on the environment, there will not be a significant adverse effect in this case because the project has incorporated specific provisions to reduce impacts to a less than significant level and/or the mitigation measures described herein have been added to the project. A Mitigated Negative Declaration has thus been prepared.*

The Initial Study, which provides the basis and reasons for this determination, is attached and/or referenced herein and is hereby made a part of this document.

Signature   Date

Proposed Mitigation Measures:

The following Mitigation Measures are extracted from the Initial Study. These measures are designed to avoid or minimize potentially significant impacts, and thereby reduce them to an insignificant level. A Mitigation Monitoring and Reporting Program (MMRP) is an integral part of project implementation to ensure that mitigation is properly implemented by the City and the implementing agencies. The MMRP will describe actions required to implement the appropriate mitigation for each CEQA category including identifying the responsible agency, program timing, and program monitoring requirements. Based on the analysis and conclusions of the Initial Study, the impacts of proposed project would be mitigated to less-than-significant levels with the implementation of the mitigation measures presented below.

AGRICULTURE AND FORESTRY RESOURCES

Mitigation Measure AG-1*:* Prior to the conversion of important farmland on the Project site, the Project applicant shall participate in the City's agricultural mitigation fee program and the SJMSCP by paying the established fees on a per-acre basis for the loss of important farmland. Fees paid toward the City's program shall be used to fund conservation easements on comparable or better agricultural lands to provide compensatory mitigation.

BIOLOGICAL RESOURCES

Mitigation Measure BIO-1*:* Prior to commencement of any grading activities, the Project proponent shall seek coverage under the SJMSCP to mitigate for habitat impacts to covered special status species. Coverage involves compensation for habitat impacts on covered species through implementation of incidental take and minimization Measures (ITMMs) and payment of fees for conversion of lands that may provide habitat for covered special status species. These fees are used to preserve and/or create habitat in preserves to be managed in perpetuity. Obtaining coverage for a Project includes incidental take authorization (permits) under the Endangered Species Act Section 10(a), California Fish and Game Code Section 2081, and the MBTA. Coverage under the SJMSCP would fully mitigate all habitat impacts on covered special-status species.

Mitigation Measure BIO-2: Prior to the approval of improvement plans, the Project applicant shall provide a landscape plan that includes tree planting specifications established by the Manteca Municipal Code (17.19.060) for the replacement of any trees, excluding orchard and non-native trees, to be removed at a ratio of 1:1. Replacement trees shall be planted on-site at a location that is agreeable to the City.

CULTURAL RESOURCES

Mitigation Measure CUL-1: The Project applicant shall ensure that a training session for all workers is conducted in advance of the initiation of construction activities at the site. The training session will provide information on recognition of artifacts, human remains, and cultural deposits to help in the recognition of potential issues.

Mitigation Measure CUL-2: The Project applicant shall retain a qualified archaeologist to observe initial ground disturbance activities, during initial grading. If artifacts, exotic rock, shell or bone are uncovered during the construction, the archaeologist will be able to document the finding, and determine if additional work is necessary to excavate or remove the artifacts or feature.

Mitigation Measure CUL-3: If cultural resources (i.e., prehistoric sites, historic sites, isolated artifacts/features, and paleontological sites) are discovered during construction, work shall be halted immediately within 50 meters (165 feet) of the discovery, the City of Manteca shall be notified, and a qualified archaeologist that meets the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology (or a qualified paleontologist in the event paleontological resources are found) shall be retained to determine the significance of the discovery. The City of Manteca shall consider recommendations presented by the professional for any unanticipated discoveries and shall carry out the measures deemed feasible and appropriate. Such measures may include avoidance, preservation in place, excavation, documentation, curation, data recovery, or other appropriate measures. Specific measures are developed based on the significance of the find.

Mitigation Measure CUL-4: If any human remains are found during grading and construction activities, all work shall be halted immediately within 50 meters (165 feet) of the discovery and the County Coroner must be notified, according to Section 5097.98 of the State Public Resources Code and Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the coroner shall notify the Native American Heritage Commission, and the procedures outlined in CEQA Section 15064.5(d) and (e) shall be followed. Additionally, if the Native American resources are identified, a Native American monitor, following the Guidelines for Monitors/Consultants of Native American Cultural, Religious, and Burial Sites established by the Native American Heritage Commission, may also be required and, if required, shall be retained at the applicant's expense.

Geology and Soils

Mitigation Measure GEO-1: Prior to issuance of any building permits, the Project applicant shall be required to submit building plans to the City of Manteca for review and approval. The building plans shall also comply with all applicable requirements of the most recent California Building Standards Code. All on-site soil engineering activities shall be conducted under the supervision of a licensed geotechnical engineer or certified engineering geologist.

Mitigation Measure GEO-2: The Project applicant shall submit a Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP) to the RWQCB in accordance with the NPDES General Construction Permit requirements. The SWPPP shall be designed to control pollutant discharges utilizing Best Management Practices (BMPs) and technology to reduce erosion and sediments. BMPs may consist of a wide variety of measures taken to reduce pollutants in stormwater runoff from the Project site. Measures shall include temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) that will be employed to control erosion from disturbed areas. Final selection of BMPs will be subject to approval by the City of Manteca and the RWQCB. The SWPPP will be kept on site during construction activity and will be made available upon request to representatives of the RWQCB.

Hazards and Hazardous Materials

Mitigation Measure HAZ-1: The Project applicant shall hire a qualified consultant to perform soil and site testing to check whether hazardous conditions are present, prior to any grading activities. The soil sampling shall address the presence/absence of hazardous substances in the soils, including agrichemicals and/or petroleum products. A soil sampling and analysis workplan shall be shall be prepared and meet the requirements of the Department of Toxic Substances Control Interim Guidance for Sampling Agricultural Properties (2008). The soils in the area where farming equipment and/or tanks have been stored should be included in the soil sampling and analysis workplan.

If the sampling results indicate the presence of agrichemicals that exceed commercial screening levels, a removal action workplan shall be prepared in coordination with San Joaquin County Environmental Health Department. The removal action workplan shall include a detailed engineering plan for conducting the removal action, a description of the on-site contamination, the goals to be achieved by the removal action, and any alternative removal options that were considered and rejected and the basis for that rejection. A no further action letter shall be issued by San Joaquin County Environmental Health Department upon completion of the removal action. The removal action shall be deemed complete when the confirmation samples exhibit concentrations below the commercial screening levels, which will be established by the agencies.

If asbestos-containing materials and/or lead are found in the buildings, a California Occupational Safety and Health Administration (Cal/OSHA) certified asbestos containing building materials (ACBM) and lead based paint contractor shall be retained to remove the asbestos-containing materials and lead in accordance with EPA and Cal/OSHA standards. In addition, all activities (construction or demolition) in the vicinity of these materials shall comply with Cal/OSHA asbestos and lead worker construction standards. The ACBM and lead shall be disposed of properly at an appropriate offsite disposal facility.

Mitigation Measure HAZ-2 Prior to initiation of any ground disturbance activities within 50 feet of a well, the Project applicant shall hire a licensed well contractor to obtain a well abandonment permit from San Joaquin County Environmental Health Department, and properly abandon the on-site wells, pursuant to review and approval of the City Engineer and the San Joaquin County Environmental Health Department.

Noise

Mitigation Measure NOISE-1: The following mitigation measures shall be implemented:

a) Construction activities (excluding activities that would result in a safety concern to the public or construction workers) shall be limited to between the hours of 7:00 a.m. and 7:00 p.m. Construction activities shall be prohibited on Sundays and federal holidays.

b) Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations.

c) Construction equipment staging areas shall be located at the furthest distance possible from nearby noise-sensitive land uses.

Mitigation Measure NOISE-2: The Project applicant shall implement the following design features, prior to project operation (it should be noted these design features are based upon an estimate of the future residence layouts. The assumptions made by Saxelby Acoustics to determine what design features would be required shall be verified by the Project applicant, once floor plans become available):

- An 11-foot barrier shall be constructed along the western boundary of the Project site and 8- foot barrier shall be constructed along a portion the northern and southern project boundaries, consistent with the modeling conducted by Saxelby Acoustics in the environmental noise assessment. Barriers could consist of sounds walls, earthen berms, or a combination of sound wall and earthen berm. Sound walls should consist of concrete masonry type construction and may include earthen berms to achieve the full barrier height relative to pad elevations;
- Building facades shall include use of stucco with exterior sheathing and a resilient channel for hanging interior gypsum board;
- STC 38 minimum rated glazing shall be used;
- Carpet on pad must be used as flooring in bedrooms;
- Interior gypsum wallboards and gypsum ceiling shall be 5/8";
- Saxelby Acoustics recommends that mechanical ventilation penetrations for exhaust fans not face toward Airport Way. Where feasible, these vents should be routed towards the opposite side of the building to minimize sound intrusion to sensitive areas of the buildings.
- Where vents must face toward Airport Way, it is recommended that the duct work be increased in length and make as many "S" turns as feasible prior to exiting the dwelling. This separates the openings between the noise source and the living space with a long circuitous route. Each time the sound turns a corner, it is reduced slightly. Flexible duct work is preferred ducting for this noise mitigation. Where the vent exits the building, a spring-loaded flap with a gasket should be installed to reduce sound entering the duct work when the vent is not in use;
- Mechanical ventilation shall be provided to allow occupants to keep doors and windows closed for acoustic isolation;
- In lieu of these measures, an interior noise control report may be prepared by a qualified acoustic engineer demonstrating that the proposed building construction would achieve the interior noise reduction requirement of 31 dBA.

PUBLIC SERVICES

Mitigation Measure PUBLIC-1: The Project applicant shall pay applicable park in-lieu fees or dedicate parkland in accordance with the City of Manteca Municipal Code standards outlined in Chapter 3.20. Proof of payment of the in-lieu fees shall be submitted to the City Engineer.

TABLE OF CONTENTS

This page left intentionally blank.

INITIAL STUDY CHECKLIST

PROJECT TITLE

320 Airport Way Subdivision

LEAD AGENCY NAME AND ADDRESS

City of Manteca – City Hall
1215 West Center Street, Suite 201
Manteca, CA 95337
(209) 456-8000

CONTACT PERSON AND PHONE NUMBER

Doug Ledebour
320 Airport Way LLC.
3200 Danville Blvd, Ste 200
Alamo, CA 94507
(925) 648-8888

PROJECT LOCATION AND SETTING

The 320 Airport Way Subdivision site (Project site) includes approximately 13.2 acres located in the western portion of the City of Manteca, north of State Route (SR) 120, in San Joaquin, California. The Project site is identified as Assessor's Parcel Number (APN) 200-140-26 by the San Joaquin County Assessor's Office. The Project site is bound by Airport Way to the west, a single-family residence and a park (i.e., Manteca Golf Course) to the north, undeveloped land to the east, and a single-family residence to the south. The Project site is also bounded to the north by a future single-family subdivision (i.e. Yosemite Greens). The surrounding land uses are low-density residential and light industrial to the west, medium-density residential and park uses to the north, medium-density residential to the east, and high-density residential to the south. The surrounding land is mostly undeveloped aside from the single-family residences, light industrial, and golf course.

The Project site currently is mostly undeveloped. The Project site has been used for agricultural purposes in the past. A single-family residence and two barn structures are located on the southwestern corner of the Project site. The remaining land has been tilled and left free of vegetation, except for ruderal grasses. Large mature trees exist in the vicinity of the single-family residence and barn structures. The northern boundary of the parcel is bordered by an irrigation drain (SSJID Drain #5). The Project site is generally flat with a gentle slope to the northeast toward the irrigation drain.

See Figures 1 and 2 for the regional location and the project vicinity. Figure 3 contains the tentative subdivision map of the project area.

PROJECT DESCRIPTION

The proposed Project includes up to 123 residences, which would be comprised of attached duplexes and some detached single-family homes (it should be noted that the final unit count may be reduced to fewer than 123 residences). The Project site contains approximately 12.8

gross developable acres (GDA)[1], and the density of the Project site would be up to approximately 9.6 units/acre. The typical lot size will be 30 feet by 70 feet or 2,100 square feet. The maximum footprint of the residences would be 70% of the lot size. All existing structures within the Project site would be demolished, and the associated infrastructure removed, including any septic tanks, leach fields, and wells on-site, per City of Manteca requirements.

Infrastructure and Access

The proposed Project would be served by existing City water, sewer, and storm drainage infrastructure. An approximately one-acre storm drainage basin has been designed to collect storm drainage from the Project site before discharging it into the City's drainage system. The basin is shown as "Lot B" in Figure 3. The existing City laterals and lines currently located in Airport Way would be extended into the Project site.

The Project site would be accessed via a single access point off Airport Way and will contain eight internal streets. "Center Street" and "Half Dome Drive", shown on the subdivision map (Figure 3) would remain unfinished in order to tie into future neighboring developments. Each lot would contain a two-car garage and two driveway parking spaces. The Project site is also anticipated to contain approximately 95 street parking spaces.

GENERAL PLAN AND ZONING DESIGNATIONS

The Project site is designated Medium Density Residential (MDR) by the Manteca General Plan Land Use Map. According to the City of Manteca 2023 General Plan, the MDR designation provides for smaller single-family homes in more imaginative lotting arrangements, duplex and triplex development, smaller scale multi-family developments, including cottage homes, garden apartments, townhouses, and cluster housing, and mobile home parks. The density range also accommodates small-lot single family homes that are smaller in size, making them cost less to build and resulting in the home being more affordable to residents. The allowed density within the MDR designation is 8.1 to 15 dwelling units per acre. With up to 123 units on 12.8 acres, the proposed density would be up to approximately 9.6 dwelling units per gross developable acre, which is within the allowed density range.

The Project site is zoned Limited Multi-Family Dwelling (R2) by the Manteca Zoning Map. The R2 zone accommodates a variety of uses, including single-family and multi-family residential uses, school, recreation, and public uses, some utility infrastructure and public safety uses, and some child-care and medical services uses.

A General Plan Amendment or rezone would not be required for the project. The existing General Plan land uses and the zoning designations are shown on Figure 4.

REQUESTED ENTITLEMENTS AND OTHER APPROVALS

The City of Manteca is the Lead Agency for the proposed project, pursuant to the State Guidelines for Implementation of CEQA, Section 15050.

This document will be used by the City of Manteca to take the following actions:

- Adoption of the Mitigated Negative Declaration (MND);
- Adoption of the Mitigation Monitoring and Reporting Program;

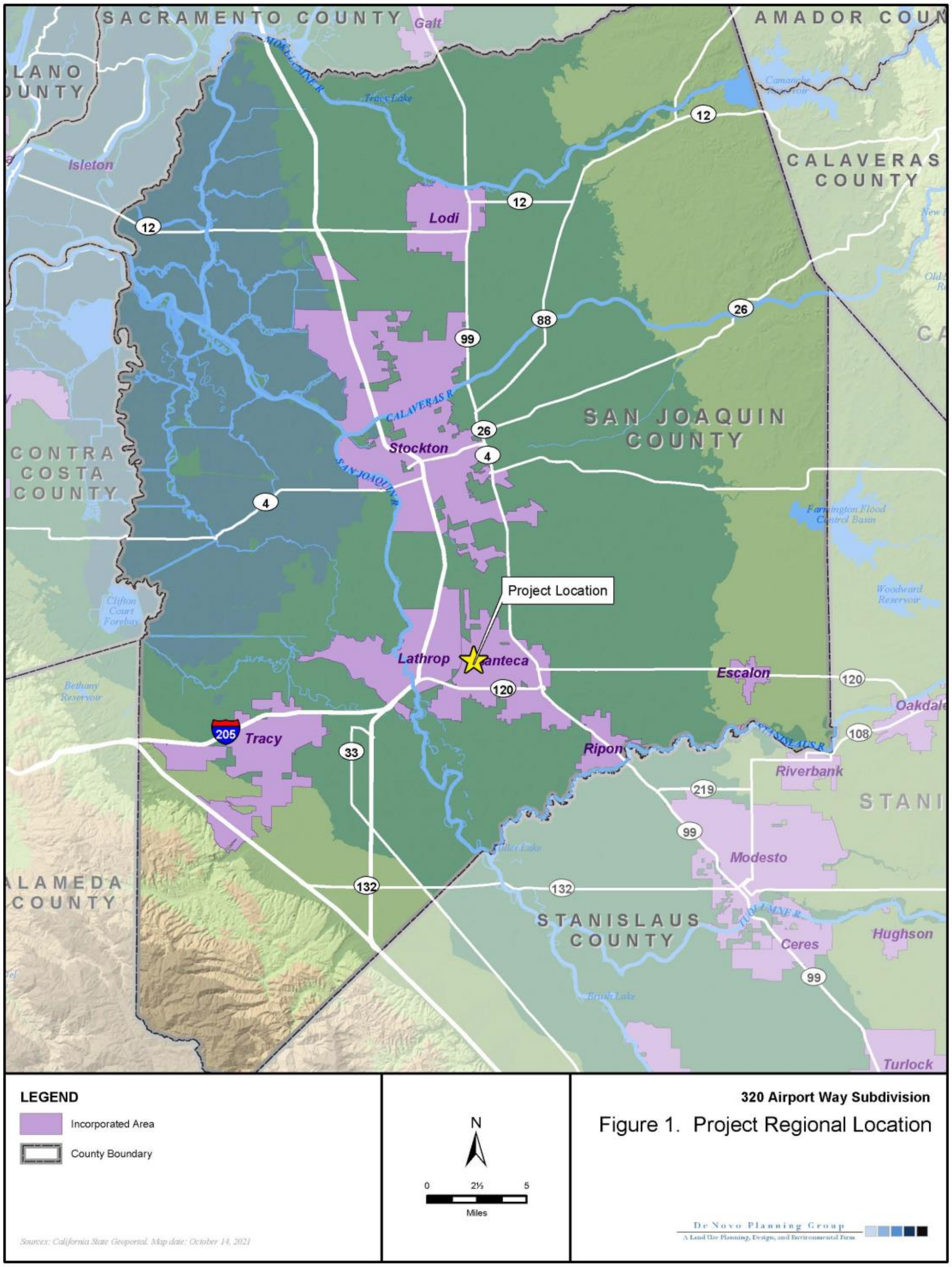
[1] Gross Developable Acres excludes Airport Way right of way dedication.

- City review and approval of the proposed Grading and Improvement Plans.

The following agencies may be required to issue permits or approve certain aspects of the proposed project:

- Regional Water Quality Control Board (RWQCB) – Construction activities would be required to be covered under the National Pollution Discharge Elimination System (NPDES);
- RWQCB – The Storm Water Pollution Prevention Plan (SWPPP) would be required to be approved prior to construction activities pursuant to the Clean Water Act;
- San Joaquin Valley Air Pollution Control District (SJVAPCD) – Approval of construction-related air quality permits;
- San Joaquin Council of Governments (SJCOG) – Review of project application to determine consistency with the San Joaquin County Multi-Species Habitat, Conservation, and Open Space Plan (SJMSCP).

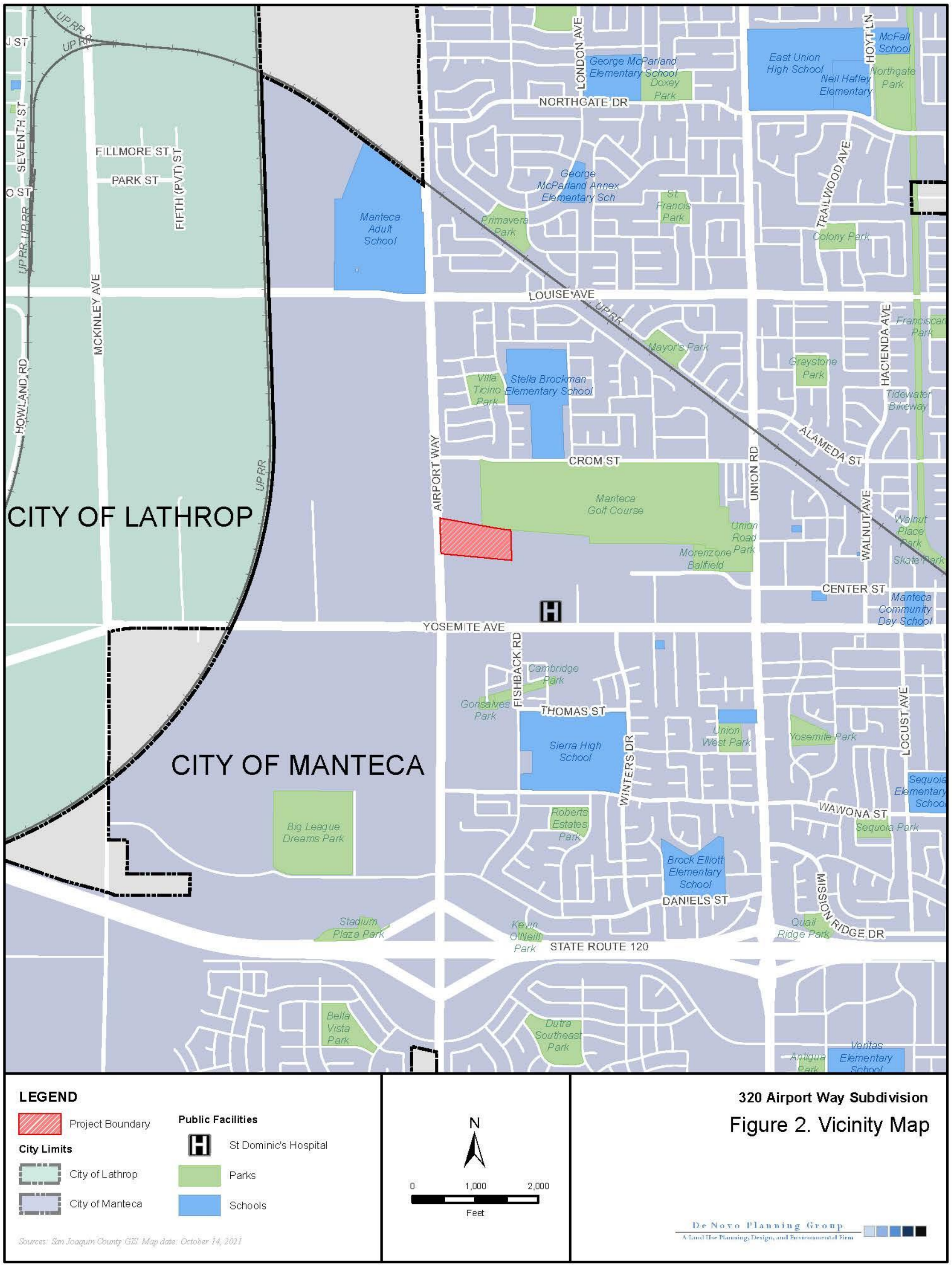
This page left intentionally blank.



320 Airport Way Subdivision

Figure 1. Project Regional Location

This page left intentionally blank.


CITY OF LATHROP
CITY OF MANTECA
AIRPORT WAY
YOSEMITE AVE
LOUISE AVE
CROM ST
UNION RD
CENTER ST
STATE ROUTE 120
NORTHGATE DR
Manteca Golf Course
Manteca Adult School
Stella Brockman Elementary School
Sierra High School
East Union High School
Big League Dreams Park
LEGEND
Project Boundary
City Limits
City of Lathrop
City of Manteca
Public Facilities
St Dominic's Hospital
Parks
Schools
Sources: San Joaquin County GIS. Map date: October 14, 2021
N
0
1,000
2,000
Feet
320 Airport Way Subdivision
Figure 2. Vicinity Map
De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

This page left intentionally blank.

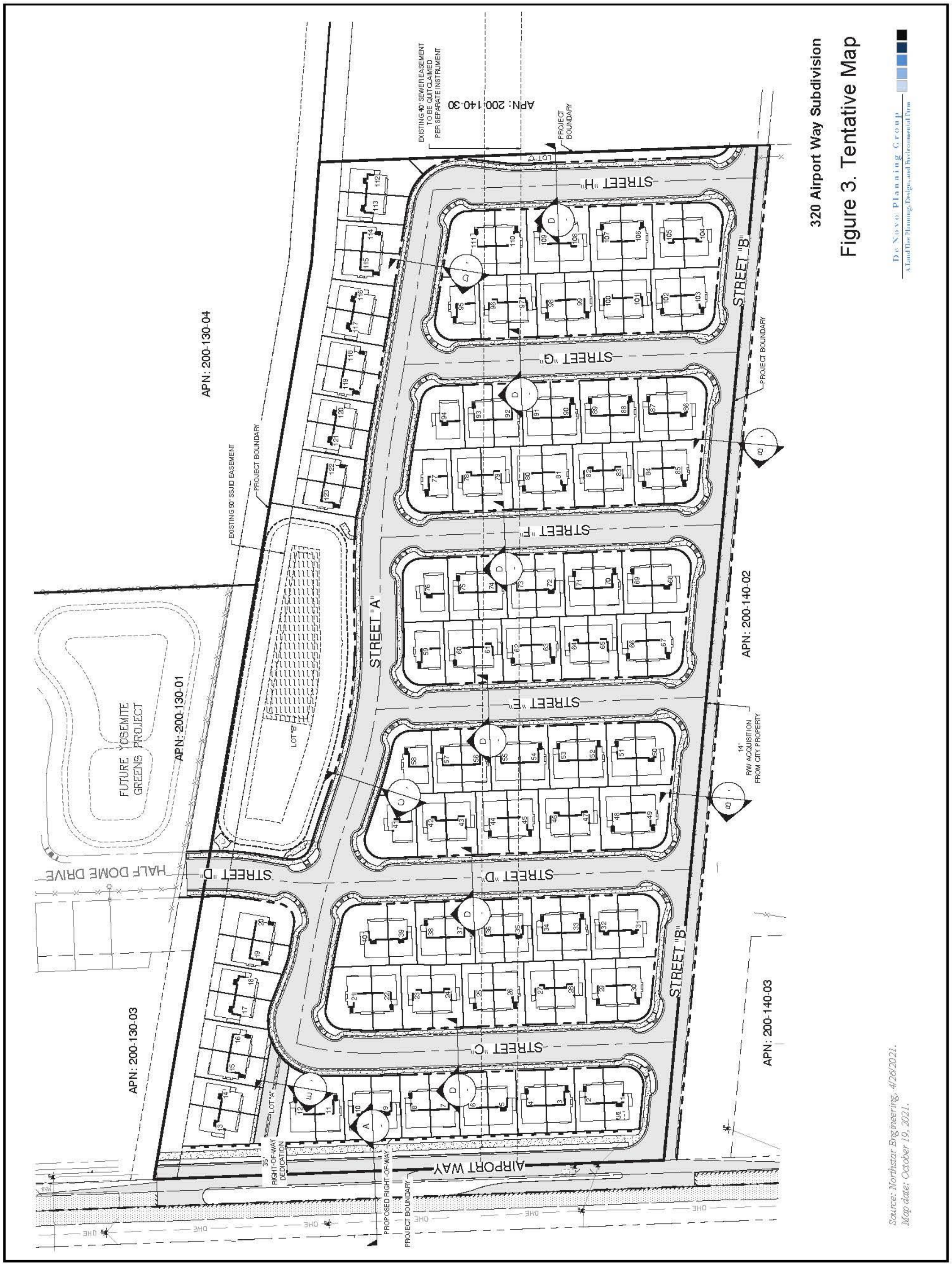
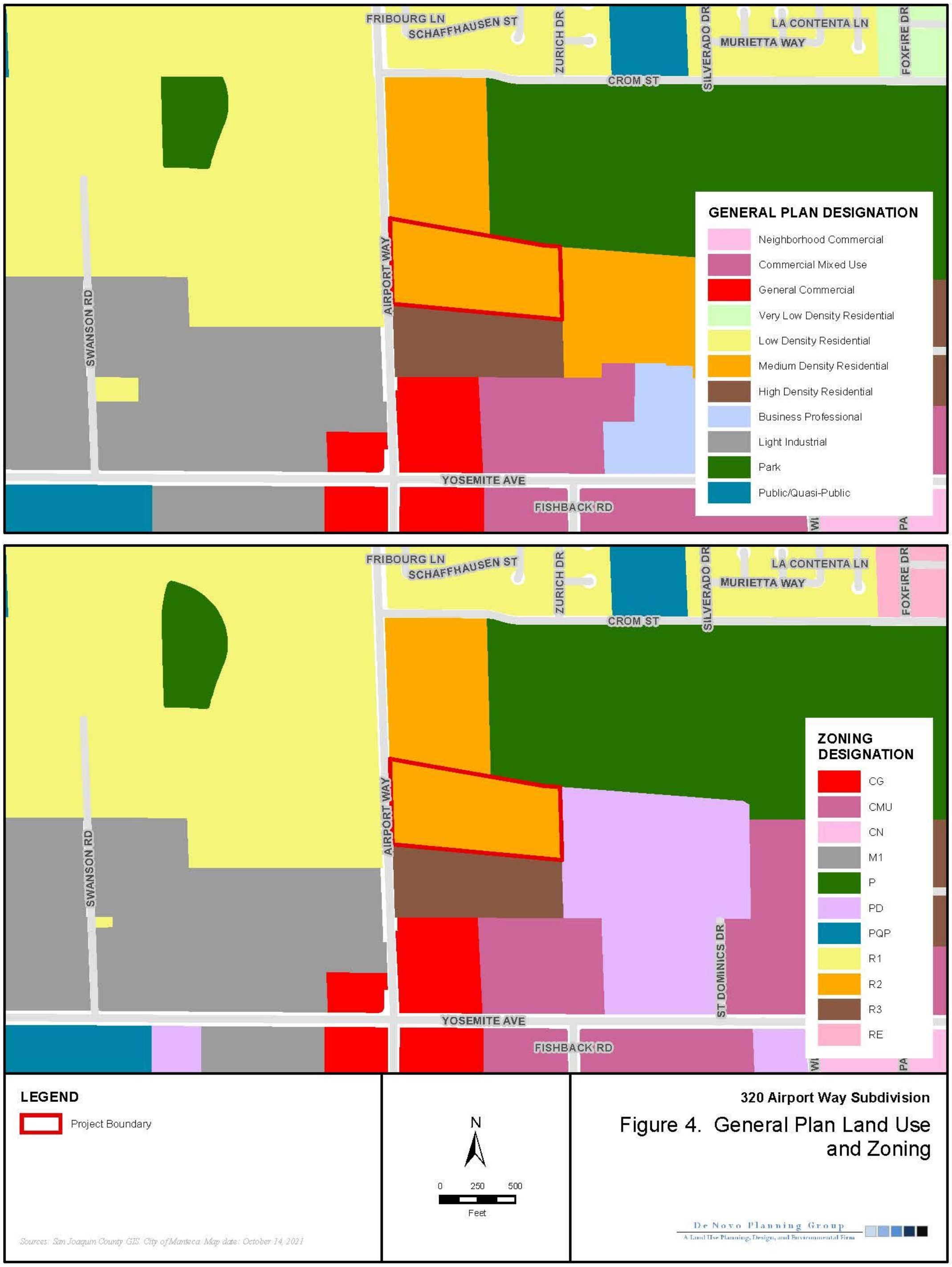


Figure 3. Tentative Map

This page left intentionally blank.



320 Airport Way Subdivision

Figure 4. General Plan Land Use and Zoning

This page left intentionally blank.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

None of the environmental factors listed below would have potentially significant impacts as a result of development of this project, as described on the following pages.

	Aesthetics		Agriculture and Forestry Resources		Air Quality
	Biological Resources		Cultural Resources		Energy
	Geology and Soils		Greenhouse Gasses		Hazards and Hazardous Materials
	Hydrology and Water Quality		Land Use and Planning		Mineral Resources
	Noise		Population and Housing		Public Services
	Recreation		Transportation		Tribal Cultural Resources
	Utilities and Service Systems		Wildfire		Mandatory Findings of Significance

DETERMINATION

On the basis of this initial evaluation:

	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

Date

EVALUATION INSTRUCTIONS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).
5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
    a) Earlier Analysis Used. Identify and state where they are available for review.
    b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9) The explanation of each issue should identify:
    a) The significance criteria or threshold, if any, used to evaluate each question; and
    b) The mitigation measure identified, if any, to reduce the impact to less than significant.

EVALUATION OF ENVIRONMENTAL IMPACTS

In each area of potential impact listed in this section, there are one or more questions which assess the degree of potential environmental effect. A response is provided to each question using one of the four impact evaluation criteria described below. A discussion of the response is also included.

- Potentially Significant Impact. This response is appropriate when there is substantial evidence that an effect is significant. If there are one or more "Potentially Significant Impact" entries, upon completion of the Initial Study, an EIR is required.
- Less than Significant With Mitigation Incorporated. This response applies when the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact". The Lead Agency must describe the mitigation measures and briefly explain how they reduce the effect to a less than significant level.
- Less than Significant Impact. A less than significant impact is one which is deemed to have little or no adverse effect on the environment. Mitigation measures are, therefore, not necessary, although they may be recommended to further reduce a minor impact.
- No Impact. These issues were either identified as having no impact on the environment, or they are not relevant to the project.

ENVIRONMENTAL CHECKLIST

This section of the Initial Study incorporates the most current Appendix "G" Environmental Checklist Form contained in the CEQA Guidelines. Impact questions and responses are included in both tabular and narrative formats for each of the 21 environmental topic areas.

I. AESTHETICS

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

Responses to Checklist Questions

Responses a), c): There are no scenic viewsheds within the City of Manteca, and the City of Manteca General Plan does not specifically designate any scenic viewsheds within the city. The existing Manteca General Plan does, however, note Manteca's scenic environmental resources including the San Joaquin River environment, and scenic vistas of the Coast Range and the Sierra.

For analysis purposes, a scenic vista can be discussed in terms of a foreground, middle ground, and background viewshed. The middle ground and background viewshed is often referred to as the broad viewshed. Examples of scenic vistas can include mountain ranges, valleys, ridgelines, or water bodies from a focal point of the forefront of the broad viewshed, such as visually important trees, rocks, or historic buildings. An impact would generally occur if a project would change the view to the middle ground or background elements of the broad viewshed, or remove the visually important trees, rocks, or historic buildings in the foreground. There are no scenic middleground or background views from the Project site that would be significantly affected by the proposed project.

The proposed Project would not significantly disrupt middle ground or background views from public viewpoints. The proposed Project would result in changes to the foreground views from the public viewpoint by adding residential buildings to a site that is currently vacant (except for the existing residences located with the Project site along Airport Way).

Upon build-out, the Project site would be of similar visual character to nearby and adjacent developments (such as the residential community located to the north of the Project site). For motorists travelling along nearby roadways, such as Airport Way, the Project site would appear to be a continuation of adjacent residential land uses and would not present unexpected or otherwise unpleasant aesthetic values within the general vicinity.

The greatest visual change would apply to neighbors that are located to the west and south of the Project site with a direct view of the area. Views of the Project site are generally visible from immediately adjacent residences. However, the proposed Project would visually blend into the residential and rural surrounding uses.

The change in character of the Project site, once developed, is anticipated by the General Plan and would be visually compatible with surrounding existing land uses. Moreover, although the City considers the visual impact from the loss of agricultural lands, not all agricultural lands are the same. The Project site does not have characteristics that would normally be considered a significant scenic amenity or visual resource. Many of the buildings located on the Project site are in varying condition, including at last one barnyard building that appears to be in a state of disrepair (located in the western portion of the Project site). Moreover, building debris is often located on the property (at least temporarily). These practices may be considered visually unappealing by the general public. Furthermore, proposed setbacks and landscaping around the perimeter of the Project site will buffer the foreground viewshed from residents in the immediate vicinity. Therefore, implementation of the proposed Project would have a ***less than significant*** impact relative to this topic.

Response b): The Project site is not located within view of a state scenic highway. Only one highway section in San Joaquin County is listed as a Designated Scenic Highway by the Caltrans Scenic Highway Mapping System; the segment of Interstate 580 from Interstate 5 to State Route 205. The City of Manteca is not visible from this roadway segment. Therefore, the proposed Project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. Implementation of the proposed Project would have ***no impact*** relative to this topic.

Response d): The Project site currently consists of vacant land with some existing residences. The Project site contains minimal existing lighting. There is a potential for the proposed Project to create new sources of light and glare. Examples of lighting would include construction lighting, street lighting, security lighting along sidewalks, exterior building lighting, interior building lighting, and automobile lighting. Examples of glare would include reflective building materials and automobiles.

There is a potential for the implementation of the proposed Project to introduce new sources of light and glare into the project area. Contributors to light and glare impacts would include construction lighting and street lighting that would create ongoing light impacts to the area. Nighttime construction activities are not anticipated to be required as part of on-site roadway construction. Operational light sources from street lighting may be required to provide for safe travel. However, to minimize light and glare impacts, the City has adopted ordinances that establish lighting standards for all new and existing development. These ordinances are existing standards. All street lighting would have to comply with the City of Manteca lighting standards. Section 17.50.060 of the Manteca Municipal Code identifies general lighting standards for light shielding, illumination levels, and nuisance prevention.

Moreover, the City of Manteca is in the process of adopting a Crime Prevention Through Environmental Design (CPTED) Ordinance. Supporting this effort, the City has two planners aboard who are (CPTED) certified. The new CPTED Ordinance will require all illumination sources to use LED. The exterior lighting will be aimed down and towards the Project site to provide adequate illumination without glare effect. Fixtures will have bulbs that are fully recessed and shielded and will not emit light above the horizontal plane of the shielding.

LED is the best illumination source for reducing urban glare. All streetlights within the Project site would comply with the CPTED streetlight illumination standards. LED lights are 40 to 60% more energy efficient than traditional lighting technologies. By using LED luminaries, it is possible to provide better quality lighting with no glare, lower energy consumption, and reduce CO_2 emissions.

Lastly, it is noted that sky glow is an effect of light pollution, which has historically not been an environmental concern in the City of Manteca given their enforcement of their lighting ordinance which imposes design conditions on lighting within the City's jurisdiction. It is also noted that sky glow can also be a function of lighting density, which is a function of building density. For instance, nighttime light pollution and sky glow is much more common in densely populated urban environments, but is not common within the small suburban communities of the Central Valley.

Therefore, implementation of the proposed Project would have a ***less than significant*** impact relative to this topic.

II. AGRICULTURE AND FORESTRY RESOURCES

Would the project:	***Potentially Significant Impact***	***Less Than Significant with Mitigation Incorporation***	***Less Than Significant Impact***	***No Impact***
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?		X		
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 1222(g)) or timberland (as defined in Public Resources Code section 4526)?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?			X	

Responses to Checklist Questions

Response a): The Project site is designated as Farmland of Local Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency (California Department of Conservation, 2018).

The Project site is designated as MDR by the Manteca General Plan Land Use Map. The proposed Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use. However, the proposed Project is subject to the City's agricultural mitigation fee program and the SJMSCP. Payment of these fees is standard for the conversion of farmland in the City of Manteca. Different types of land require different levels of mitigation. The entirety of San Joaquin County is mapped according to each land use category so that landowners, project proponents and project reviewers are aware of the applicable SJMSCP fees for the proposed development. The appropriate fees are collected by the City and remitted to SJCOG for administration. SJCOG uses the funds to preserve open space land of comparable types throughout the County, often coordinating with other private or public land trusts to purchase conservation easements or buy land outright for preservation. Fees are automatically adjusted on an annual basis.

The project proponent will be required to pay the established fees on a per-acre basis for the loss of Farmland of Local Importance. Fees paid toward the City's program shall be used to fund conservation easements on comparable or better agricultural lands to provide compensatory mitigation. Although the proposed Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, implementation of the following mitigation would ensure there is a ***less than significant*** impact relative to this issue.

Mitigation Measure(s)

***Mitigation Measure AG-1**: Prior to the conversion of important farmland on the Project site, the Project applicant shall participate in the City's agricultural mitigation fee program and the SJMSCP by paying the established fees on a per-acre basis for the loss of important farmland. Fees paid toward the City's program shall be used to fund conservation easements on comparable or better agricultural lands to provide compensatory mitigation.*

Response b): The Project site is not zoned for agricultural use nor is it under a Williamson Act contract (California Department of Conservation, 2016). The proposed Project would not conflict with existing zoning for agricultural use, or a Williamson Act contract. Implementation of the proposed Project would have ***no impact*** relative to this issue.

Response c): The Project site is not forest land (as defined in Public Resources Code section 1222(g)) or timberland (as defined in Public Resources Code section 4526). The proposed Project would not conflict with existing zoning for, or cause rezoning of, forest land or timberland. Implementation of the proposed Project would have ***no impact*** relative to this issue.

Response d): The Project site is not forest land. The proposed Project would not result in the loss of forest land or conversion of forest land to non-forest use. Implementation of the proposed Project would have ***no impact*** relative to this issue.

Response e): The Project site does not contain forest land, and there is no forest land in the vicinity of the Project site. The Project site is designated MDR and will result in a conversion of the land to non-farmland. This is consistent with the General Plan. The proposed Project does not involve any other changes in the existing environment not disclosed under the previous responses which, due to their location or nature, could result in conversion of farmland, to non-agricultural use, or conversion of forest land to non-forest use. Implementation of the proposed Project would have a ***less than significant*** impact relative to this issue.

III. AIR QUALITY

Would the project:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?			X	
c) Expose sensitive receptors to substantial pollutant concentrations?			X	
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

Existing Setting

The Project site is located within the San Joaquin Valley Air Pollution Control District (SJVAPCD). This agency is responsible for monitoring air pollution levels and ensuring compliance with federal and state air quality regulations within the San Joaquin Valley Air Basin (SJVAB) and has jurisdiction over most air quality matters within its borders.

Responses to Checklist Questions

Responses a), b): Air quality emissions would be generated during construction and during operation of the proposed project. Operational emissions would come primarily from vehicle emissions from vehicle trips generated by the proposed Project and from the use of energy (i.e., electricity and natural gas) within the proposed Project residences.

SJVAPCD Small Project Analysis Level (SPAL)

The SJVAPCD has established CEQA Small Project Analysis Level (SPAL) screening thresholds, which are based on District New Source Review (NSR) offset requirements for stationary sources (SJVAPCD, 2017). Projects that fit the descriptions and are less than the project sizes provided are deemed to have a less than significant impact on air quality due to criteria pollutant emissions and as such are excluded from quantifying criteria pollutant emissions for CEQA purposes. The Single-Family land use category was chosen for the purposes of the SPAL screening thresholds. According to the SPAL screening thresholds, Single Family projects that are less than 390 units and Condominiums/Townhouse projects that are less than 256 units in project size would have a less than significant impact on air quality due to criteria pollutant emissions. The proposed Project would develop up to 123 residential units, which is smaller than the 390-unit SPAL screening threshold for Single Family Projects.

Construction-Related Emissions

The SJVAPCD's approach to analysis of construction impacts is to require implementation of effective and comprehensive control measures, rather than to require detailed quantification of emission concentrations for modeling of direct impacts. PM_{10} emitted during construction can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors, making quantification difficult.

Despite this variability in emissions, experience has shown that there are a number of feasible control measures that can be reasonably implemented to significantly reduce PM_{10} emissions from construction activities. The SJVAPCD has determined that, on its own, compliance with Regulation VIII for all sites and implementation of all other control measures indicated in Tables 6-2 and 6-3 of the SJVAPCD's Guide for Assessing and Mitigating Air Quality Impacts (as appropriate) would constitute sufficient mitigation to reduce construction PM_{10} impacts to a level considered less than significant.

Construction would result in numerous activities that would generate dust. The fine, silty soils in the project area and often strong afternoon winds exacerbate the potential for dust, particularly in the summer months. Impacts would be localized and variable. Construction impacts would last for a period of several months to several years. The initial phase of project construction would involve grading and site preparation activities, followed by building construction. Construction activities that could generate dust and vehicle emissions are primarily related to grading, soil excavation, and other ground-preparation activities, as well as building construction.

Control measures are required and enforced by the SJVAPCD under Regulation VIII. The SJVAPCD considers construction-related emissions from all projects in this region to be mitigated to a less than significant level if SJVAPCD-recommended PM_{10} fugitive dust rules and equipment exhaust emissions controls are implemented. The proposed Project would be required to comply with all applicable measures from SJVAPCD Rule VIII. The proposed Project would have a less than significant impact related to construction activities on these potential impacts.

In addition, Table AIR-1 (below) provides the results of the construction-related emissions modeling results from CalEEMod in comparison to the SJVAPCD thresholds for criteria air pollutants.

Table AIR-1: Project Unmitigated Construction Criteria Pollutant Emissions (tons/year)

Emissions Type	*Proposed Project Emissions*	*SJVAPCD Threshold*	*Above Threshold in Proposed Project?*
ROG	1.3	10	N
NO_x	2.7	10	N
CO	2.6	100	N
PM_{10}	0.3	15	N
$PM_{2.5}$	0.2	15	N
SO_x	<0.1	27	N

Source: CalEEMod, v.2016.3.2

Operational Emissions

For the purposes of this operational air quality analysis, actions that violate Federal standards for criteria pollutants (i.e., primary standards designed to safeguard the health of people considered to be sensitive receptors while outdoors and secondary standards designed to safeguard human welfare) are considered significant impacts. Additionally, actions that violate State standards developed by the CARB or criteria developed by the SJVAPCD, including thresholds for criteria pollutants, are considered significant impacts.

SJVAPCD Rule 9510 Indirect Source Review

District Rule 9510 requires developers of large residential, commercial and industrial projects to reduce smog-forming (NOx) and particulate (PM_{10} and $PM_{2.5}$) emissions generated by their projects. The Rule applies to many project types, including to projects which, upon full build-out, will include 50 residential units or more. Project developers are required to reduce:

- 20 percent of construction-exhaust nitrogen oxides;
- 45 percent of construction-exhaust PM_{10};
- 33 percent of operational nitrogen oxides over 10 years; and
- 50 percent of operational PM_{10} over 10 years.

Developers are encouraged to meet these reduction requirements through the implementation of on-site mitigation; however, if the on-site mitigation does not achieve the required baseline emission reductions, the Project applicant will mitigate the difference by paying an off-site fee to the District. Fees reduce emissions by helping to fund clean-air projects in the District. The proposed Project would be required to consult with the SJVAPCD regarding the applicability of Rule 9510 Indirect Source Review including the fees.

Criteria Pollutant Emissions and Thresholds

Project operational emissions are provided in Table AIR-2 (below) (further detail is provided in Appendix A), in comparison to the SJVAPCD criteria pollutant thresholds.

Table AIR-2: Project Unmitigated Operational Criteria Pollutant Emissions (tons/year)

Emissions Type	*Proposed Project Emissions*	*SJVAPCD Threshold*	*Above Threshold in Proposed Project?*
ROG	1.1	10	N
NO_x	0.9	10	N
CO	5.3	100	N
PM_{10}	1.0	15	N
$PM_{2.5}$	0.3	15	N
SO_x	<0.1	27	N

Source: CalEEMod, v.2020.4.0

As shown above, the proposed Project would not exceed the applicable SJVAPCD thresholds associated with operational emissions. Therefore, the proposed Project would have a ***less than significant*** impact with regard to operational emissions.

Conclusion

As described above, the proposed Project would have ***a less than significant*** impact related to the potential to conflict with or obstruct implementation of the applicable air quality plan, or to result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

Response c): Sensitive receptors are those parts of the population that can be severely impacted by air pollution. Sensitive receptors include children, the elderly, and the infirm. Although there are existing residences located to the north, south, and west of the Project site, there are no schools or elderly facilities located adjacent to the Project site. The nearest school (Stella

Brockman Elementary School) is located approximately 0.25 miles to the northeast of the Project site, at its closest point.

Implementation of the proposed Project would not expose these sensitive receptors to substantial pollutant concentrations. Air emissions would be generated during the construction and operational phases of the project. The construction phase of the project would be temporary and short-term, and the implementation of all State, Federal, and SJVAPCD requirements would greatly reduce pollution concentrations generated during construction activities. Additionally, operational emissions would be minimal and would have a negligible effect on nearby sensitive receptors.

Operation of the proposed Project would result in emissions from vehicle trips and from building energy use. However, as described under Response a) – b) above, the proposed Project would not generate significant concentrations of air emissions. Therefore, impacts to sensitive receptors would be negligible and this is a ***less than significant*** impact.

Response d): The proposed Project would not generate objectionable odors. People in the immediate vicinity of construction activities may be subject to temporary odors typically associated with construction activities (diesel exhaust, hot asphalt, etc.). However, any odors generated by construction activities would be minor and would be short and temporary in duration.

Examples of facilities that are known producers of operational odors include: Wastewater Treatment Facilities, Chemical Manufacturing, Sanitary Landfill, Fiberglass Manufacturing, Transfer Station, Painting/Coating Operations (e.g., auto body shops), Composting Facility, Food Processing Facility, Petroleum Refinery, Feed Lot/Dairy, Asphalt Batch Plant, and Rendering Plant. If a project would locate receptors and known odor sources in proximity to each other further analysis may be warranted; however, if a project would not locate receptors and known odor sources in proximity to each other, then further analysis is not warranted.

The project does not include any of the aforementioned uses. Additionally, construction activities would be temporary and minor. Lastly, other emissions are evaluated in responses a-c), as provided above. As such, implementation of the proposed Project would have a ***less than significant*** impact relative to this topic.

IV. BIOLOGICAL RESOURCES

Would the project:	***Potentially Significant Impact***	***Less Than Significant with Mitigation Incorporation***	***Less Than Significant Impact***	***No Impact***
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?			X	
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			X	
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			X	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			X	
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?		X		

Regional Setting

The City of Manteca is located in the western portion of the Great Valley Geomorphic Province of California. The Great Valley Province is a broad structural trough bounded by the tilted block of the Sierra Nevada on the east and the complexly folded and faulted Coast Ranges on the west. The San Joaquin River is located just south and west of the City. This major river drains the Great Valley Province into the San Joaquin Delta to the north, ultimately discharging into the San Francisco Bay to the northwest.

The City of Manteca is located within the San Joaquin Valley Bioregion, which is comprised of Kings County, most of Fresno, Kern, Merced, and Stanislaus counties, and portions of Madera, San Luis Obispo, and Tulare counties. The San Joaquin Valley Bioregion is the third most populous out of ten bioregions in the state, with an estimated 2 million people. The largest cities are Fresno, Bakersfield, Modesto, and Stockton. Interstate 5 and State Route 99 are the major north-south roads that run the entire length of the bioregion. Habitat in the bioregion includes vernal pools, valley sink scrub and saltbush, freshwater marsh, grasslands, arid plains, orchards, and oak savannah. Historically, millions of acres of wetlands flourished in the bioregion, but stream diversions for irrigation dried all but about five percent. Remnants of the wetland habitats are protected in this bioregion in publicly owned parks, reserves, and wildlife areas. The bioregion is considered the state's top agricultural producing region with the abundance of fertile soil.

The region has a Mediterranean climate that is subject to cool, wet winters (often blanketed with fog) and hot, dry summers. The average annual precipitation is approximately 13.81 inches. Precipitation occurs as rain most of which falls between the months of November through April, peaking in January at 2.85 inches. The average temperatures range from December lows of 37.5 F to July highs of 94.3 F.

The Project site is relatively flat with a natural gentle slope from southwest to northeast. Topographic features within the Project site include level fields, farm roads/driveways, irrigation ditches/catch basins, stockpiles. Elevation ranges from approximately 20 to 27 feet above mean sea level. There are no rivers, streams, or other natural aquatic habitats on the Project site. The fields are regularly grazed by cattle throughout the year. The fields are fenced and structured into paddocks.

Vegetation on the Project site consists of barren, agricultural, ruderal, and landscaping. Common plant species observed in these areas include: wild oat (*Avena barbata*), softchess (*Bromus hordeaceus*) alfalfa (*Medicago sativa*), Russian thistle (Salsola tragus), Italian thistle (*Carduus pycnocephalus*), rough pigweed (*Amaranthus retroflexus*), sunflower (*Helianthus annuus*), tarragon (*Artemisia dracunculus*), prickly lettuce (*Lactuca serriola*), milk thistle (*Silybum marianum*), sow thistle (*Sonchus asper*), barley (*Hordeum* sp.), mustard (*Brassica niger*), and heliotrope (*Heliotropium curassavicum*).

Agricultural and ruderal vegetation found on the Project site provides habitat for both common and a few special-status wildlife populations. For example, some commonly observed wildlife species in the region include: California ground squirrel (*Spermophilus beecheyi*), California vole (*Microtus californicus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus),* American kestrel (*Falco sparverius*), white-tailed kite (*Elanus leucurus*), American killdeer (*Charadrius vociferus*), gopher snake (*Pituophis melanoleucus*), garter snake (*Thamnophis species*), and western fence lizard (*Sceloporus occidentalis*), as well as many native insect species. There are also several bat species in the region. Bats often feed on insects as they fly over agricultural and natural areas.

Locally common and abundant wildlife species are important components of the ecosystem. Due to habitat loss, many of these species must continually adapt to using agricultural, ruderal, and ornamental vegetation for cover, foraging, dispersal, and nesting.

Responses to Checklist Questions

Response a): The following discussion is based on a background search of special-status species that are documented in the California Natural Diversity Database (CNDDB), the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants, and the U.S. Fish and Wildlife Service's (USFWS) records of listed endangered and threatened species from the IPAC database. The background search was regional in scope and focused on the documented occurrences within 10 miles of the Project site. Table BIO-1 provides a list of special-status plants and Table BIO-2 provides a list of special-status animals.

TABLE BIO-1: SPECIAL-STATUS PLANT SPECIES WHICH MAY OCCUR IN PROJECT AREA

SPECIES	*STATUS (FED./CA/ CNPS/SJMSCP)*	*GEOGRAPHIC DISTRIBUTION*	*HABITAT AND BLOOMING PERIOD*
Big tarplant *Blepharizonia plumosa*	--/--/1B.1/No	San Francisco Bay area with occurrences in Alameda, Contra Costa, San Joaquin, Stanislaus, and Solano Counties	Valley and foothill grassland; 30-505 m. July-Oct.
Slough thistle *Cirsium crassicaule*	--/--/1B.1/Yes	San Joaquin Valley: Kings, Kern, and San Joaquin Counties	Freshwater sloughs and marshes; 3-100 m. May-August.
Recurved larkspur *Delphinium recurvatum*	--/--/1B.2/Yes	Central Valley from Colusa to Kern Counties	Alkaline soils in saltbush scrub, cismontane woodland, valley and foothill grassland; 3-750 m. March-May.
Round-leaved filaree *Erodium macrophyllum*	--/--/2.1/No	Scattered occurrences in the Great Valley, southern north Coast Ranges, San Francisco Bay area, south Coast Ranges, Channel Islands, Transverse Ranges, and Peninsular Ranges	Cismontane woodland, valley and foothill grassland on clay soils; 15-1,200 m. March-May.
Delta button-celery *Eryngium racemosum*	--/E/1B.1/Yes	San Joaquin River delta floodplains and adjacent Sierra Nevada foothills: Calaveras, Merced, San Joaquin, and Stanislaus Counties	Riparian scrub, seasonally inundated depressions along floodplains on clay soils; below 75 m. June-August.
Wright's trichocoronis *Trichocoronis wrightii* var. *wrightii*	--/--/2.1/Yes	Scattered locations in the Central Valley; southern coast of Texas	Floodplains, moist places, on alkaline soils; below 450 m. May-September.
Caper-fruited tropidocarpum *Tropidocarpum capparideum*	--/--/1B.1/Yes	Historically known from the northwest San Joaquin Valley and adjacent Coast Range foothills; currently known from Fresno, Monterey, and San Luis Obispo Counties	Alkaline hills in valley and foothill grassland; below 455 m. March-April.

NOTES: CNPS = CALIFORNIA NATIVE PLANT SOCIETY
SJMSCP = SAN JOAQUIN MULTI-SPECIES HABITAT CONSERVATION AND OPEN SPACE PLAN

FEDERAL
E = ENDANGERED UNDER THE FEDERAL ENDANGERED SPECIES ACT.
T = THREATENED UNDER THE FEDERAL ENDANGERED SPECIES ACT.

STATE
E = ENDANGERED UNDER THE CALIFORNIA ENDANGERED SPECIES ACT.
T = THREATENED UNDER THE FEDERAL CALIFORNIA ENDANGERED SPECIES ACT.
R = RARE UNDER THE CALIFORNIA ENDANGERED SPECIES ACT

CALIFORNIA NATIVE PLANT SOCIETY
1B = RARE, THREATENED, OR ENDANGERED IN CALIFORNIA AND ELSEWHERE.
2 = RARE, THREATENED, OR ENDANGERED IN CALIFORNIA, BUT MORE COMMON ELSEWHERE.
3 = A REVIEW LIST – PLANTS ABOUT WHICH MORE INFORMATION IS NEEDED.
4 = PLANTS OF LIMITED DISTRIBUTION – A WATCH LIST
.1 = SERIOUSLY ENDANGERED IN CALIFORNIA (OVER 80% OF OCCURRENCES THREATENED-HIGH DEGREE AND IMMEDIACY OF THREAT).
.2 = FAIRLY ENDANGERED IN CALIFORNIA (20-80% OCCURRENCES THREATENED).
.3 = NOT VERY ENDANGERED IN CALIFORNIA (<20% OF OCCURRENCES THREATENED).

Special Status Plant Species

There are seven special status plants identified as having the potential to occur on the Project site based on known occurrences in the region. These include: Big tarplant (*Blepharizonia plumose*), Slough thistle (*Cirsium crassicaule*), Recurved larkspur (*Delphinium recurvatum*), Round-leaved filaree (*Erodium macrophyllum*), Delta button-celery (*Eryngium racemosum*), Wright's trichocoronis (*Trichocoronis wrightii var. wrightii*), and Caper-fruited tropidocarpum (*Tropidocarpum capparideum*).

Of the seven species, there are no federal listed species, one state listed species (endangered), five CNPS 1B listed species (including the state listed species), and two CNPS 2 listed species. The state listed species and CNPS 1B listed species are covered species under the SJMCP. The CNPS 2 listed species are not covered under the SJMCP.

TABLE BIO-2: SPECIAL-STATUS WILDLIFE AND FISH SPECIES WHICH MAY OCCUR IN PROJECT AREA

SPECIES	STATUS (FED/CA/ SJMSCP)	GEOGRAPHIC DISTRIBUTION	HABITAT REQUIREMENTS
INVERTEBRATES			
Vernal pool fairy shrimp *Branchinecta lynchi*	T/--/Yes	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County	Common in vernal pools; they are also found in sandstone rock outcrop pools.
Vernal pool tadpole shrimp *Lepidurus packardi*	E/--/Yes	Shasta County south to Merced County	Vernal pools and ephemeral stock ponds.
Molestan blister beetle *Lytta molesta*	--/--/Yes	Distribution of this species is poorly known.	Annual grasslands, foothill woodlands or saltbush scrub.
Sacramento anthicid beetle *Anthicus sacramento*	--/--/No	Found in several locations along the Sacramento and San Joaquin rivers, from Shasta to San Joaquin counties, and at one site along the Feather River.	Sand dune area, sand slipfaces among bamboo and willow, but may not depend on these plants.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T/--/Yes	Stream side habitats below 3,000 feet throughout the Central Valley	Riparian and oak savanna habitats with elderberry shrubs; elderberries are the host plant.
AMPHIBIANS			
California tiger salamander *Ambystoma californiense (A. tigrinum c.)*	T/SSC/Yes	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Butte County south to northeastern San Luis Obispo County.	Small ponds, lakes, or vernal pools in grass-lands and oak woodlands for larvae; rodent burrows, rock crevices, or fallen logs for cover for adults and for summer dormancy.
California red-legged frog *Rana aurora draytoni*	T/SSC/Yes	Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama County to Fresno County	Permanent and semi-permanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation. May estivate in rodent burrows or cracks during dry periods.
BIRDS			
Aleutian goose *Branta canadensis leucopareia*	D/--/Yes	The entire population winters in Butte Sink, then moves to Los Banos, Modesto, the Delta, and East Bay reservoirs; stages near Crescent City during spring before migrating to breeding grounds.	Roosts in large marshes, flooded fields, stock ponds, and reservoirs; forages in pastures, meadows, and harvested grainfields; corn is especially preferred
American Peregrine Falcon *Falco peregrinus anatum*	D (BCC)/D/No	Patchy breeding distribution and occur across the continental U.S., with bigger concentrations taking place in the western states and Alaska. They winter in the northern limits of their range, including portions of Canada, and are very widespread during migration.	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.
Bald eagle *Haliaeetus leucocephalus*	D (BCC)/E/No	Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino Counties and in the Lake Tahoe Basin. Reintroduced into central coast. Winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierra Nevada, and east of the Sierra Nevada south of Mono County	In western North America, nests and roosts in coniferous forests within 1 mile of a lake, reservoir, stream, or the ocean
Burrowing owl *Athene cunicularia*	BCC/SSC/Yes	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast	Level, open, dry, heavily grazed or low stature grassland or desert vegetation with available burrows

SPECIES	STATUS (FED/CA/ SJMSCP)	GEOGRAPHIC DISTRIBUTION	HABITAT REQUIREMENTS
California black rail *Laterallus jamaicensis coturniculus*	BCC/T/Yes	Permanent resident in the San Francisco Bay and east-ward through the Delta into Sacramento and San Joaquin Counties; small populations in Marin, Santa Cruz, San Luis Obispo, Orange, Riverside, and Imperial Counties	Tidal salt marshes associated with heavy growth of pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations
Fox sparrow *Branta canadensis leucopareia*	BCC/--/No	Found throughout North American, with several subspecies wintering in chaparral in California.	Breed in thickets and chaparral across northern North America and south along the western mountains. During migration, Fox Sparrows forage in the leaf litter of open hardwood forests as well as swampy thickets. Winter in chaparral.
Least Bittern *Ixobrychus exilis*	BCC/SSC/No	Nest in large marshes with dense vegetation from southern Canada to northern Argentina. These birds migrate from the northern parts of their range in winter for the southernmost coasts of the United States and areas further south, travelling at night.	Colonial nester in marshlands and borders of ponds and reservoirs which provide ample cover. Nests usually placed low in tules, over water. Marsh & swamp wetland.
lesser yellowlegs *Branta canadensis leucopareia*	BCC/--/No	Wintering occurs along the coasts of California, Baja California, southeastern U.S., and along the Gulf of Mexico, in addition to southeastern Texas and throughout Central America.	Wintering habitat use varies with rainfall; tidal flats may be frequented during the dry season, while adjacent shallow lagoons and marshes are used during the rainy season.
lewis's woodpecker *Branta canadensis leucopareia*	BCC/--/No	Breed from southern British Columbia down to Arizona and New Mexico; this range also covers California east to Colorado. They winter from southern British Columbia throughout the southwestern U.S. Within the northern portion of its breeding range, it remains present throughout the year in many portions of its breeding range.	Open ponderosa pine forest, open riparian woodland dominated by cottonwood, and logged or burned pine forest. Their breeding distribution is widely associated with ponderosa pine distribution in western North America. Lewis's Woodpeckers commonly reuse existing nest holes or natural cavities in trees, as they do not use newly excavated ones.
Loggerhead shrike *Lanius ludovicianus*	BCC/SSC/Yes	Resident and winter visitor in lowlands and foothills throughout California. Rare on coastal slope north of Mendocino County, occurring only in winter	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches
Long-billed curlew *Numenius americanus*	BCC/--/Yes	Nests in northeastern California in Modoc, Siskiyou, and Lassen Counties. Winters along the coast and in interior valleys west of Sierra Nevada	Nests in high-elevation grasslands adjacent to lakes or marshes. During migration and in winter; frequents coastal beaches and mudflats and interior grasslands and agricultural fields
Marbeled godwit *Branta canadensis leucopareia*	BCC/--/No	Breeds in Montana as well as North and South Dakota, with this range extending through Alberta, Saskatchewan and Manitoba in Canada. Marbled Godwits winter along both coasts and the Gulf of Mexico and are transient elsewhere.	Breeds in marshes and flooded plains, in migration and winter also on mudflats and beaches.
Mountain plover *Charadrius montanus*	BCC/SSC/Yes	Does not breed in California; in winter, found in the Central Valley south of Yuba County, along the coast in parts of San Luis Obispo, Santa Barbara, Ventura, and San Diego Counties; parts of Imperial, Riverside, Kern, and Los Angeles Counties	Occupies open plains or rolling hills with short grasses or very sparse vegetation; nearby bodies of water are not needed; may use newly plowed or sprouting grainfields
Nuttalls woodpecker *Branta canadensis leucopareia*	BCC/--/No	Year-round distribution occurs from northern California and southward to northwestern Baja California.	Found primarily in oak woodlands, but also found in riparian woodlands. Tree nest cavity excavated by males with little assistance from females; male may roost in cavity as it nears completion.
Oak titmouse *Baeolophus inornatus*	BCC/S/No	Nonmigratory species that breeds from Oregon, through California and to northwest Baja California, Mexico.	Live in warm, open, dry oak or oak-pine woodlands. Many will use scrub oaks or other brush as long as woodlands are nearby. Nests are built in tree cavities. Occasionally, Oak Titmice nest in stumps, fenceposts, pipes, eaves, or holes in riverbanks. They will also use nest boxes.

SPECIES	STATUS (FED/CA/ SJMSCP)	GEOGRAPHIC DISTRIBUTION	HABITAT REQUIREMENTS
Short-eared owl *Asio flammeus*	BCC/SSC/Yes	Permanent resident along the coast from Del Norte County to Monterey County although very rare in summer north of San Francisco Bay, in the Sierra Nevada north of Nevada County, in the plains east of the Cascades, and in Mono County; small, isolated populations	Freshwater and salt marshes, lowland meadows, and irrigated alfalfa fields; needs dense tules or tall grass for nesting and daytime roosts.
Song sparrow (Modesto Population) *Melospiza melodia*	BCC/SSC/Yes	Restricted to California, where it is locally numerous in the Sacramento Valley, Sacramento–San Joaquin River Delta, and northern San Joaquin Valley. Exact boundaries of range uncertain.	Found in emergent freshwater marshes dominated by tules (*Scirpus* spp.) and cattails (*Typha* spp.) as well as riparian willow (*Salix* spp.) thickets. They also nest in riparian forests of Valley Oak (*Quercus lobata*) with a sufficient understory of blackberry (*Rubus* spp.), along vegetated irrigation canals and levees, and in recently planted Valley Oak restoration sites.
Swainson's hawk *Buteo swainsoni*	BCC/T/Yes	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County	Nests in oaks or cottonwoods in or near riparian habitats. Forages in grasslands, irrigated pastures, and grain fields
Merlin *Falco columbarius*	--/--/Yes	Does not nest in California. Rare but widespread winter visitor to the Central Valley and coastal areas	Forages along coastline in open grasslands, savannas, and woodlands. Often forages near lakes and other wetlands
Tricolored blackbird *Agelaius tricolor*	BCC/C (SSC)/Yes	Permanent resident in the Central Valley from Butte County to Kern County. Breeds at scattered coastal locations from Marin County south to San Diego County; and at scattered locations in Lake, Sonoma, and Solano Counties. Rare nester in Siskiyou, Modoc, and Lassen Counties	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grainfields. Habitat must be large enough to support 50 pairs. Probably requires water at or near the nesting colony
Western grebe *Branta canadensis leucopareia*	BCC/--/No	Breeds mainly from western Canada, east to southwestern Manitoba, and south through U.S. from California and Utah through the northern Rocky Mountain and upper Great Plains states. Winters mainly along Pacific Coast from southeastern Alaska to northwestern Mexico.	Breed on freshwater lakes and marshes with extensive open water bordered by emergent vegetation. During winter they move to saltwater or brackish bays, estuaries, or sheltered sea coasts and are less frequently found on freshwater lakes or rivers.
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	T (BCC)/E/Yes	Nests along the upper Sacramento, lower Feather, south fork of the Kern, Amargosa, Santa Ana, and Colorado Rivers	Wide, dense riparian forests with a thick understory of willows for nesting; sites with a dominant cottonwood overstory are preferred for foraging; may avoid valley oak riparian habitats where scrub jays are abundant
Williamson's sapsucker *Branta canadensis leucopareia*	BCC/--/No	Breeding: Southern British Columbia, through central Washington to California; extending to Idaho, Montana, Utah, Wyoming, Colorado, New Mexico and Arizona. Winter: Arizona, New Mexico, through the Sierra Madres and into central Mexico.	Inhabits open coniferous and mixed coniferous-deciduous forests.
Yellow-billed magpie *Pica nuttalli*	BCC/--/No	The year-round range of Yellow-billed Magpies is entirely in California.	Resides in oak savanna, open areas with large trees, and along streams. This species also forages in grassland, pasture, fields, and orchards.
Yellow-headed blackbird *Xanthocephalus*	--/SSC/Yes	Nests in freshwater emergent wetlands with dense vegetation and deep water. Often along borders of lakes or ponds.	Nests only where large insects such as odonatan are abundant, nesting timed with maximum emergence of aquatic insects.
FISH			
Delta smelt *Hypomesus transpacificus*	T/T/Yes	Primarily in the Sacramento–San Joaquin Estuary but has been found as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River; range extends downstream to San Pablo Bay.	Occurs in estuary habitat in the Delta where fresh and brackish water mix in the salinity range of 2–7 parts per thousand.

SPECIES	*STATUS (FED/CA/ SJMSCP)*	*GEOGRAPHIC DISTRIBUTION*	*HABITAT REQUIREMENTS*
Hardhead *Mylopharodon conocephalus*	--/SSC/No	Tributary streams in the San Joaquin drainage; large tributary streams in the Sacramento River and the main stem	Resides in low to mid-elevation streams and prefer clear, deep pools and runs with slow velocities. They also occur in reservoirs.
Central Valley steelhead *Oncorhynchus mykiss*	T/--/No	Sacramento River and tributary Central Valley rivers.	Occurs in well-oxygenated, cool, riverine habitat with water temperatures from 7.8°C to 18°C. Habitat types are riffles, runs, and pools.
Central Valley fall- /late fall-run Chinook salmon *Oncorhynchus tshawytscha*	--/SSC/No	Sacramento and San Joaquin Rivers and tributary Central Valley rivers.	Have the same general habitat requirements as winter and spring-run Chinook salmon.
Longfin smelt *Spirinchus thaleichthys*	--/SSC/Yes	Occurs in estuaries along the California coast. Adults concentrated in Suisun, San Pablo, and North San Francisco Bays.	Prior to spawning, these fish aggregate in deepwater habitats available in the northern Delta, including, primarily, the channel habitats of Suisun Bay and the Sacramento River. Spawning occurs in fresh water on the San Joaquin River below Medford Island and on the Sacramento River below Rio Vista.
MAMMALS			
Riparian (San Joaquin Valley) woodrat *Neotoma fuscipes riparia*	E/SSC, FP/Yes	Historical distribution along the San Joaquin, Stanislaus, and Tuolumne Rivers, and Caswell State Park in San Joaquin, Stanislaus, and Merced Counties; presently limited to San Joaquin County at Caswell State Park and a possible second population near Vernalis	Riparian habitats with dense shrub cover, willow thickets, and an oak overstory
Riparian brush rabbit *Sylvilagus bachmani riparius*	E/E/Yes	Limited to San Joaquin County at Caswell State Park near the confluence of the Stanislaus and San Joaquin Rivers and Paradise Cut area on Union Pacific right-of-way lands	Native valley riparian habitats with large clumps of dense shrubs, low-growing vines, and some tall shrubs and trees
American badger *Taxidea taxus*	--/SSC/Yes	In California, badgers occur throughout the state except in humid coastal forests of northwestern California in Del Norte and Humboldt Counties	Badgers occur in a wide variety of open, arid habitats but are most commonly associated with grasslands, savannas, mountain meadows, and open areas of desert scrub; the principal habitat requirements for the species appear to be sufficient food (burrowing rodents), friable soils, and relatively open, uncultivated ground
San Joaquin kit fox *Vulpes macrotis mutica*	E/T/Yes	Principally occurs in the San Joaquin Valley and adjacent open foothills to the west; recent records from 17 counties extending from Kern County north to Contra Costa County	Saltbush scrub, grassland, oak, savanna, and freshwater scrub
REPTILES			
Giant garter snake *Thamnophis couchi gigas*	T/T/Yes	Central Valley from the vicinity of Burrel in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno	Sloughs, canals, low gradient streams and freshwater marsh habitats where there is a prey base of small fish and amphibians; they are also found in irrigation ditches and rice fields; requires grassy banks and emergent vegetation for basking and areas of high ground protected from flooding during winter.

STATUS EXPLANATIONS:

FEDERAL

E = ENDANGERED UNDER THE FEDERAL ENDANGERED SPECIES ACT.
T = THREATENED UNDER THE FEDERAL ENDANGERED SPECIES ACT.
PE = PROPOSED FOR ENDANGERED UNDER THE FEDERAL ENDANGERED SPECIES ACT.
PT = PROPOSED FOR THREATENED UNDER THE FEDERAL ENDANGERED SPECIES ACT.
C = CANDIDATE SPECIES FOR LISTING UNDER THE FEDERAL ENDANGERED SPECIES ACT.
D = DELISTED FROM FEDERAL LISTING STATUS.
BCC = BIRD OF CONSERVATION CONCERN

STATE
E = ENDANGERED UNDER THE CALIFORNIA ENDANGERED SPECIES ACT.
T = THREATENED UNDER THE CALIFORNIA ENDANGERED SPECIES ACT.
C = CANDIDATE SPECIES FOR LISTING UNDER THE STATE ENDANGERED SPECIES ACT.
FP = FULLY PROTECTED UNDER THE CALIFORNIA FISH AND GAME CODE.
SSC = SPECIES OF SPECIAL CONCERN IN CALIFORNIA.

Special Status Wildlife Species

Invertebrates: There are three special-status invertebrates that are documented within a 10-mile radius of the Project site according to the CNDDB including: Molestan blister beetle (*Lytta molesta*), Sacramento anthicid beetle (*Anthicus sacramento*), and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). In addition, the Vernal pool fairy shrimp (*Branchinecta lynchi*) and Vernal pool tadpole shrimp (*Lepidurus packardi*) are documented in the USFWS IPAC database as potentially occurring within the region.

Vernal pool fairy shrimp (VPFS) is a federal threatened invertebrate found in the Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. They are commonly found in vernal pools and in sandstone rock outcrop pools. VPFS is not anticipated to be directly affected by any individual phase or component of the proposed Project because there in not appropriate vernal pool habitat on the Project site.

Vernal pool tadpole shrimp (VPTS) is a federal endangered invertebrate found in vernal pools and stock ponds from Shasta County south to Merced County. VPTS is not anticipated to be directly affected by any individual phase or component of the proposed Project because there in not appropriate vernal pool habitat on the Project site.

Valley elderberry longhorn beetle (VELB) is a federal threatened insect, proposed for delisting. Elderberry (*Sambucus* sp.), which is a primary host species for valley elderberry longhorn beetle (VELB). VELB is not anticipated to be directly affected by the proposed project.

Essential habitat for Molestan blister beetle and Sacramento anthicid beetle is not present on the Project site.

No special-status invertebrates are expected to be affected by the proposed project. Nevertheless, Mitigation Measure BIO-1 requires the Project proponent to seek coverage under the SJMSCP to mitigate for habitat impacts to covered special status species. Coverage involves compensation for habitat impacts on covered species through implementation of incidental take and minimization measures (ITMMs) and payment of fees for conversion of lands that may provide habitat for covered special status species. These fees are used to preserve and/or create habitat in preserves to be managed in perpetuity. Obtaining coverage for a Project includes incidental take authorization (permits) under the Endangered Species Act Section 10(a), California Fish and Game Code Section 2081, and the MBTA. Coverage under the SJMSCP would fully mitigate all habitat impacts on covered special-status species.

Reptile and amphibian species: There is one special-status amphibian that is documented within a 10-mile radius of the Project site according to the CNDDB including: California tiger salamander (*Ambystoma californiense*). In addition, the California red-legged frog (*Rana aurora draytoni*) and Giant garter snake (*Thamnophis couchi gigas*) are documented in the USFWS IPAC database as potentially occurring within the region. There is no essential habitat for any of these three species within the Project.

No special-status reptiles or amphibians are expected to be affected by the proposed project. Nevertheless, Mitigation Measure BIO-1 requires the Project proponent to seek coverage under the SJMSCP to mitigate for habitat impacts to covered special status species. Coverage involves compensation for habitat impacts on covered species through implementation of incidental take and minimization measures (ITMMs) and payment of fees for conversion of lands that may provide habitat for covered special status species. These fees are used to preserve and/or create habitat in preserves to be managed in perpetuity. Obtaining coverage for a Project includes incidental take authorization (permits) under the Endangered Species Act Section 10(a), California Fish and Game Code Section 2081, and the MBTA. Coverage under the SJMSCP would fully mitigate all habitat impacts on covered special-status species.

Birds: Special-status birds that are documented in the CNDDB within a ten-mile radius of the Project site include: Aleutian goose (*Branta canadensis leucopareia*), Yellow-headed blackbird (*Xanthocephalus xanthocephalus*), Swainson's hawk (*Buteo swainsoni*), song sparrow (Modesto population) (*Melospiza melodia*), Merlin (*Falco columbarius*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), burrowing owl (*Athene cunicularia*), Tricolored blackbird (*Agelaius tricolor*). In addition, the bald eagle (*Haliaeetus leucocephalus*), black rail (*Laterallus jamaicensis*), fox sparrow (*Passerella iliaca*), least bittern (*Ixobrychus exilis*), lesser yellowlegs (*Tringa flavipes*), Lewis's woodpecker (*Melanerpes lewis*), loggerhead shrike (*Lanius ludovicianus*), long-billed curlew (*Numenius americanus*), marbeled godwit (*Limosa fedoa*), mountain plover (*Charadrius montanus*), Nuttalls woodpecker (*Picoides nuttallii*), oak titmouse (*Baeolophus inornatus*), peregrine falcon (*Falco peregrinus*), short-eared owl (*Asio flammeus*), western grebe (A*echmophorus occidentalis*), Williamson's sapsucker (*Sphyrapicus thyroideus*), and yellow-billed magpie (*Pica nuttalli*) are documented in the USFWS IPAC database as potentially occurring within the region. The Project site may provide suitable foraging habitat for a variety of potentially occurring special-status birds, including those listed above. Potential nesting habitat is present in a variety of trees located within the Project site and in the vicinity, although no active or residual nests were observed. There is also the potential for other special-status birds that do not nest in this region and represent migrants or winter visitants to forage on the Project site.

Year-round birds: Special-status birds that can be present in the region throughout the year include: bald eagle (*Haliaeetus leucocephalus*), black rail (*Laterallus jamaicensis*), burrowing owl (*Athene cunicularia*), loggerhead shrike *(Lanius ludovicianus*), Nuttalls woodpecker (*Picoides nuttallii*), oak titmouse (*Baeolophus inornatus*), song sparrow (Modesto population) (*Melospiza melodia*), tricolored blackbird *(Agelaius tricolor*), Williamson's sapsucker (*Sphyrapicus thyroideus*), yellow-billed magpie (*Pica nuttalli*), among others. Some of these species are migratory, but also reside year-round in California.

Summering Birds: Special-status birds that are only present in the region in the spring and summer months include: Aleutian goose (*Branta canadensis leucopareia*), least bittern (*Ixobrychus exilis*), Swainson's hawk (*Buteo swainsoni*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), and yellow-billed magpie (*Pica nuttalli*).

Overwintering Birds: Special-status birds that are only present in the region in the fall and winter months include: fox sparrow (*Passerella iliaca*), lesser yellowlegs (*Tringa flavipes*), Lewis's woodpecker (*Melanerpes lewis*), long-billed curlew (*Numenius americanus*), marbeled godwit (*Limosa fedoa*), merlin *(Falco columbarius*), mountain plover (*Charadrius montanus*), peregrine falcon (*Falco peregrinus*), short-eared owl (*Asio flammeus*), and western grebe (A*echmophorus occidentalis*).

Nesting Raptors (Birds of Prey): All raptors (owls, hawks, eagles, falcons), including species and their nests, are protected from take pursuant to the Fish and Game Code of California Section 3503.5, and the federal Migratory Bird Treaty Act, among other federal and State regulations. Special-status raptors that are known to occur in the region include: bald eagle (*Haliaeetus leucocephalus*), burrowing owl (*Athene cunicularia*), Cooper's hawk *(Accipiter cooperii*), ferruginous hawk *(Buteo rega*), golden eagle *(Aquila chrysaetos*), great horned owl *(Bubo virginianus),* prairie falcon *(Falco mexicanus*), red-tailed hawk *(Buteo jamaicensis),* short-eared owl (*Asio flammeus*), Swainson's hawk *(Buteo swainsoni*), and white-tailed kite *(Elanus leucurus*), among others.

Analysis: While the Project site contains very limited nesting habitat, there are powerlines and trees located in the region that represent potentially suitable nesting habitat for a variety of special-status birds. Additionally, the agricultural land represents potentially suitable nesting habitat for the ground-nesting birds where disturbance is less frequent. In general, most nesting occurs from late February and early March through late July and early August, depending on various environmental conditions. The CNDDB currently contains nesting records for Swainson's hawk and burrowing owl in the vicinity of the Project site. In addition to the species described above, common raptors such as among others, may nest in or adjacent to the Project site.

New sources of noise and light during the construction and operational phases of the project could adversely affect nesters if they located adjacent to the Project site in any given year. Additionally, the proposed Project would eliminate the agricultural areas on the Project site, which serve as potential foraging habitat for birds throughout the year. Mitigation Measure BIO-1 requires participation in the SJMSCP. As part of the SJMSCP, SJCOG requires preconstruction surveys for projects that occur during the avian breeding season (March 1 – August 31). When active nests are identified, the biologists develop buffer zones around the active nests as deemed appropriate until the young have fledged. SJCOG also uses the fees to purchase habitat as compensation for the loss of foraging habitat. Implementation of the proposed project, with the Mitigation Measure BIO-1, would ensure that potential impacts to special status birds are reduced.

Mammal: Special-status mammals that are documented within a 10-mile radius of the Project site include: Riparian (San Joaquin Valley) woodrat (*Neotoma fuscipes riparia*), Riparian brush rabbit (*Sylvilagus bachmani riparius*), American badger (*Taxidea taxus*), and San Joaquin kit fox (*Vulpes macrotis mutica*).

Riparian (San Joaquin Valley) woodrat and riparian brush rabbit: The Project site does not contain appropriate habitat for riparian (San Joaquin Valley) woodrat and riparian brush rabbit.

American badger, San Joaquin kit fox, or San Joaquin pocket mouse: The Project site does not contain high quality habitat for the American badger. All but one of the documented occurrences of the San Joaquin kit fox occur on the southwest side of Tracy near the foothills with one documented occurrence located near Mountain House. The closest documented occurrence of San Joaquin pocket mouse is approximately five miles west of the Project site. It is unlikely that the Project site is used by American badger, San Joaquin kit fox, or San Joaquin pocket mouse and these species have not been observed during recent or previous field surveys.

Special-status bats: The Project site provides potential habitat for several special-status bats, including: Greater western mastiff bat (*Eumops perotis californicus*), western red bat (*Lasiurus blossevillii*), small-footed myotis/bat (*Myotis ciliolabrum*), long-eared myotis/bat (*Myotis evotis*), fringed myotis/bat (*Myotis thysanodes*), long-legged myotis/bat (*Myotis volans*), and Yuma myotis/bat (*Myotis yumanensis*). These species are not federal, or state listed; however, they are tracked by the CNDDB. Development of the Project site would eliminate foraging habitat for special status bats by removing the agricultural areas. Additionally, special status bats can establish roosts within the structures and/or trees located on the Project site. Bats can establish roosts even when absent in prior years. These special status bat species are covered by the SJMSCP.

Conclusion: No special-status species are expected to be affected by the proposed project. Nevertheless, Mitigation Measure BIO-1 requires the Project proponent to seek coverage under the SJMSCP to mitigate for habitat impacts to covered special status species. Coverage involves compensation for habitat impacts on covered species through implementation of incidental take and minimization Measures (ITMMs) and payment of fees for conversion of lands that may provide habitat for covered special status species. These fees are used to preserve and/or create habitat in preserves to be managed in perpetuity. Obtaining coverage for a Project includes incidental take authorization (permits) under the Endangered Species Act Section 10(a), California Fish and Game Code Section 2081, and the MBTA. Coverage under the SJMSCP would fully mitigate all habitat impacts on covered special-status species.

More specifically, the SJMSCP is administered by a Joint Powers Authority consisting of members of the SJCOG, the CDFW, and the USFWS. According to the SJMSCP, adoption and implementation by local planning jurisdictions provides full compensation and mitigation for impacts to plants, fish and wildlife. Adoption and implementation of the SJMSCP also secures compliance pursuant to the state and federal laws such as CEQA, the National Environmental Policy Act (NEPA), the Planning and Zoning Law, the State Subdivision Map Act, the Porter-Cologne Act and the Cortese-Knox Act in regard to species covered under the SJMSCP. Applicants pay mitigation fees on a per-acre basis. The entire County is mapped according to these categories so that landowners, project proponents and project reviewers are easily aware of the applicable SJMSCP fees for the proposed development. The appropriate fees are collected by the City and remitted to SJCOG for administration. SJCOG uses the funds to preserve open space land of comparable types throughout the County, often coordinating with other private or public land trusts to purchase conservation easements or buy land outright for preservation. The fees are automatically adjusted on an annual basis. The fees have been designed to sufficiently mitigation the impacts of projects on candidate, sensitive, and special status species. Therefore, with implementation of Mitigation Measure BIO-1, the proposed Project would have a ***less than significant*** impact relative to this topic.

Mitigation Measure(s)

Mitigation Measure BIO-1*: Prior to commencement of any grading activities, the Project proponent shall seek coverage under the SJMSCP to mitigate for habitat impacts to covered special status species. Coverage involves compensation for habitat impacts on covered species through implementation of incidental take and minimization Measures (ITMMs) and payment of fees for conversion of lands that may provide habitat for covered special status species. These fees are used to preserve and/or create habitat in preserves to be managed in perpetuity. Obtaining coverage for a Project includes incidental take authorization (permits) under the Endangered Species Act Section 10(a), California Fish and Game Code Section 2081, and the MBTA. Coverage under the SJMSCP would fully mitigate all habitat impacts on covered special-status species.*

Responses b): There is no riparian habitat on the Project site. The CNDDB record search revealed documented occurrences of four sensitive habitats within 10 miles of the Project site including: Elderberry Savanna, Great Valley Cottonwood Riparian Forest, Great Valley Mixed Riparian

Forest, and Great Valley Oak Riparian. None of these sensitive natural communities occur within the portion of the Project site. Implementation of the proposed Project would have a ***less than significant*** impact on riparian habitats or natural communities.

Response c): The Project site does not contain protected wetlands or other jurisdictional areas and there is no need for permitting associated with the federal or state Clean Water Acts. The irrigation ditches are man-made isolated facilities with the sole purpose of agricultural irrigation. These ditches are exempt from permitting. Absent any wetlands or jurisdictional waters, implementation of the proposed Project would have ***less than significant*** impact relative to this topic.

Response d): The CNDDB record search did not reveal any documented wildlife corridors or wildlife nursery sites on or adjacent to the Project site. Special status fish species documented within the region include: Delta smelt (*Hypomesus transpacificus*), Hardhead (*Mylopharodon conocephalus*), Central Valley steelhead (*Oncorhynchus mykiss*), Central Valley fall- /late fall-run Chinook salmon (*Oncorhynchus tshawytscha*), and Longfin smelt (*Spirinchus thaleichthys*). The closest major natural movement corridor for native fish that are documented in the region is the San Joaquin River, located to the west of the Project site. The land uses within the Project site would not have any direct disturbance to the San Joaquin River or its tributaries, and therefore, would not have any direct disturbance to the movement corridor or habitat.

The ongoing operational phase of the proposed Project requires discharge of stormwater into the City storm drainage system, which ultimately discharges into the Delta. The discharge of stormwater could result in indirect impacts to special status fish and wildlife if stormwater was not appropriately treated through BMPs prior to its discharge to the Delta. The Manteca Municipal Code Title 13 (Public Services) Chapter 13.28 (Stormwater Management and Discharges) establish minimum storm water management requirements and controls. Storm water drainage is managed through the implementation of best management practices to the extent they are technologically achievable to prevent and reduce pollutants. The City requires reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses. The management of water quality through BMPs is intended to ensure that water quality does not degrade to levels that would interfere or impede fish or wildlife. Implementation of these required measures would ensure that this potential impact is reduced to a ***less than significant*** level.

Responses e): The proposed Project is subject to the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP). The proposed Project does not conflict with the SJMSCP. Therefore, the proposed Project would have a ***less than significant*** impact relative to this topic. The mitigation measure presented in this Initial Study requires participation in the SJMSCP.

Responses f): The Resource Conservation Element of the General Plan establishes numerous policies and implementation measures related to biological resources as listed below:

Conservation Element Policies

RC-P-31. Minimize impact of new development on native vegetation and wildlife.

- ***Consistent****: This Initial Study includes an in-depth analysis of impacts for sensitive plants and wildlife, as well as habitat. Where impacts are identified, mitigation measures are presented to minimize, avoid, or compensate to the extent practicable.*

RC-P-33. Discourage the premature removal of orchard trees in advance of development, and discourage the removal of other existing healthy mature trees, both native and introduced.

- ***Consistent****: The proposed Project will not require the removal of orchard trees.*

RC-P-34. Protect special status species and other species that are sensitive to human activities.

- ***Consistent****: This Initial Study includes an in-depth analysis of impacts for sensitive plants and wildlife, as well as habitat. Where impacts are identified, mitigation measures are presented to minimize, avoid, or compensate to the extent practicable.*

RC-P-35. Allow contiguous habitat areas.

- ***Consistent****: Habitat areas in the vicinity of the Project site include agricultural plant communities which provide habitat for a variety of biological resources in the region. Agricultural areas occur throughout the region and are generally flat and well drained, and as a result are well suited for many crops. Alfalfa fields, hay, row crops, orchards, dominate the agricultural areas in the vicinity. The proposed Project does not require contiguous habitat areas to change or convert to another use.*

RC-P-36. Consider the development of new drainage channels planted with native vegetation, which would provide habitat as well as drainage.

- ***Consistent****: Although consideration was made by the City and Project applicant to develop new drainage channels planted with native vegetation, the City in conjunction with the Project applicant determined that consistency with the City's storm drainage master plan is more appropriate than inclusion of new storm drainage channels with native vegetation. The proposed Project does not include new drainage channels, in part because drainage channels in populated areas present health and safety considerations given the presence of water and the potential for drowning.*

Municipal Code

The Manteca Municipal Code calls for the avoidance of heritage trees as defined under section 17.61.030. Heritage trees are any natural woody plant rooted in the ground and having a diameter of 30 inches or more when measured two feet above the ground. There is one large mature tree located on the Project site near the existing residence at the north end of the property.

Section 17.19.060 calls for the protection of all existing trees having a diameter of six inches or more when measured 4½ feet above the ground. The City planning department must be notified of planned construction or grade changes within the proximity of existing mature trees. Existing trees must be protected from construction equipment, machinery, grade changes, and excavation for utilities, paving, and footers. Replacement of existing trees is subject to approval from the planning director and must be with a minimum 24-inch box tree of compatible species for the development site and be consistent with Section 17.19.030.

Section 12.08.070 of the municipal code prohibits cutting, pruning, removing, injuring, or interference with any tree, shrub, or plant upon or in any street tree area or other public place in the City without prior approval from the superintendent. The City is authorized to grant such permission at their discretion and where necessary. Except for utility companies, as provided in Section 12.08.080, no such permission shall be valid for a longer period than 30 days after its issuance.

The Project site contains nine trees, all of which are in the vicinity of the existing residence in the southwest portion of the project area. Trees that cannot remain in the final design must be replaced in accordance with the *Manteca Municipal Code (17.19.060)* if deemed applicable at the time of removal.

The following mitigation measures would require compliance with the Manteca Municipal Code for removal and replacement of trees. With the implementation of the following mitigation measures, the proposed Project would have a ***less than significant*** impact relative to this topic.

Mitigation Measure

Mitigation Measure BIO-2*: Prior to the approval of improvement plans, the Project applicant shall provide a landscape plan that includes tree planting specifications established by the Manteca Municipal Code (17.19.060) for the replacement of any trees, excluding orchard and non-native trees, to be removed at a ratio of 1:1. Replacement trees shall be planted on-site at a location that is agreeable to the City.*

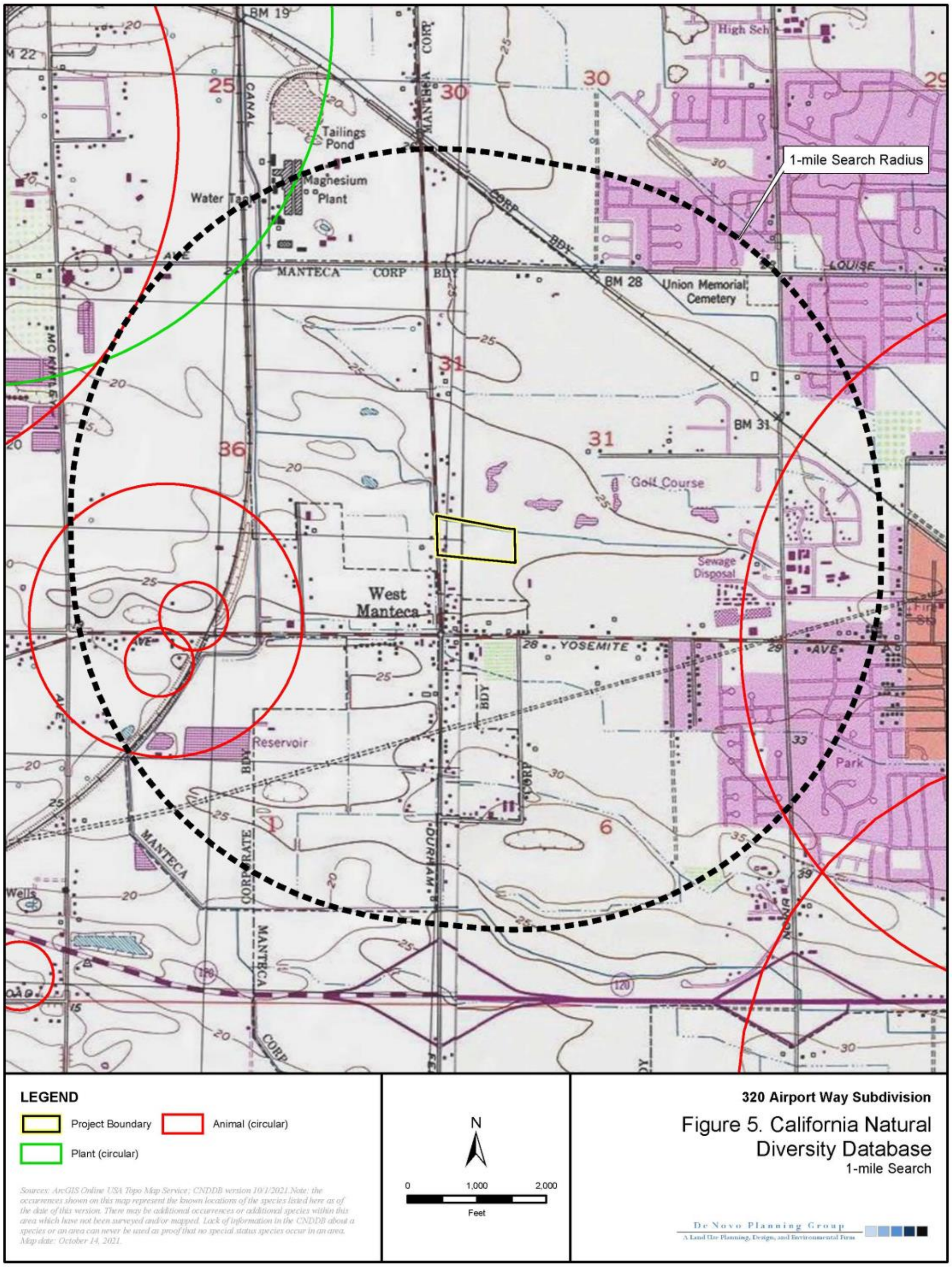
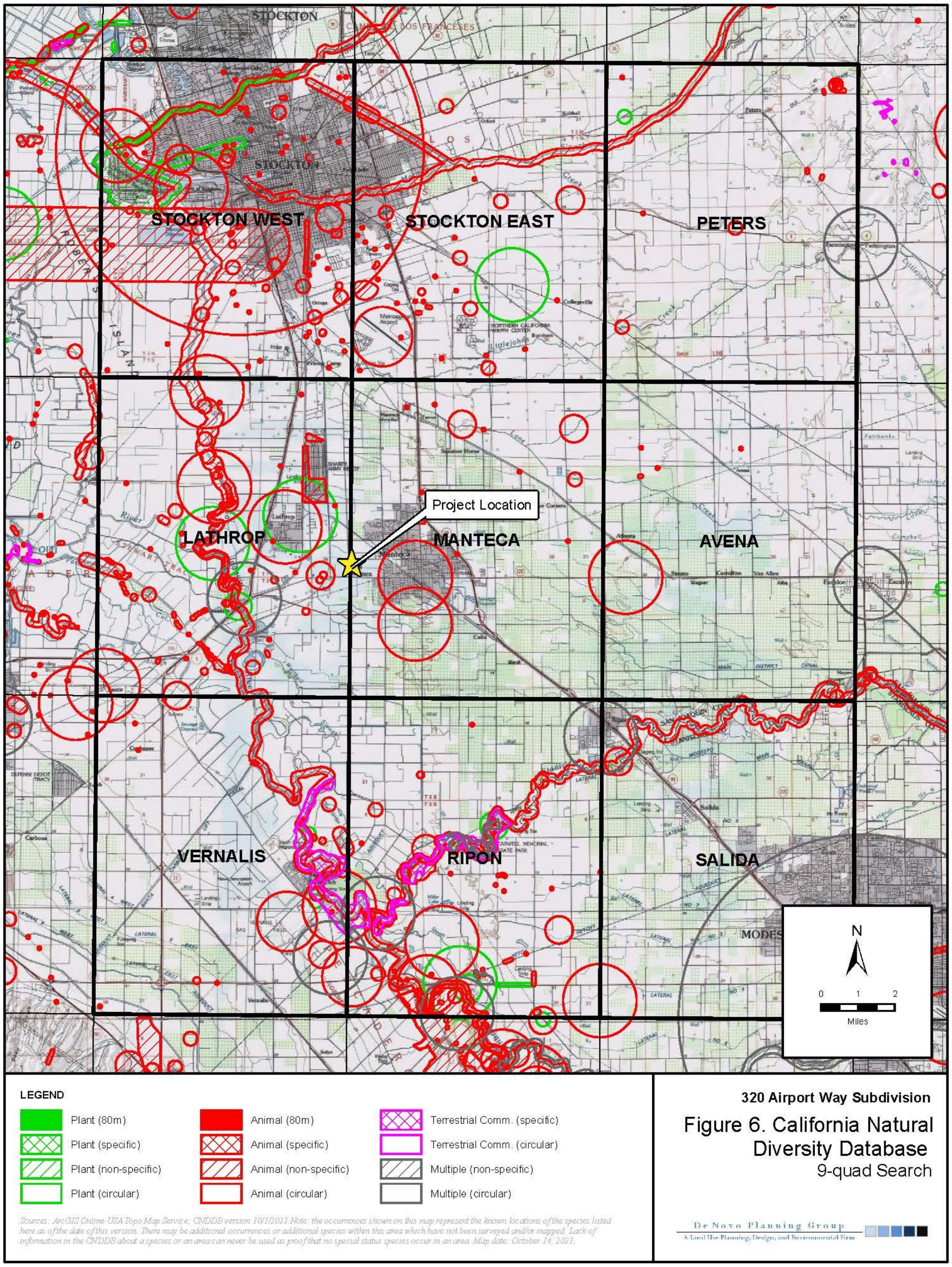


Figure 5. California Natural Diversity Database
1-mile Search

This page left intentionally blank.



320 Airport Way Subdivision

Figure 6. California Natural Diversity Database
9-quad Search

This page left intentionally blank.

V. CULTURAL RESOURCES

Would the project:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section15064.5?		X		
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?		X		
c) Disturb any human remains, including those interred outside of formal cemeteries?		X		

Responses to Checklist Questions

Responses a), b): A Cultural Resources Assessment was prepared by Peak & Associates on September 17, 2021. The Cultural Resources Assessment included an Information Center records search and a complete field survey of the Project site. Melinda A. Peak, senior historian/archeologist with Peak & Associates, Inc. served as principal investigator for the study, with archeologist Michael Lawson completing the field survey.

The Cultural Resources Assessment included a record search that was conducted for the current APE and a 0.25-mile radius at the Central California Information Center of the California Historical Resources Information System on August 26, 2021. There are no resources recorded in the Project site.

In the ¼-mile radius search area, there have been two sections of ditches recorded, as well as a historic building at 495 Airport Way. The Project site is shown as included as part of report done for the Windmiller and Napoli in 2002 (SJ-04786). This is an overview, with limited survey, and most private property would not have been surveyed in 2002. Another report for a nine-acre survey by Busby is reported to include the property; maps received do not outline clearly enough to allow an elimination of any portion of the Project site as previously surveyed (SJ-05840). Several other surveys have been completed in the search radius. Based on the records search, the Cultural Resources Assessment concluded that there are no historic or prehistoric period sites present within the Project site.

The property was surveyed on August 31, 2021 by Michael Lawson of Peak & Associates. The Cultural Resources Assessment identified that the existing building complex within the Project site is not a historical resource. In addition, no evidence was found of prehistoric period use or occupancy of the property. Although no prehistoric sites were found during the survey, there is a slight possibility that a site may exist and be totally obscured by vegetation, fill, or other historic activities, leaving no surface evidence. Should artifacts or unusual amounts of stone, bone, or shell be uncovered during construction activities, work in that part of the Project site shall be halted, and an archeologist should be consulted for on-the-spot evaluation of the finding.

Implementation of the following mitigation measure would require investigations and avoidance methods in the event that a previously undiscovered cultural resource is encountered during construction activities. With implementation of the following mitigation measure, development of the proposed Project would have a ***less than significant*** impact on historical and archaeological resources.

Mitigation Measure(s)

Mitigation Measure CUL-1: *The Project applicant shall ensure that a training session for all workers is conducted in advance of the initiation of construction activities at the site. The training session will provide information on recognition of artifacts, human remains, and cultural deposits to help in the recognition of potential issues.*

Mitigation Measure CUL-2: *The Project applicant shall retain a qualified archaeologist to observe initial ground disturbance activities, during initial grading. If artifacts, exotic rock, shell or bone are uncovered during the construction, the archaeologist will be able to document the finding, and determine if additional work is necessary to excavate or remove the artifacts or feature.*

Mitigation Measure CUL-3: *If cultural resources (i.e., prehistoric sites, historic sites, isolated artifacts/features, and paleontological sites) are discovered during construction, work shall be halted immediately within 50 meters (165 feet) of the discovery, the City of Manteca shall be notified, and a qualified archaeologist that meets the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology (or a qualified paleontologist in the event paleontological resources are found) shall be retained to determine the significance of the discovery. The City of Manteca shall consider recommendations presented by the professional for any unanticipated discoveries and shall carry out the measures deemed feasible and appropriate. Such measures may include avoidance, preservation in place, excavation, documentation, curation, data recovery, or other appropriate measures. Specific measures are developed based on the significance of the find.*

Response c): Indications are that humans have occupied the Central Valley for at least 10,000 years and it is not always possible to predict where human remains may occur outside of formal burials. Therefore, excavation and construction activities, regardless of depth, may yield human remains that may not be interred in marked, formal burials. Under CEQA, human remains are protected under the definition of archaeological materials as being "any evidence of human activity." Additionally, Public Resources Code Section 5097 has specific stop-work and notification procedures to follow in the event that human remains are inadvertently discovered during construction. Implementation of the following mitigation measure would reduce this potential impact to a ***less than significant*** level.

Mitigation Measure(s)

Mitigation Measure CUL-4: *If any human remains are found during grading and construction activities, all work shall be halted immediately within 50 meters (165 feet) of the discovery and the County Coroner must be notified, according to Section 5097.98 of the State Public Resources Code and Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the coroner shall notify the Native American Heritage Commission, and the procedures outlined in CEQA Section 15064.5(d) and (e) shall be followed. Additionally, if the Native American resources are identified, a Native American monitor, following the Guidelines for Monitors/Consultants of Native American Cultural, Religious, and Burial Sites established by the Native American Heritage Commission, may also be required and, if required, shall be retained at the applicant's expense.*

VI. ENERGY

Would the project:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			X	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			X	

Responses to Checklist Questions

Response a-b): Appendix F of the State CEQA Guidelines requires consideration of the potentially significant energy implications of a project. CEQA requires mitigation measures to reduce "wasteful, inefficient and unnecessary" energy usage (Public Resources Code Section 21100, subdivision [b][3]). According to Appendix F of the CEQA Guidelines, the means to achieve the goal of conserving energy include decreasing overall energy consumption, decreasing reliance on natural gas and oil, and increasing reliance on renewable energy sources. In particular, the proposed Project would be considered "wasteful, inefficient, and unnecessary" if it were to violate state and federal energy standards and/or result in significant adverse impacts related to project energy requirements, energy inefficiencies, energy intensiveness of materials, cause significant impacts on local and regional energy supplies or generate requirements for additional capacity, fail to comply with existing energy standards, otherwise result in significant adverse impacts on energy resources, or conflict or create an inconsistency with applicable plan, policy, or regulation.

The proposed Project includes the construction of 123 residential units. The amount of energy used at the Project site would directly correlate to the size of the proposed units, the energy consumption of associated unit appliances, and outdoor lighting. Other major sources of proposed Project energy consumption include fuel used by vehicle trips generated during project construction and operation, and fuel used by off-road construction vehicles during construction.

The following discussion provides calculated levels of energy use expected for the proposed project, based on commonly used modelling software (i.e., CalEEMod v.2020.4.0 and the California Air Resource Board's EMFAC2021). It should be noted that many of the assumptions provided by CalEEMod are conservative relative to the proposed project. Therefore, this discussion provides a conservative estimate of proposed Project emissions.

It should be noted that the existing energy usage of the Project site is not modeled, since existing baseline energy consumption would be greater than zero (i.e., the existing Project site does not produce more energy than it requires to operate). That is, the analysis focused on gross emissions, as opposed to net emissions. Therefore, the analysis provided herein for energy represents a conservative overestimate of the net increase in emissions and energy usage generated by the proposed project.

Electricity and Natural Gas

Electricity and natural gas used by the proposed Project would be used primarily to power on-site buildings. Total annual unmitigated and mitigated electricity (kWh) and natural gas (kBTU) usage associated with the operation of the proposed Project are shown in Table ENERGY-1, below (as provided by CalEEMod). The proposed Project incorporates feasible mitigation to reduce the proposed project's operational electricity and natural gas consumption.

According to Calico's *Appendix A: Calculation Details for CalEEMod*, CalEEMod uses the California Commercial End Use Survey (CEUS) database to develop energy intensity value for non-residential buildings. The energy use from residential land uses is calculated based on the Residential Appliance Saturation Survey (RASS). Similar to CEUS, this is a comprehensive energy use assessment that includes the end use for various climate zones in California.

Table ENERGY-1: Project Operational Natural Gas and Electricity Usage (Unmitigated Scenario)

Emissions[a]	***Natural Gas (kBTU/year)***	***Electricity (kWh/year)***
Condo/Townhouse	2,189,150	565,645
Single Family Housing	165,612	55,352
Total	**2,354,762**	**620,997**

NOTE: [A] NUMBERS PROVIDED HERE MAY NOT ADD UP EXACTLY TO TOTAL DUE TO ROUNDING.
SOURCE: CALEEMOD (V.2020.4.0).

As shown in Table ENERGY-1, project operational energy usage would be reduced with implementation of project components considered mitigation by CalEEMod (note: given the limited mitigation options available in the current version of CalEEMod, the reduction attributable to mitigation represents a conservative analysis). These project components include installation of Energy Star appliances (consistent with the requirements under the current version of California's Building Energy Efficiency Standards), and compliance with the Model Water Efficient Landscape Ordinance (as contained in the California Code of Regulations and as prescribed in Chapter 17.48 of the Manteca Municipal Code). These reductions in overall proposed Project energy usage also reflect a reduction in the project's energy intensity.

On-Road Vehicles (Operation)

The proposed Project would generate vehicle trips during its operational phase. According to the Transportation Impact Analysis Report prepared for the proposed Project (Kittelson & Associates, 2021), the proposed Project would generate approximately 1,161 net new daily vehicles trips. In order to calculate operational on-road vehicle energy usage and emissions, default trip lengths generated by CalEEMod were used, which are based on the project location and urbanization level parameters De Novo (the Initial Study consultant) selected within CalEEMod (i.e., "San Joaquin Valley Air Pollution Control District" project location and "Urban" setting, respectively). These values are provided by the individual districts or use a default average for the state, depending on the location of the proposed project. Using fleet mix data provide by CalEEMod (v2020.4.0), and Year 2022 gasoline and diesel MPG (miles per gallon) factors for individual vehicle classes as provided by EMFAC2021, De Novo derived weighted MPG factors for operational on-road vehicles of approximately 24.1 MPG for gasoline vehicles. With this information, De Novo calculated as a conservative estimate that the unmitigated proposed Project would generate vehicle trips that would use a total of approximately 300 gallons of gasoline fuel per day, on average, or 109,669 gallons of fuel per year.

On-Road Vehicles (Construction)

The proposed Project would also generate on-road vehicle trips during project construction (from construction workers, vendors, and haulers). The Project site is essentially flat, and it is anticipated that the Project site can be balanced on site, meaning that there would be limited to no cut and fill (i.e., import/export).). Estimates of vehicle fuel consumed were derived based on the assumed construction schedule, vehicle trip lengths and number of workers per construction phase as provided by CalEEMod, and Year 2022 gasoline MPG factors provided by EMFAC2021. For the purposes of simplicity, it was assumed that all vehicles used gasoline as a fuel source (as opposed to diesel fuel or alternative sources). The demolition phase of the proposed Project reflects debris haul off of the existing structures. It is noted that the model run assumed a 20-day schedule, with 15 daily worker trips and 27 total haul trips, which is very likely an overestimate of time. However, this worst-case scenario was assumed in the event that there is a special condition in the building materials that require special treatment (i.e., lead or asbestos). In the event that there are no special conditions, it is estimated that there would be up to five workers, and the demolition would occur over approximately two days. The estimated truck haul trips are three trips, which equates to six round trips. This is to reflect the energy and emissions associated with the three truck haul trips during demolition.

Table ENERGY-2, below, describes gasoline and diesel fuel used by on-road mobile sources during each phase of the construction schedule. As shown, the vast majority of on-road mobile vehicle fuel used during the construction of the proposed Project would occur during the building construction phase.

Table ENERGY-2: On-Road Mobile Fuel Generated by Project Construction Activities – By Phase

Construction Phase	*# of Days*	*Total Daily Worker Trips[a]*	*Total Daily Vendor Trips[a]*	*Total Hauling Trips[a]*	*Gallons of Gasoline Fuel[b]*	*Gallons of Diesel Fuel[b]*
Demolition	20	15	-	27	127	102
Site Preparation	10	18	-	-	76	-
Grading	30	20	-	-	254	-
Building Construction	300	86	13	-	10,912	5,366
Paving	20	15	-	-	127	-
Architectural Coating	20	17	-	-	144	-
Total	**N/A**	**N/A**	**N/A**	**N/A**	**11,640**	**5,468**

NOTE: [A] PROVIDED BY CALEEMOD. [B] SEE APPENDIX A FOR FURTHER DETAIL

SOURCE: CALEEMOD (V.2020.4.0); EMFAC2021.

Off-Road Vehicles (Construction)

Off-road construction vehicles would use diesel fuel during the construction phase of the proposed project. A non-exhaustive list of off-road constructive vehicles expected to be used during the construction phase of the proposed Project includes: cranes, forklifts, generator sets, tractors, excavators, and dozers. Based on the total amount of CO_2 emissions expected to be generated by the proposed Project (as provided by the CalEEMod output), and a CO_2 to diesel fuel conversion factor (provided by the U.S. Energy Information Administration), the proposed Project would use up to a total of approximately 13,156 gallons of diesel fuel for off-road construction vehicles (during the site preparation and grading phases of the proposed project). Detailed calculations are provided in Appendix A.

Other

The proposed Project landscape maintenance activities would generally require the use fossil fuel (i.e., gasoline) energy. For example, lawn mowers require the use of fuel for power. As an approximation, it is estimated that landscape care maintenance would require approximately four individuals one full day per week, or 1,644 hours per year. Assuming an average of approximately 0.5 gallons of gasoline used per person-hour, the proposed Project would require the use of approximately 832 gallons of gasoline per year to power landscape maintenance equipment. The energy used to power landscape maintenance equipment would not differ substantially from the energy required for landscape maintenance for similar project.

The proposed Project could also use other sources of energy not identified here. Examples of other energy sources include alternative and/or renewable energy (such as solar PV) and/or on-site stationary sources (such as on-site diesel generators) for electricity generation. However, the proposed Project does not propose to use other sources of energy at this time.

Conclusion

The proposed Project would use energy resources for the operation of project buildings (electricity and natural gas), for on-road vehicle trips (e.g., gasoline and diesel fuel) generated by the proposed project, and from off-road construction activities associated with the proposed Project (e.g., diesel fuel). Each of these activities would require the use of energy resources. The proposed Project would be responsible for conserving energy, to the extent feasible, and relies heavily on reducing per capita energy consumption to achieve this goal, including through Statewide and local measures.

The proposed Project would be in compliance with all applicable federal, state, and local regulations regulating energy usage. For example, PG&E is responsible for the mix of energy resources used to provide electricity for its customers, and it is in the process of implementing the Statewide Renewable Portfolio Standard (RPS) to increase the proportion of renewable energy (e.g., solar and wind) within its energy portfolio. PG&E is expected to achieve at least a 33% mix of renewable energy resources by 2020, and 50% by 2030. Additionally, energy-saving regulations, including the latest State Title 24 building energy efficiency standards ("part 6"), would be applicable to the proposed project. Other statewide measures, including those intended to improve the energy efficiency of the statewide passenger and heavy-duty truck vehicle fleet (e.g., the Pavley Bill and the Low Carbon Fuel Standard) are improving vehicle fuel economies, thereby conserving gasoline and diesel fuel. These energy savings would continue to accrue over time.

As a result, the proposed Project would not result in any significant adverse impacts related to project energy requirements, energy use inefficiencies, and/or the energy intensiveness of materials by amount and fuel type for each stage of the proposed Project including construction, operations, maintenance, and/or removal. PG&E, the electricity and natural gas provider to the Project site, maintains sufficient capacity to serve the proposed project. The proposed Project would comply with all existing energy standards, including those established by the City of Manteca, and would not result in significant adverse impacts on energy resources. Therefore, the proposed Project would not be expected cause an inefficient, wasteful, or unnecessary use of energy resources nor cause a significant impact on any of the threshold as described by Appendix F of the CEQA Guidelines. This is a **less than significant** impact.

VII. GEOLOGY AND SOILS

Would the project:	*Potentially Significant Impact*	*Less Than Significant with Mitigation*	*Less Than Significant Impact*	*No Impact*
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:			X	
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X	
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?		X		
iv) Landslides?			X	
b) Result in substantial soil erosion or the loss of topsoil?		X		
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?		X		
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?		X		
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	

Responses to Checklist Questions

Responses a.i), a.ii), a.iv): Figure 7 shows the earthquake faults in the vicinity of the Project site. As shown in the figure, the Project site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone, and known surface expression of active faults does not exist within the Project site. However, the Project site is located within a seismically active region. The U.S. Geological Survey identifies potential seismic sources within approximately 20 miles of the Project site. Two of the closest known faults classified as active by the U.S. Geological Survey are an unnamed fault east of the City of Tracy, located approximately 8 miles to the west, and the San Joaquin fault, located approximately 16 miles to the southwest. The Midway fault is located approximately 20 miles to the west. Other faults that could potentially affect the proposed Project include the Corral Hollow-Carnegie fault, the Greenville fault, the Antioch fault, and the Los Positas fault.

Geologic Hazards

Potential seismic hazards resulting from a nearby moderate to major earthquake could generally be classified as primary and secondary. The primary seismic hazard is ground rupture, also called surface faulting. The common secondary seismic hazards include ground shaking and ground lurching.

Ground Rupture

Because the property does not have known active faults crossing the Project site, and the Project site is not located within an Earthquake Fault Special Study Zone, ground rupture is unlikely at the subject property.

Ground Shaking

According to the California Geological Survey's Probabilistic Seismic Hazard Assessment Program, Manteca is considered to be within an area that is predicted to have a 10 percent probability that a seismic event would produce horizontal ground shaking of 10 to 20 percent within a 50-year period. This level of ground shaking correlates to a Modified Mercalli intensity of V to VII, light to strong. As a result of these factors the California Geological Survey has defined the entire county as a seismic hazard zone. There will always be a potential for groundshaking caused by seismic activity anywhere in California, including the Project site.

In order to minimize potential damage to the buildings and site improvements, all construction in California is required to be designed in accordance with the latest seismic design standards of the California Building Code. The California Building Code, Title 24, Part 2, Chapter 16 addresses structural design and Chapter 18 addresses soils and foundations. Collectively, these state requirements, which have been adopted by the City of Manteca, include design standards and requirements that are intended to minimize impacts to structures in seismically active areas of California. Section 1613 specifically provides structural design standards for earthquake loads. Section 1803.5.11 and 1803.5.12 provide requirements for geotechnical investigations for structures assigned varying Seismic Design Categories in accordance with Section 1613. Design in accordance with these standards and policies would reduce any potential impact to a less than significant level.

Landslides

The Project site is not susceptible to landslides because the area is essentially flat. This is a less than significant impact.

Conclusion

In order to minimize potential damage to the buildings and site improvements, all construction in California is required to be designed in accordance with the latest seismic design standards of the California Building Code. The California Building Code, Title 24, Part 2, Chapter 16 addresses structural design and Chapter 18 addresses soils and foundations. Collectively, these state requirements, which have been adopted by the City of Manteca, include design standards and requirements that are intended to minimize impacts to structures in seismically active areas of California. Section 1613 specifically provides structural design standards for earthquake loads.

Section 1803.5.11 and 1803.5.12 provide requirements for geotechnical investigations for structures assigned varying Seismic Design Categories in accordance with Section 1613. Additionally, the City of Manteca has adopted Design and Construction Standards and incorporated numerous policies relative to seismicity to ensure the health and safety of all people. Design in accordance with these standards and policies would reduce any potential impact to a less than significant level. Because all development in the Project site must be designed in conformance with these state and local standards and policies, any potential impact would be considered ***less than significant***.

Responses a.iii), c), d): Liquefaction normally occurs when sites underlain by saturated, loose to medium dense, granular soils are subjected to relatively high ground shaking. During an earthquake, ground shaking may cause certain types of soil deposits to lose shear strength, resulting in ground settlement, oscillation, loss of bearing capacity, landsliding, and the buoyant rise of buried structures. The majority of liquefaction hazards are associated with sandy soils, silty soils of low plasticity, and some gravelly soils. Cohesive soils are generally not considered to be susceptible to liquefaction. In general, liquefaction hazards are most severe within the upper 50 feet of the surface, except where slope faces, or deep foundations are present.

Expansive soils are those that undergo volume changes as moisture content fluctuates; swelling substantially when wet or shrinking when dry. Soil expansion can damage structures by cracking foundations, causing settlement and distorting structural elements. Expansion is a typical characteristic of clay-type soils. Expansive soils shrink and swell in volume during changes in moisture content, such as a result of seasonal rain events, and can cause damage to foundations, concrete slabs, roadway improvements, and pavement sections.

Soil expansion is dependent on many factors. The more clayey, critically expansive surface soil and fill materials will be subjected to volume changes during seasonal fluctuations in moisture content. Figure 8 shows the soils within the Project site. There are no expansive (i.e., shrink-swell) soils within the Project site. The soils encountered at the Project site consist of Veritas fine sandy loam (0-2% slopes) throughout the vast majority of the Project site, and Tinnin loamy coarse sand (0-2% slopes), at the southwestern edge of the Project site.

Future development of the proposed Project could expose people or structures to adverse effects associated with liquefaction and/or soil expansion. Construction of the proposed Project would be required to comply with the City's General Plan policies related to geologic and seismic hazards. These policies obligate the City to require that new development mitigate the potential impacts of geologic hazards through building plan review (Policy S-P-2) and mitigate the potential impacts of seismic-induced settlement of uncompacted fill and liquefaction due to the presence of a high-water table (Policy S-P-2). To that end, General Plan Policy S-P-1 requires that all proposed development prepare geological reports and/or geological engineering reports for projects located in areas of potentially significant geological hazards, including potential subsidence (collapsible surface soils) due to groundwater extraction.

With implementation of the following mitigation measure, this potential impact would be ***less than significant***.

Mitigation Measure(s)

Mitigation Measure GEO-1*: Prior to issuance of any building permits, the Project applicant shall be required to submit building plans to the City of Manteca for review and approval. The building plans shall also comply with all applicable requirements of the most recent California Building*

Standards Code. All on-site soil engineering activities shall be conducted under the supervision of a licensed geotechnical engineer or certified engineering geologist.

Response b): The Project site is currently vacant land except for the single-family unit and two farm buildings. According to the Project site plans prepared for the proposed project, development of the proposed Project would result in the creation of new impervious surface areas throughout the Project site. The development of the Project site would also cause ground disturbance of topsoil. The ground disturbance would be limited to the areas proposed for grading and excavation, including the proposed driveway areas, residential building pads, and drainage, sewer, and water infrastructure improvements. After grading and excavation, and prior to overlaying the disturbed ground surfaces with impervious surfaces and structures, the potential exists for wind and water erosion to occur, which could adversely affect downstream storm drainage facilities.

Without implementation of appropriate Best Management Practices (BMPs) related to prevention of soil erosion during construction, development of the proposed Project would result in a potentially significant impact with respect to soil erosion. Implementation of the following mitigation measures would ensure the impact is ***less than significant***.

Mitigation Measure(s)

Mitigation Measure GEO-2*: The Project applicant shall submit a Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP) to the RWQCB in accordance with the NPDES General Construction Permit requirements. The SWPPP shall be designed to control pollutant discharges utilizing Best Management Practices (BMPs) and technology to reduce erosion and sediments. BMPs may consist of a wide variety of measures taken to reduce pollutants in stormwater runoff from the Project site. Measures shall include temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) that will be employed to control erosion from disturbed areas. Final selection of BMPs will be subject to approval by the City of Manteca and the RWQCB. The SWPPP will be kept on site during construction activity and will be made available upon request to representatives of the RWQCB.*

Response e): The proposed Project has been designed to connect to the existing City sewer system and septic systems will not be used. Therefore, ***no impact*** would occur related to soils incapable of adequately supporting the use of septic tanks.

Response f): Known paleontological resources or sites are not located on the Project site. Additionally, unique geologic features are not located on the Project site. The Project site is currently undeveloped and surrounded by existing or future urban development. As discussed in Section V, Cultural Resources, should artifacts or unusual amounts of stone, bone, or shell be uncovered during construction activities, an archeologist should be consulted for an evaluation. Implementation of Mitigation Measure CLT-1 would require investigations and avoidance methods in the event that a previously undiscovered cultural resource is encountered during construction activities. With implementation of Mitigation Measure CLT-1, impacts to paleontological resources or unique geologic features are not expected. This is a ***less than significant*** impact.

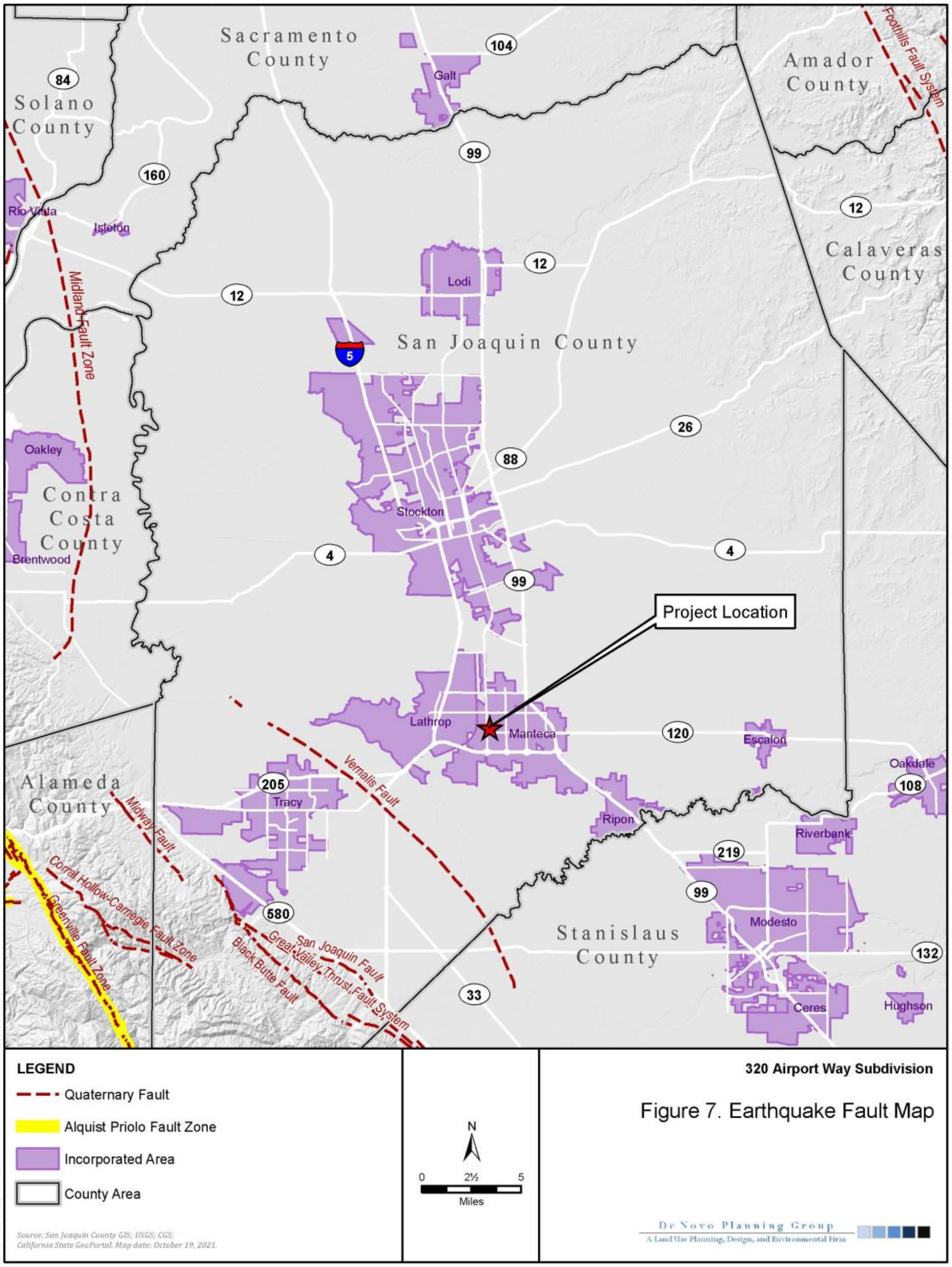
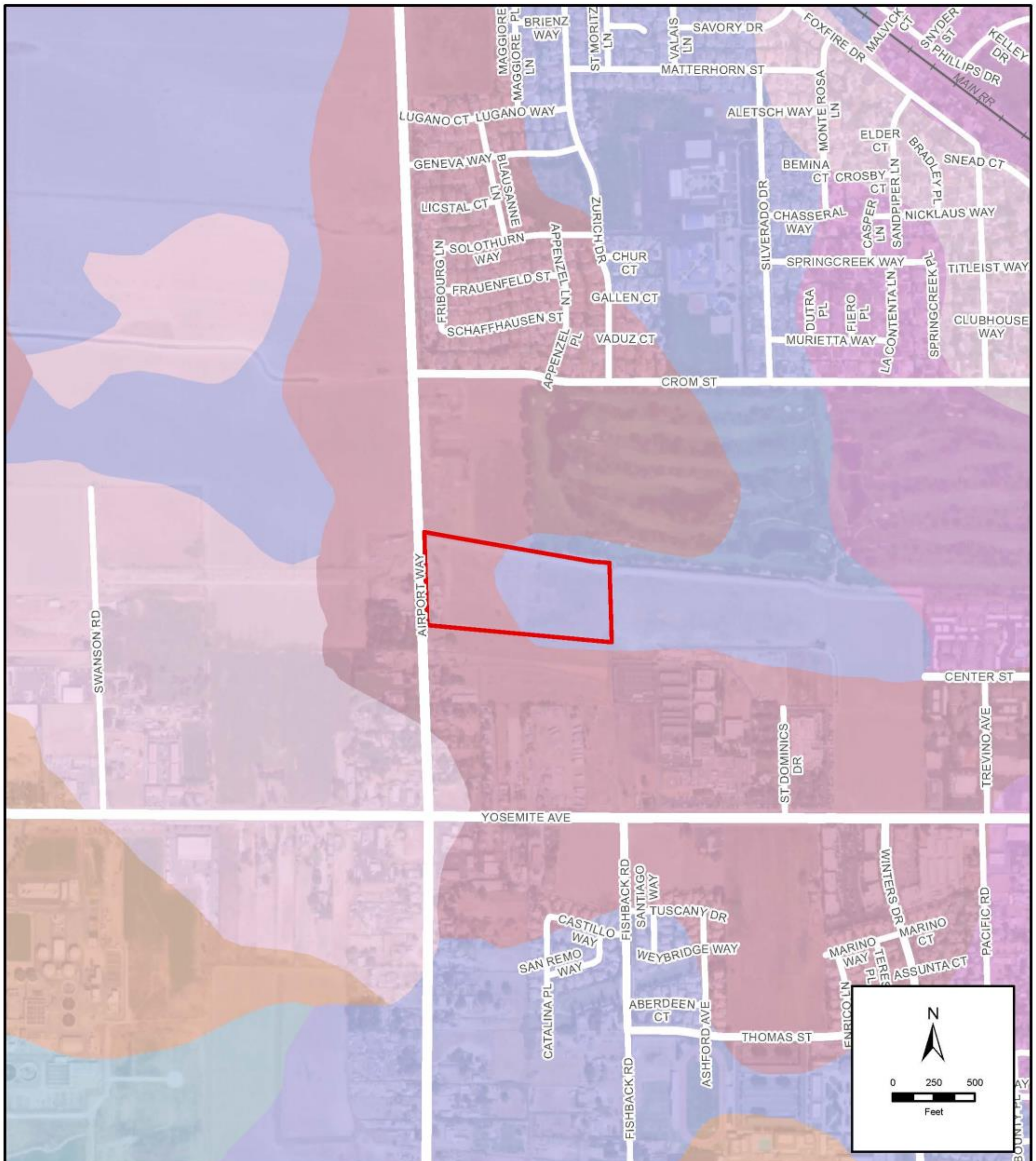


Figure 7. Earthquake Fault Map

This page left intentionally blank.



LEGEND

- Project Boundary

NRCS Soil Description (Acres Onsite)

- Bisgani loamy coarse sand, partially drained, 0 to 2 percent slopes
- Delhi loamy sand, 0 to 2 percent slopes, MLRA 17
- Delhi-Urban land complex, 0 to 2 percent slopes
- Timor loamy sand, 0 to 2 percent slopes
- Tinnin loamy coarse sand, 0 to 2 percent slopes (7.4 ac)
- Veritas fine sandy loam, 0 to 2 percent slopes (6.0 ac)

Sources: San Joaquin County GIS; NRCS Soils Database. Map date: October 14, 2021.

320 Airport Way Subdivision

Figure 8. Soils Map

De Novo Planning Group
A Land Use Planning, Design, and Environmental Firm

This page left intentionally blank.

VIII. GREENHOUSE GAS EMISSIONS

Would the project:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gasses?			X	

Existing Setting

Various gases in the Earth's atmosphere, classified as atmospheric greenhouse gases (GHGs), play a critical role in determining the Earth's surface temperature. Solar radiation enters Earth's atmosphere from space, and a portion of the radiation is absorbed by the Earth's surface. The Earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation.

Naturally occurring GHGs include water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3). Several classes of halogenated substances that contain fluorine, chlorine, or bromine are also GHGs, but they are, for the most part, solely a product of industrial activities. Although the direct GHGs, including CO_2, CH_4, and N_2O, occur naturally in the atmosphere, human activities have changed their atmospheric concentrations. From the pre-industrial era (i.e., ending about 1750) to 2011, concentrations of these three GHGs have increased globally by 40, 150, and 20 percent, respectively (IPCC, 2013).

Greenhouse gases, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect. Among the prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), ozone (O_3), water vapor, nitrous oxide (N_2O), and chlorofluorocarbons (CFCs).

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. In California, the transportation sector is the largest emitter of GHGs, followed by the industrial sector (California Energy Commission, 2016).

As the name implies, global climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, respectively. California produced 441 million gross metric tons of carbon dioxide equivalents ($MMTCO_2e$) in 2014 (California Energy Commission, 2016). By 2020, estimated business-as-usual greenhouse gas emissions in California are projected to be 509 $MMTCO_2e$ per year (California Air Resources Board, 2015). Given that the U.S. EPA estimates that worldwide emissions from human activities totaled nearly 46 billion gross metric tons of carbon dioxide equivalents ($BMTCO_2e$) in 2010, California's incremental contribution to global GHGs is approximately 2% (U.S. EPA, 2014).

Carbon dioxide equivalents are a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential of a GHG, is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

Consumption of fossil fuels in the transportation sector was the single largest source of California's GHG emissions in 2014, accounting for 37% of total GHG emissions in the state. This category was followed by the industrial sector (24%), the electricity generation sector (including both in-state and out of-state sources) (20%) and the agriculture sector (8%) (California Energy Commission, 2016).

Responses to Checklist Questions

Responses a), b): The SJVAPCD has evaluated different approaches for estimating impacts, and summarizing potential GHG emission reduction measures. The SJVAPCD staff has concluded that "*existing science is inadequate to support quantification of impacts that project specific GHG emissions have on global climatic change*." This is readily understood when one considers that global climatic change is the result of the sum total of GHG emissions, both man-made and natural that occurred in the past; that is occurring now; and will occur in the future. The effects of project specific GHG emissions are cumulative, and unless reduced or mitigated, their incremental contribution to global climatic change could be considered significant.

The *Guidance for Assessing and Mitigating Air Quality Impacts* (SJVAPCD, 2015) provides an approach to assessing a project's impacts on greenhouse gas emissions by evaluating the proposed Project's emissions to the "reduction targets" established in ARB's AB 32 Scoping Plan. For instance, the SJVACD's guidance recommends that projects should demonstrate that "*project specific GHG emissions would be reduced or mitigated by at least 29%, compared to Business as Usual (BAU), including GHG emission reductions achieved since the 2002-2004 baseline period, consistent with GHG emission reduction targets established in ARB's AB 32 Scoping Plan. Projects achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG*."

Subsequent to the SJVAPCD's approval of the *Final Draft Guidance for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2015), the California Supreme Court issued an opinion that affects the conclusions that should/should not be drawn from a GHG emissions analysis that is based on consistency with the AB 32 Scoping Plan. More specifically, in *Center for Biological Diversity v. California Department of Fish and Wildlife*, the Court ruled that showing a "project-level reduction" that meets or exceeds the Scoping Plan's overall statewide GHG reduction goal is not necessarily sufficient to show that the proposed Project's GHG impacts will be adequately mitigated: "*the Scoping Plan nowhere related that statewide level of reduction effort to the percentage of reduction that would or should be required from individual projects*..." According to the Court, the lead agency cannot simply assume that the overall level of effort required to achieve the statewide goal for emissions reductions will suffice for a specific project.

Given this Court decision, reliance on a 29 percent GHG emissions reduction from projected BAU levels compared to the proposed Project's estimated 2020 levels as recommended in the SJVAPCD's guidance documents is not an appropriate basis for an impact conclusion in the MND. Given that the SJVAPCD staff has concluded that "*existing science is inadequate to support quantification of impacts that project specific GHG emissions have on global climatic change,*" this MND instead relies on a qualitative approach for this analysis. The approach still relies on the Appendix G of the CEQA Guidelines thresholds which indicate that climate change-related impacts are considered significant if implementation of the proposed Project would do any of the following:

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

These two CEQA Appendix G threshold questions are provided within the Initial Study checklist and are the thresholds used for the subsequent analysis. The focus of the analysis is on the proposed Project's consistency with the relevant efficiency (i.e. per service population) threshold.

The proposed Project would generate GHGs during the construction and operational phases of the proposed project. The primary source of construction-related GHGs from the proposed Project would result from emissions of CO_2 associated with the construction of the proposed project, and worker vehicle trips. The proposed Project would require limited grading, and would also include site preparation, building construction, and architectural coating phases. The operational phase of the proposed Project would generate GHGs primarily from the proposed project's operational vehicle trips and building energy (electricity and natural gas) usage. Other sources of GHG emissions would be minimal. Proposed Project construction-related GHGs are provided in Table GHG-1, below. Proposed project operational-related GHGs are provided in Table GHG-2.

Table GHG-1: Construction GHG Emissions (Unmitigated Metric Tons/Yr)

Year	*Bio-CO_2*	*NBio-CO_2*	*Total CO_2*	*CH_4*	*N_2O*	*CO_2e*
2020	0	450.2	450.2	0.1	0	454.4
2021	0	180.0	180.0	<0.1	0	181.6
Maximum	**0**	**450.2**	**450.2**	**0.1**	**0**	**454.4**

SOURCE: CALEEMOD (V.2020.4.0).

Table GHG-2: Operational GHG Emissions 2021 (Unmitigated Metric Tons/Yr)

Category	*Bio-CO_2*	*NBio-CO_2*	*Total CO_2*	*CH_4*	*N_2O*	*CO_2e*
Area	0	1.5	1.5	<0.1	0	1.5
Energy	0	183.1	183.1	<0.1	<0.1	184.4
Mobile	0	929.2	929.2	<0.1	<0.1	945.2
Waste	12.4	0	12.4	0.7	0	30.8
Water	2.5	5.6	8.2	0.3	<0.1	16.6
Total	**15.0**	**1,119.5**	**1,134.5**	**1.1**	**0.1**	**1,178.5**

SOURCE: CALEEMOD (V.2020.4.0).

A common threshold for GHGs is 4.6 MT CO2e/SP/year (residents+employees).[2] According to the 2020 U.S. Census, the population in Manteca is 83,498 people, and the average persons per household is 3.11. Therefore, the proposed Project would result in the construction of residential

[2] For example, the Bay Area Air Quality Management District (BAAQMD) has promulgated a threshold of 4.6 MT CO2e/SP/year (residents+employees). See Bay Area Air Quality Management District CEQA Guidelines, May 2017.

housing that would generate up to an estimated 382 people. Therefore, assuming a 30-year amortization of construction emissions, the combined project construction and operational GHG emissions would generate approximately 3.1 MT CO2e/SP/year, below the BAAQMD threshold of 4.6 MT CO2e/SP/year.

The proposed Project would not generate GHG emissions that would have a significant impact on the environment or conflict with any applicable plans, policies, or regulations. Since the proposed Project would be consistent with the City CAP, and would not exceed any relevant GHG threshold, impacts related to greenhouse gases are ***less than significant***.

IX. HAZARDS AND HAZARDOUS MATERIALS

Would the project:	***Potentially Significant Impact***	***Less Than Significant with Mitigation Incorporation***	***Less Than Significant Impact***	***No Impact***
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?		X		
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		X		
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				x
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?			X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?			X	
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?			X	

Responses to Checklist Questions

Responses a), b): The proposed Project would create new residential uses on a site that is surrounded by existing residential, commercial, and recreational uses. The proposed residential land uses do not routinely transport, use, or dispose of hazardous materials, or present a reasonably foreseeable release of hazardous materials, with the exception of common hazardous materials such as household cleaners, paint, engine oil, and similar household substances. The operational phase of the proposed Project does not pose a significant hazard to the public or the environment.

The parcel that comprises the Project site is currently vacant with evidence it was once used for agricultural purposes. Like most agricultural operations in the Central Valley, agricultural practices in the area have used agricultural chemicals as a standard practice. Although no contaminated soils have been identified in the Project site or in the immediate vicinity above applicable levels, residual concentrations of pesticides may be present in soil as a result of historic agricultural and ranching activities. Additionally, although groundwater wells have not been identified on the Project site, there is a possibility that groundwater wells exist on-site.

Should groundwater wells be present on-site, the proper well abandonment permit would need to be obtained.

The barns and equipment storage areas located on-site would require removal prior to any construction. If the structures are demolished, they will require evaluation for asbestos and lead containing materials. If such materials are present in the demolition of the structures, special demolition and disposal practices are required in accordance with state regulations to ensure their safe handling. For instance, if asbestos or lead is present, there is a special demolition process, as well as special landfills that are permitted to accept such demolition debris. It should be noted that CEQA does not require that these hazardous materials must be tested and analyzed at the current time – only that adequate performance measures would be taken to reduce the potential for a significant hazard to the public or environment is generated during project activities (including demolition). However, if the asbestos or lead is not present, then the demolition process would not require any special handling. Additionally, existing areas containing storage of farm equipment would require soil sampling to assess the soils in these areas.

There are no known underground storage tanks or pipelines located on the Project site that contain hazardous materials. Therefore, the disturbance of such items during construction activities is unlikely. Construction equipment and materials would likely require the use of petroleum-based products (oil, gasoline, diesel fuel), and a variety of common chemicals including paints, cleaners, and solvents. Transportation, storage, use, and disposal of hazardous materials during construction activities would be required to comply with applicable federal, state, and local statutes and regulations. Compliance would ensure that human health and the environment are not exposed to hazardous materials. Therefore, with implementation of the following mitigation measures (Mitigation Measures HAZ-1 through HAZ-2), the proposed Project would have a ***less than significant*** impact relative to this issue.

Mitigation Measure HAZ-1: *The Project applicant shall hire a qualified consultant to perform soil and site testing to check whether hazardous conditions are present, prior to any grading activities. The soil sampling shall address the presence/absence of hazardous substances in the soils, including agrichemicals and/or petroleum products. A soil sampling and analysis workplan shall be shall be prepared and meet the requirements of the Department of Toxic Substances Control Interim Guidance for Sampling Agricultural Properties (2008). The soils in the area where farming equipment and/or tanks have been stored should be included in the soil sampling and analysis workplan.*

If the sampling results indicate the presence of agrichemicals that exceed commercial screening levels, a removal action workplan shall be prepared in coordination with San Joaquin County Environmental Health Department. The removal action workplan shall include a detailed engineering plan for conducting the removal action, a description of the on-site contamination, the goals to be achieved by the removal action, and any alternative removal options that were considered and rejected and the basis for that rejection. A no further action letter shall be issued by San Joaquin County Environmental Health Department upon completion of the removal action. The removal action shall be deemed complete when the confirmation samples exhibit concentrations below the commercial screening levels, which will be established by the agencies.

If asbestos-containing materials and/or lead are found in the buildings, a California Occupational Safety and Health Administration (Cal/OSHA) certified asbestos containing building materials (ACBM) and lead based paint contractor shall be retained to remove the asbestos-containing materials and lead in accordance with EPA and Cal/OSHA standards. In addition, all activities *(construction or demolition) in the vicinity of these materials shall comply with Cal/OSHA asbestos and lead worker construction standards. The ACBM and lead shall be disposed of properly at an appropriate offsite disposal facility.*

Mitigation Measure HAZ-2 *Prior to initiation of any ground disturbance activities within 50 feet of a well, the Project applicant shall hire a licensed well contractor to obtain a well abandonment permit from San Joaquin County Environmental Health Department, and properly abandon the on-site wells, pursuant to review and approval of the City Engineer and the San Joaquin County Environmental Health Department.*

Response c): The Project site is located over ¼ mile of an existing school. The nearest school (Stella Brockman Elementary School) is located approximately 0.42 miles to the northeast of the Project site, at its closest point. Because the Project site is beyond the ¼-mile radius of a school, Implementation of the proposed Project would result in a ***no impact*** relative to this topic.

Response d): According the California Department of Toxic Substances Control (DTSC) there are no Federal Superfund Sites, State Response Sites, or Voluntary Cleanup Sites on, or in the near vicinity of the Project site. The Project site is not included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5. The nearest investigation site, located approximately adjacent to the western portion of the Project site, is the:

- Satellite Housing (site #60000626): This site is a voluntary cleanup site, which has a current status of Inactive as of March 16, 2009. This 3.2-acre site has had past uses that caused soil contamination from pesticide/insecticide/rodenticide.

Implementation of the proposed Project would result in a ***less than significant*** impact relative to this environmental topic.

Response e): The Federal Aviation Administration (FAA) establishes distances of ground clearance for take-off and landing safety based on such items as the type of aircraft using the airport. The Project site is not located within the vicinity of a private airstrip or public airport. The closest airport or airstrip is the Stockton Metropolitan Airport, located approximately 5.5 miles north of the Project site. Implementation of the proposed Project would have a ***less than significant*** impact with regards to this environmental issue.

Response f): The Office of Emergency Services (OES) maintains an Emergency Operations Plan (EOP) that serves as the official Emergency Plan for San Joaquin County. It includes planned operational functions and overall responsibilities of County Departments during an emergency situation. The Emergency Plan also contains a threat summary for San Joaquin County, which addresses the potential for natural, technological and human-caused disasters (County Code, Title 4-3007).

The County OES also prepared a Hazardous Materials Area Plan (§2720 H&S, 2008) that describes the hazardous materials response system developed to protect public health, prevent environmental damage and ensure proper use and disposal of hazardous materials. The plan establishes effective response capabilities to contain and control releases, establishes oversight of long-term cleanup and mitigation of residual releases, and integrates multi-jurisdiction and agency coordination. This plan is now implemented by the San Joaquin County Environmental Health Department.

The San Joaquin County Environmental Health Department maintains a Hazardous Materials Management Plan/ Hazardous Materials Business Plan (HMMP/HMBP). The HMMP/HMBP describes agency roles, strategies and processes for responding to emergencies involving hazardous materials. The Environmental Health Department maintains a Hazardous Materials Database and Risk and Flood Maps available to the public on its website.

In San Joaquin County, all major roads are available for evacuation, depending on the location and type of emergency that arises. The proposed Project does not include any actions that would impair or physically interfere with any of San Joaquin County's emergency plans or evacuation routes. Future uses on the Project site will have access to the County resources that establish protocols for safe use, handling and transport of hazardous materials. Construction activities are not expected to result in any unknown significant road closures, traffic detours, or congestion that could hinder the emergency vehicle access or evacuation in the event of an emergency. Implementation of the proposed Project would have a ***less than significant*** impact with regards to this environmental issue.

Response g): The risk of wildfire is related to a variety of parameters, including fuel loading (vegetation), fire weather (winds, temperatures, humidity levels and fuel moisture contents), and topography (degree of slope). Steep slopes contribute to fire hazard by intensifying the effects of wind and making fire suppression difficult. Fuels such as grass are highly flammable because they have a high surface area to mass ratio and require less heat to reach the ignition point, while fuels such as trees have a lower surface area to mass ratio and require more heat to reach the ignition point.

The City has areas with an abundance of flashy fuels (i.e., grassland) in the outlying residential parcels and open lands that, when combined with warm and dry summers with temperatures often exceeding 100 degrees Fahrenheit, create a situation that results in higher risk of wildland fires. Most wildland fires are human caused, so areas with easy human access to land with the appropriate fire parameters generally result in an increased risk of fire.

The City of Manteca contains areas with "moderate" and "non-wildland fuel" ranks. The areas warranting "moderate" fuel ranks possess combustible material in sufficient quantities combined with topographic characteristics that pose a wildfire risk. CalFire data for the areas immediately surrounding the Project site also include "moderate" and "non-wildland fuel" ranks. Areas west of Interstate 5, approximately 15 miles or further southwest of the Planning Area, are designated as "moderate" and "high" fuel ranks.

The Project site is located in an area with a "Local Responsibility Zone (LRA) Unzoned" rank. The Project site is also not located on a steep slope, and the Project site is essentially flat. The Project site is also located in an urban area, with existing or future urban development located on all sides. Therefore, this is a ***less than significant*** impact and no mitigation is required.

X. HYDROLOGY AND WATER QUALITY

Would the project:	***Potentially Significant Impact***	***Less Than Significant with Mitigation Incorporation***	***Less Than Significant Impact***	***No Impact***
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			X	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
(i) Result in substantial erosion or siltation on- or off-site;			X	
(ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;			X	
(iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or			X	
(iv) Impede or redirect flood flows?			X	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?			X	
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			X	

Responses to Checklist Questions

Response a): Implementation of proposed Project would not violate any water quality or waste discharge requirements. Construction activities including grading could temporarily increase soil erosion rates during and shortly after project construction. Construction-related erosion could result in the loss of soil and could adversely affect water quality in nearby surface waters. The RWQCB requires a project-specific SWPPP to be prepared for each project that disturbs an area one acre or larger. The SWPPP is required to include project specific best management measures that are designed to control drainage and erosion. Mitigation Measure GEO-2 would require the preparation of a SWPPP to ensure that the proposed Project prepares and implements a SWPPP throughout the construction phase of the proposed Project. The SWPPP (Mitigation Measure GEO-2) and the project specific drainage plan would reduce the potential for the proposed Project to violate water quality standards during construction. Implementation of the proposed Project would result in a ***less than significant*** impact relative to this topic.

Response b): The proposed Project would connect to the City of Manteca water system. The City's municipal water supply includes deliveries from the South San Joaquin Irrigation District's (SSJID) South County Water Supply Program (SCWSP), and local groundwater pumped from the City's wells.

The proposed Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted). The City's 2023 General Plan designates the Project site as MDR, which allows for residential densities of up to 15 dwelling units per acre. Therefore, the City's 2023 General Plan anticipated up to 198 units and an associated population of approximately 616 persons within the Project site.

Project construction would add additional impervious surfaces to the Project site; however, various areas of the Project site would remain largely pervious, which would allow infiltration to underlying groundwater. For example, the proposed Project proposes to include a large drainage basin within the central-northern portion of the Project site (see Figure 3). Additionally, the proposed Project includes landscaping areas that would remain pervious. These areas would continue to contribute to groundwater recharge following construction of the proposed Project. Furthermore, the proposed Project is not anticipated to significantly affect groundwater quality because sufficient stormwater infrastructure would be constructed as part of project to detain and filter stormwater runoff and prevent long-term water quality degradation. Therefore, project construction and operation would not substantially deplete or interfere with groundwater supply or quality. This impact would be ***less than significant***.

Responses c.i), c.ii), c.iii), e): When land is in a natural or undeveloped condition, soils, mulch, vegetation, and plant roots absorb rainwater. This absorption process is called infiltration or percolation. Much of the rainwater that falls on natural or undeveloped land slowly infiltrates the soil and is stored either temporarily or permanently in underground layers of soil. When the soil becomes completely soaked or saturated with water or the rate of rainfall exceeds the infiltration capacity of the soil, the rainwater begins to flow on the surface of land to low lying areas, ditches, channels, streams, and rivers. Rainwater that flows off a site is defined as storm water runoff. When a site is in a natural condition or is undeveloped, a larger percentage of rainwater infiltrates into the soil and a smaller percentage flow off the Project site as storm water runoff.

The infiltration and runoff process is altered when a site is developed. Buildings, sidewalks, roads, and parking lots introduce asphalt, concrete, and roofing materials to the landscape. These materials are relatively impervious, which means that they absorb less rainwater. As impervious surfaces are added to the ground conditions, the natural infiltration process is reduced. As a result, the volume and rate of storm water runoff increases. The increased volumes and rates of storm water runoff can result in flooding if adequate storm drainage facilities are not provided.

There are no rivers, streams, or water courses located on or immediately adjacent to the Project site, except for the drainage ditch located along the northern boundary of the Project site (SSJID Drain #5). As such, there is low potential for the proposed Project to alter a water course, which could lead to on or offsite flooding. Drainage improvements associated with the Project site would be located on the Project site, and the proposed Project would not alter or adversely impact offsite drainage facilities.

The proposed Project would not generate new or altered stormwater discharge into streams. Existing streams/crossings would be maintained, and no new crossings are proposed as part of the proposed project.

The proposed Project would increase impervious surfaces throughout the Project site. The proposed Project would require the installation of storm drainage infrastructure to ensure that storm waters properly drain from the Project site. The proposed storm drainage plan includes an engineered network of storm drain lines, manholes, inlets, and a water quality basin. Drainage would flow to an existing SSJID drain located in the northern portion of the Project site (SSJID Drain #5). The storm drainage plan was designed and engineered to ensure proper construction of storm drainage infrastructure to control runoff and prevent flooding, erosion, and sedimentation. The City Engineer reviews all storm drainage plans as part of the improvement plan submittal to ensure that all facilities are designed to the City's standards and specifications. The City Engineer also reviews all storm drainage plans to ensure that post-project runoff does not exceed pre-project runoff. The City Engineer's review of pre- and post-project runoff is intended to ensure that the capacity of the existing storm drainage system is not exceeded. This determination is ultimately made by the City Engineer during the improvement plan review and approval.

Additionally, the proposed Project is subject to the requirements of Chapter 13.28 of the Manteca Municipal Code – Stormwater Management and Discharge Control. The purpose of these requirements is to "establish minimum storm water management requirements and controls to protect and safeguard the general health, safety and welfare of the public residing in watersheds within the city of Manteca". These requirements are intended to assist in the protection and enhancement of the water quality of watercourses, water bodies, and wetlands in a manner pursuant to and consistent with the Federal Water Pollution Control Act (Clean Water Act, 33 USC Section 1251 et seq.), Porter- Cologne Water Quality Control Act (California Water Code Section 13000 et seq.) and National Pollutant Discharge Elimination System ("NPDES") Permit No. CAS000004, as such permit is amended and/or renewed.

The proposed Project storm drainage plan will require the construction of new storm water drainage facilities on the Project site; however, the construction of these facilities would not substantially alter the existing drainage pattern of the area, or alter the course of a stream or river, in a manner that would result in substantial erosion or siltation, substantially increase the rate or amount of surface runoff in a manner that would result in flooding, or create or contribute runoff water which would exceed the capacity or existing or planned drainage systems or provide substantial additional sources of polluted runoff. The proposed Project would also not conflict with any water control quality plan or sustainable groundwater management plan. With implementation of the following mitigation measures, the proposed Project would have a ***less than significant*** impact relative to this environmental topic.

Response d): As shown in Figure 9, approximately one-third of the Project site is located within the 500-year flood zone within the southeast portion of the Project site. The 500-year flood zone by definition indicates an area protected by levees from the 1% annual chance flood. The proposed Project is not located within a 100-year or 200-year flood zone.

The risks of flooding hazards on the Project site and immediate surroundings are primarily related to large, infrequent storm events. These risks of flooding are greatest during the rainy season between November and March. Flooding events can result in damage to structures, injury or loss of human and animal life, exposure to waterborne diseases, and damage to infrastructure.

In addition, standing floodwater can destroy agricultural crops, undermine infrastructure and structural foundations, and contaminate groundwater.

Further, in 2007, the State of California passed a series of laws referred to as Senate Bill (SB) 5 directing the Department of Water Resources (DWR) to prepare flood maps for the Central Valley flood system and the State Plan of Flood Control, which includes a system of levees and flood control facilities located in the Central Valley. This legislation also set specific locations within the area affected by the 200-year flood event as the urban level of flood protection (ULOP) for the Central Valley.

SB5 "requires all cities and counties within the Sacramento-San Joaquin Valley, as defined in California Government Code Sections 65007(h) and (j), to make findings related to an ULOP or national Federal Emergency Management Agency (FEMA) standard of flood protection before: (1) entering into a development agreement for any property that is located within a flood hazard zone; (2) approving a discretionary permit or other discretionary entitlement, or ministerial permit that would result in the construction of a new residence, for a project that is located within a flood hazard zone; or (3) approving a tentative map, or a parcel map for which a tentative map was not required, for any subdivision that is located within a flood hazard zone." In 2016, the City of Manteca approved a Memorandum of Understanding to pursue 200-year urban level of flood protection to satisfy SB 5.

As shown in Figure 10, the Project site is located within a dam inundation area for the New Melones Dam and the San Luis Dam. Dam failure is generally a result of structural instability caused by improper design or construction, instability resulting from seismic shaking, or overtopping and erosion of the dam. Larger dams that are higher than 25 feet or with storage capacities over 50 acre-feet of water are regulated by the California Dam Safety Act, which is implemented by the California Department of Water Resources, Division of Safety of Dams (DSD). The DSD is responsible for inspecting and monitoring these dams. The Act also requires that dam owners submit to the California Office of Emergency Services inundation maps for dams that would cause significant loss of life or personal injury as a result of dam failure. The County Office of Emergency Services is responsible for developing and implementing a Dam Failure Plan that designates evacuation plans, the direction of floodwaters, and provides emergency information.

Regular inspection by DSD and maintenance by the dam owners ensure that the dams are kept in safe operating condition. As such, failure of these dams is considered to have an extremely low probability of occurring and is not considered to be a reasonably foreseeable event.

The proposed Project would not expose people or structures to a significant risk of loss, injury or death involving flooding as a result of the failure of a levee or dam.

The Project site is not anticipated to be inundated by a tsunami because it is located at an elevation of approximately 23 to 27 feet above sea level and is approximately 60 miles away from the Pacific Ocean which is the closest ocean waterbody.

The Project site is not anticipated to be inundated by a seiche because it is not located in close proximity to a water body capable of creating a seiche.

Implementation of the proposed Project would have a ***less than significant*** impact relative to the risk of release of pollutants due to project inundation by flood hazards, seiches, and tsunamis, or the potential to alter the course of a stream or river in a manner that would impede or redirect flood flows.

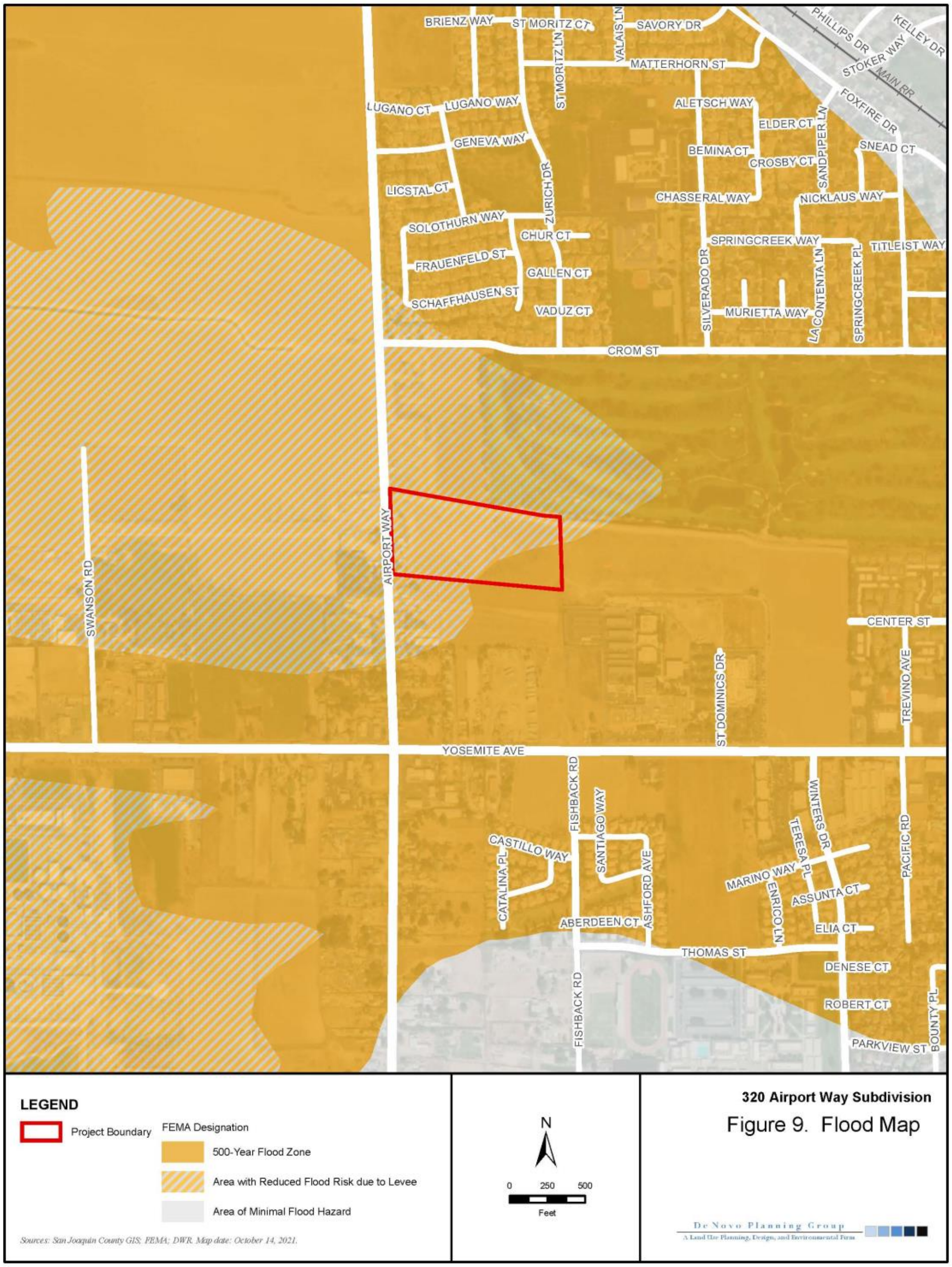
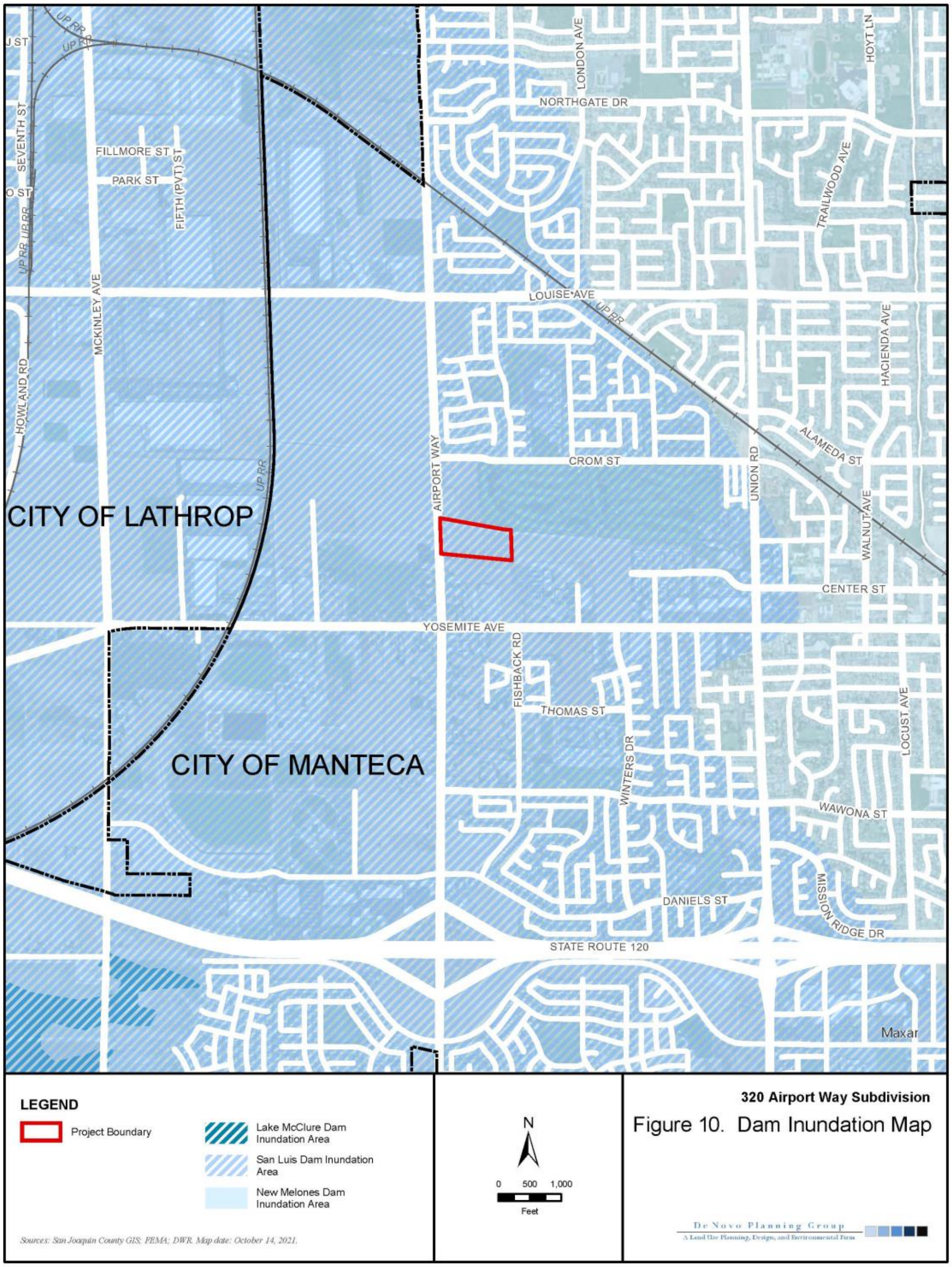


Figure 9. Flood Map

This page left intentionally blank.



320 Airport Way Subdivision

Figure 10. Dam Inundation Map

This page left intentionally blank.

XI. LAND USE AND PLANNING

Would the project:	***Potentially Significant Impact***	***Less Than Significant with Mitigation Incorporation***	***Less Than Significant Impact***	***No Impact***
a) Physically divide an established community?			X	
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?			X	

Responses to Checklist Questions

Response a): The Project site is located within the Manteca city limits and is adjacent primarily to residential uses, commercial uses, and recreational uses. The proposed Project is consistent with the surrounding uses and would not physically divide an established community. Implementation of the proposed Project would have a ***less than significant*** impact relative to this topic.

Response b): The key planning documents that are directly related to, or that establish a framework within which the proposed Project must be consistent, include:

- City of Manteca General Plan; and
- City of Manteca Zoning Ordinance.

The Project site is designated as MDR by the City's General Plan Land Use Map and is zoned as R2.

The MDR designation provides for smaller single-family homes in more imaginative lotting arrangements, duplex and triplex development, smaller scale multi-family developments, including cottage homes, garden apartments, townhouses, and cluster housing, and mobile home parks. The density range also accommodates small-lot single family homes that are smaller in size and affordable to residents. The allowed density within the MDR designation is 8.1 to 15 dwelling units per acre. With up to 123 units on 12.8 developable acres, the proposed density would be approximately 9.6 dwelling units per gross developable acre, which is within the allowed density range.

The R2 zone accommodates a variety of uses, including single-family and multi-family residential uses, school, recreation, and public uses, some utility infrastructure and public safety uses, and some child-care and medical services uses.

The proposed Project would not require changes to any land use or zoning designations, and is supportive to the utility demands for each of these uses. Therefore, impacts to land use compatibility would be ***less than significant***.

XII. MINERAL RESOURCES

Would the project:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?			X	
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?			X	

Existing Setting

The California Geological Survey identifies areas that contain or that could contain significant mineral resources so as to provide context for local agency land use decisions and to protect availability of known mineral resources. Classifications ranging from MRZ-1 to MRZ-4 are based on knowledge of a resource's presence and the quality of the resource. No mineral extraction operations are known to exist in or adjacent to the Project site. The Project site is designated within Mineral Resource Zone 3 (MRZ-3), as delineated by the Mineral Resources and Mineral Hazards Mapping Program (MRMHMP) (California Department of Conservation, 2012). MRZ-3 is defined by the MRMHMP as being in areas that contain mineral deposits, the significance of which cannot be evaluated from available data.

Responses to Checklist Questions

Responses a), b): The Project site is mapped as being located within Mineral Resource Zone 3 (MRZ-3), as delineated by the Mineral Resources and Mineral Hazards Mapping Program (MRMHMP). MRZ-3 is defined by the MRMHMP as being in areas that contain mineral deposits (the significance of which cannot be evaluated from available data. The proposed Project activities would not result in substantial subsurface excavation and would not preclude future exploration for, and extraction of, mineral resources since the proposed use would be decommissioned in the long-term. Therefore, the proposed Project would not result in the loss of an available known mineral resources nor result in the loss of availability of locally-important mineral resource recovery sites delineated in a local general plan, specific plan, or other land use plan. Additionally, there are no oil and gas extraction wells within or near the property. Therefore, the impact is ***less than significant*** to this environmental topic.

XIII. NOISE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		X		
b) Generation of excessive groundborne vibration or groundborne noise levels?			X	
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X

Existing Setting

The following discussion is based on the Environmental Noise Assessment for 320 Airport Way that was completed for the proposed Project by Saxelby Acoustics (October 2021).

Fundamentals of Acoustics

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large range of numbers. The decibel (dB) scale is used to facilitate graphical visualization of large ranges of numbers. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a graphically practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels and are expressed in units of dBA, unless otherwise noted.

The decibel scale is logarithmic, not linear. In other words, two sound power levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is half as loud as an 80 dBA sound, and twice as loud as a 60 dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (Leq), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The Leq is the foundation of the composite noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The day/night average level (L_{dn}) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment. CNEL is similar to L_{dn}, but includes a +5 dBA penalty for evening noise. Typically, CNEL and L_{dn} values are within 0.5 dBA of each other and are often considered to be synonymous. Table NOISE-1 lists several examples of the noise levels associated with common situations.

Table NOISE-1: Typical Noise Levels

Common Outdoor Activities	***Noise Level (dBA)***	***Common Indoor Activities***
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft)	--100--	
Gas Lawn Mower at 1 m (3 ft)	--90--	
Diesel Truck at 15 m (50 ft), at 80 km/hr (50 mph)	--80--	Food Blender at 1 m (3 ft) Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft)	--70--	Vacuum Cleaner at 3 m (10 ft)
Commercial Area Heavy Traffic at 90 m (300 ft)	--60--	Normal Speech at 1 m (3 ft)
Quiet Urban Daytime	--50--	Large Business Office
Quiet Urban Nighttime	--40--	Theater, Large Conference Room
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human

SOURCE: CALTRANS, TECHNICAL NOISE SUPPLEMENT, TRAFFIC NOISE ANALYSIS PROTOCOL. NOVEMBER 2009.

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction;

- Interference with activities such as speech, sleep, and learning; and
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6 dBA per doubling of distance from the source, depending on environmental conditions (i.e., atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

Existing Noise Levels – Traffic Noise

The existing ambient noise levels in the vicinity of the Project site are primarily defined by the traffic noise from Airport Way which runs along the western boundary of the Project site. Saxelby Acoustics in their environmental noise assessment (see Appendix C) conducted a continuous (24-hour) noise level study to determine the existing ambient noise levels at the Project site. Table NOISE-2 summarizes the ambient noise levels at two locations on the Project site for a 24-hour period.

Table NOISE-2: Summary of Existing Background Noise (dBA) Data at 320 Airport Way

Site	Date	Ldn	Daytime Leq	Daytime L50	Daytime Lmax	Nighttime Leq	Nighttime L50	Nighttime Lmax
LT-1	4/29/2021	74	72	70	88	67	58	86
LT-2	4/29/2021	57	51	49	65	52	50	67

SOURCE: ENVIRONMENTAL NOISE ASSESSMENT, 320 AIRPORT WAY, TABLE 6, SAXELBY ACOUSTICS 2021.

Regulatory Setting – Manteca General Plan

The City of Manteca General Plan Noise Element contains goals, policies, and implementation measures for assessing noise impacts within the City. Listed below are the noise goals, policies, and implementation measures that are applicable to the proposed project:

Goals

N-1. Protect the residents of Manteca from the harmful and annoying effects of exposure to excessive noise.

N-3. Ensure that the downtown core noise levels remain acceptable and compatible with commercial and higher density residential land uses.

N-4. Protect public health and welfare by eliminating existing noise problems where feasible, by establishing standards for acceptable indoor and outdoor noise, and by preventing significant increases in noise levels.

N-5. Incorporate noise considerations into land use planning decisions, and guide the location and design of transportation facilities to minimize the effects of noise on adjacent land uses.

Policies

N-P-2. New development of residential or other noise-sensitive land uses will not be permitted in noise-impacted areas unless effective mitigation measures are incorporated into the project design to satisfy the performance standards in Table 9-1 (Table 14 of this section).

N-P-3. The City may permit the development of new noise-sensitive uses only where the noise level due to fixed (non-transportation) noise sources satisfies the noise level standards of Table 9-2. Noise mitigation may be required to meet Table 9-2 performance standards (Table 15 of this section).

N-P-5. In accord with the Table 9-2 standards, the City shall regulate construction-related noise impacts on adjacent uses.

Implementation Measures

N-I-1. New development in residential areas with an actual or projected exterior noise level of greater than 60 dB L_{dn} will be conditioned to use mitigation measures to reduce exterior noise levels to less than or equal to 60 dB L_{dn}.

N-I-3. In making a determination of impact under the California Environmental Quality Act (CEQA), a substantial increase will occur if ambient noise levels are increased by 10 dB or more. An increase from 5-10 dB may be substantial. Factors to be considered in determining the significance of increases from 5-10 dB include:

- the resulting noise levels
- the duration and frequency of the noise
- the number of people affected
- the land use designation of the affected receptor sites
- public reactions or controversy as demonstrated at workshops or hearings, or by correspondence
- prior CEQA determinations by other agencies specific to the project

N-I-4. Control noise at the source through use of insulation, berms, building design and orientation, buffer space, staggered operating hours and other techniques. Use noise barriers to attenuate noise to acceptable levels.

Table NOISE-3: Maximum Allowable Noise Exposure Mobile Noise Sources

MAXIMUM ALLOWABLE NOISE EXPOSURE MOBILE NOISE SOURCES

Land Use[4]	Outdoor Activity Areas[1]	Interior Spaces	
		Ldn/CNEL, dB	Leq, dB[3]
Residential	60[2]	45	
Transient Lodging	60[2]	45	
Hospitals, Nursing Homes	60[2]	45	
Theaters, Auditoriums, Music Halls			35
Churches, Music Halls	60[2]		40
Office Buildings	65		45
Schools, Libraries, Museums			45
Playgrounds, Neighborhood Parks	70		

[1]*Outdoor activity areas for residential development are considered to be backyard patios or decks of single family dwellings, and the common areas where people generally congregate for multi-family developments. Outdoor activity areas for non-residential developments are considered to be those common areas where people generally congregate, including pedestrian plazas, seating areas, and outside lunch facilities. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.*

[2]*In areas where it is not possible to reduce exterior noise levels to 60 dB L_{dn} or below using a practical application of the best noise-reduction technology, an exterior noise level of up to 65 L_{dn} will be allowed.*

[3]*Determined for a typical worst-case hour during periods of use.*

[4]*Where a proposed use is not specifically listed on the table, the use shall comply with the noise exposure standards for the nearest similar use as determined by the City.*

SOURCE: MANTECA GENERAL PLAN, TABLE 9-1.

Table NOISE-4: Performance Standards for Stationary Noise Sources or Projects Affected by Stationary Noise Sources

PERFORMANCE STANDARDS FOR STATIONARY NOISE SOURCES OR PROJECTS AFFECTED BY STATIONARY NOISE SOURCES[1,2]

Noise Level Descriptor	Daytime	Nighttime
	7 a.m. to 10 p.m.	10 p.m. to 7 a.m.
Hourly Leq, dB	50	45
Maximum Level, dB	70	65

[1]*Each of the noise levels specified above should be lowered by five (5) dB for simple noise tones, noises consisting primarily of speech or music, or recurring impulsive noises. Such noises are generally considered by residents to be particularly annoying and are a primary source of noise complaints.*

[2]*No standards have been included for interior noise levels. Standard construction practices should, with the exterior noise levels identified, result in acceptable interior noise levels.*

SOURCE: MANTECA GENERAL PLAN, TABLE 9-2.

Regulatory Setting – Manteca Noise Ordinance

Section 9.52.030 of the City of Manteca Municipal Code prohibits excessive or annoying noise or vibration to residential and commercial properties in the City. The following general rules are outline in the ordinance:

9.52.030 Prohibited noises—General standard

No person shall make, or cause to suffer, or permit to be made upon any public property, public right-of-way or private property, any unnecessary and unreasonable noises, sounds or vibrations which are physically annoying to reasonable persons of ordinary sensitivity or which are so harsh or so prolonged or unnatural or unusual in their use, time or place as to cause or contribute to the unnecessary and unreasonable discomfort of any persons within the neighborhood from which said noises emanate or which interfere with the peace and comfort of residents or their guests, or the operators or customers in places of business in the vicinity, or which may detrimentally or adversely affect such residences or places of business. (Ord. 1374 § 1(part), 2007)

17.58.050 D. Exempt Activities

8. Construction activities when conducted as part of an approved Building Permit, except as prohibited in Subsection 17.58.050(E)(1) (Prohibited Activities) below.

17.58.050 E. Prohibited Activities

1. Construction Noise. Operating or causing the operation of tools or equipment on private property used in alteration, construction, demolition, drilling, or repair work daily between the hours of 7:00 p.m. and 7:00 a.m., so that the sound creates a noise disturbance across a residential property line, except for emergency work of public service utilities.

R*esponses to Checklist Questions*

Response a):

Construction Noise

The proposed Project could result in temporary or periodic increases in ambient noise levels in the Project vicinity above levels existing without the proposed project. The construction of new buildings and infrastructure improvements associated with the proposed Project will require construction activities. These activities include the use of heavy equipment and impact tools. Table NOISE-5 provides a list of the types of equipment which may be associated with construction activities and the associated noise levels.

Activities involved in project construction would typically generate maximum noise levels ranging from 85 to 90 dB at a distance of 50 feet. The nearest residential receptors would be located approximately 50 feet or more from the majority of project construction activities. This temporary increase in construction noise is considered potentially significant.

Table NOISE-5: Construction Equipment Noise

Type of Equipment	*Predicted Noise Levels, L_{max} dB*				*Distances to Noise Contours, feet*	
	Noise Level at 50'	*Noise Level at 100'*	*Noise Level at 200'*	*Noise Level at 400'*	*70 dB L_{max} contour*	*65 dB L_{max} contour*
Backhoe	78	72	66	60	126	223
Compactor	83	77	71	65	223	397
Compressor (air)	78	72	66	60	126	223
Concrete Saw	90	84	78	72	500	889
Dozer	82	76	70	64	199	354
Dump Truck	76	70	64	58	100	177
Excavator	81	75	69	63	177	315
Generator	81	75	69	63	177	315
Jackhammer	89	83	77	71	446	792
Pneumatic Tools	85	79	73	67	281	500

SOURCE: ROADWAY CONSTRUCTION NOISE MODEL USER'S GUIDE. FEDERAL HIGHWAY ADMINISTRATION. FHWA-HEP-05-054. JANUARY 2006.

There is generally an increase in ambient noise between the hours of 7 a.m. and 7 p.m. By limiting the hours of construction to these hours, the potential for nuisance noise is reduced because project construction-related noise increases would be less noticeable. The use of mufflers on construction equipment would decrease the overall noise generated during construction. Because sound diminishes with distance, locating noise-generating equipment away from noise sensitive uses would reduce overall noise impacts associated with project construction.

Separately, the City considers all hauling activities to ensure that they are routed to the City's major roadway network. Given the location of the Project site, it is anticipated that any hauling, would be located south along Airport Way and/or west on Yosemite Avenue to SR 120. Locating hauling trips on major roadways is consistent with the City's practices. The exact haul routes are generally defined during the review of grading plans, which is a step in the engineering phase of the proposed Project. The noise levels on these roadways from hauling would be short-lived and would cease after construction. Mitigation Measure NOISE-1 requires that construction activities be limited to the hours of 7:00 a.m. and 7:00 p.m. These construction time requirements would also apply to any hauling activities. The haul routes will not be adjacent to a school facility, given that there are no school facilities on these major haul routes throughout the City.

Therefore, implementation Mitigation Measure NOISE-1 would reduce impacts from temporary construction noise to a ***less than significant*** level.

Operational Noise

The City of Manteca General Plan outlines specific standards that must be met for both outdoor activity spaces and interior spaces for residential areas (Table NOISE-3). Outdoor activity spaces in residential are considered outdoor patios, decks, or congregation areas seen in multi-family housing developments. Outdoor activity areas should not exceed 60 dBA according to the standards set forth in the City of Manteca General Plan. Interior spaces are required to have noise levels of 45 dBA or below.

The noise environment of the Project site is most defined by the vehicular traffic on Airport Way. Using design elements such as the 8-foot-tall wall and a set-back of approximately 50-feet from

Airport Way, a 4.7 dBA increase in noise level is projected for the proposed Project due to the predicted increase in vehicular traffic. The increase traffic is predicted to increase outdoor activity area noise levels to 71 dBA for the residential units parallel to Airport Way. This exceeds the City of Manteca's standards by 11 dBA.

Exterior levels at the Project site are predicted to be less than 65 dBA at first floor locations and up to 76 dBA at second floor locations for the units parallel to Airport Way. Using the 25 dBA reduction estimate, first floor and second floor interior noise levels are predicted to be less than 40 dBA and 51 dBA respectively. The second-floor noise levels are predicted to exceed the City's General Plan Policy 12-P-6 which requires mitigation measures to ensure interior noise levels do not exceed 45 dBA.

The environmental noise assessment prepared by Saxelby Acoustics (see Appendix C) identified that, based upon the exterior transportation noise levels along Airport Way of 76 dBA Ldn, an exterior-to interior noise level reduction of 31 dBA would be required to meet the City of Manteca standards. Saxelby Acoustics determined the necessary noise control measures to achieve this noise level reduction. However, this level is an estimate and must be verified once floor plans become available.

Based on the available data, Saxelby Acoustics identified that the following design features that would be required to ensure that the proposed Project will meet the City of Manteca noise level standards. It should be noted these design features are based upon an estimate of the future residence layouts. The assumptions made by Saxelby Acoustics to determine what design features would be required may change, once floor plans become available. The required design features, as identified by Saxelby Acoustics, are as follows:

- An 11-foot barrier shall be constructed along the western boundary of the Project site and 8- foot barrier shall be constructed along a portion the northern and southern project boundaries. Barriers could consist of sounds walls, earthen berms, or a combination of sound wall and earthen berm. Sound walls should consist of concrete masonry type construction and may include earthen berms to achieve the full barrier height relative to pad elevations;
- Building facades shall include use of stucco with exterior sheathing and a resilient channel for hanging interior gypsum board;
- STC 38 minimum rated glazing shall be used;
- Carpet on pad must be used as flooring in bedrooms;
- Interior gypsum wallboards and gypsum ceiling shall be 5/8";
- Mechanical ventilation penetrations for exhaust fans shall not face toward Airport Way. Where feasible, these vents should be routed towards the opposite side of the building to minimize sound intrusion to sensitive areas of the buildings.
- Where vents must face toward Airport Way, duct work shall be increased in length and make as many "S" turns as feasible prior to exiting the dwelling. This separates the openings between the noise source and the living space with a long circuitous route. Each time the sound turns a corner, it is reduced slightly. Flexible duct work is preferred ducting for this noise mitigation. Where the vent exits the building, a spring-loaded flap with a gasket should be installed to reduce sound entering the duct work when the vent is not in use.

- Mechanical ventilation shall be provided to allow occupants to keep doors and windows closed for acoustic isolation.

- In lieu of these measures, an interior noise control report may be prepared by a qualified acoustic engineer demonstrating that the proposed building construction would achieve the interior noise reduction requirement of 31 dBA.

These design feature requirements are incorporated into Mitigation Measure NOISE-2, below. The implementation of Mitigation Measure NOISE-2 would ensure that outdoor activity noise levels would be below 60 dBA and interior noise levels would be below 45 dBA. With implementation of Mitigation Measure NOISE-2, these measurements meet the City of Manteca's General Plan noise level standards. Therefore, with implementation of Mitigation Measure NOISE-1 and Mitigation Measure NOISE-2, this project would have a ***less than significant*** impact.

Mitigation Measure(s)

Mitigation Measure NOISE-1*: The following mitigation measures shall be implemented:*

a) *Construction activities (excluding activities that would result in a safety concern to the public or construction workers) shall be limited to between the hours of 7:00 a.m. and 7:00 p.m. Construction activities shall be prohibited on Sundays and federal holidays.*

b) *Construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations.*

c) *Construction equipment staging areas shall be located at the furthest distance possible from nearby noise-sensitive land uses.*

Mitigation Measure NOISE-2: *The Project applicant shall implement the following design features, prior to project operation (it should be noted these design features are based upon an estimate of the future residence layouts. The assumptions made by Saxelby Acoustics to determine what design features would be required shall be verified by the Project applicant, once floor plans become available):*

- *An 11-foot barrier shall be constructed along the western boundary of the Project site and 8-foot barrier shall be constructed along a portion the northern and southern project boundaries, consistent with the modeling conducted by Saxelby Acoustics in the environmental noise assessment. Barriers could consist of sounds walls, earthen berms, or a combination of sound wall and earthen berm. Sound walls should consist of concrete masonry type construction and may include earthen berms to achieve the full barrier height relative to pad elevations;*

- *Building facades shall include use of stucco with exterior sheathing and a resilient channel for hanging interior gypsum board;*

- *STC 38 minimum rated glazing shall be used;*

- *Carpet on pad must be used as flooring in bedrooms;*

- *Interior gypsum wallboards and gypsum ceiling shall be 5/8";*

- *Saxelby Acoustics recommends that mechanical ventilation penetrations for exhaust fans not face toward Airport Way. Where feasible, these vents should be routed towards the opposite side of the building to minimize sound intrusion to sensitive areas of the buildings.*

- *Where vents must face toward Airport Way, it is recommended that the duct work be increased in length and make as many "S" turns as feasible prior to exiting the dwelling. This separates the openings between the noise source and the living space with a long circuitous route. Each time the sound turns a corner, it is reduced slightly. Flexible duct work is preferred ducting for this noise mitigation. Where the vent exits the building, a spring-loaded flap with a gasket should be installed to reduce sound entering the duct work when the vent is not in use.*

- *Mechanical ventilation shall be provided to allow occupants to keep doors and windows closed for acoustic isolation.*

- *In lieu of these measures, an interior noise control report may be prepared by a qualified acoustic engineer demonstrating that the proposed building construction would achieve the interior noise reduction requirement of 31 dBA.*

Response b): Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

Human and structural response to different vibration levels is influenced by several factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table NOISE-6 indicates that the threshold for damage to structures ranges from 0.2 to 0.6 peak particle velocity in inches per second (in/sec p.p.v). One-half this minimum threshold or 0.1 in/sec p.p.v. is considered a safe criterion that would protect against architectural or structural damage. The general threshold at which human annoyance could occur is noted as 0.1 in/sec p.p.v.

The primary vibration-generating activities associated with the proposed Project would occur during construction when activities such as grading, utilities placement, and roadway construction occur. Sensitive receptors which could be impacted by construction related vibrations, especially vibratory compactors/rollers, are located approximately 25 to 50 feet or further from the Project site. At this distance, construction vibrations are not predicted to exceed acceptable levels. Additionally, construction activities would be temporary in nature and would likely occur during normal daytime working hours.

Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural. Table NOISE-7 shows the typical vibration levels produced by construction equipment.

Table NOISE-6: Effects of Vibration on People and Buildings

Peak Particle Velocity		***Human Reaction***	***Effect on Buildings***
mm/sec.	***in./sec.***		
0.15-0.30	0.006-0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10-15	0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage.

SOURCE: CALTRANS. TRANSPORTATION RELATED EARTHBORN VIBRATIONS. TAV-02-01-R9601 FEBRUARY 20, 2002.

Table NOISE-7: Vibration Levels for Varying Construction Equipment

Type of Equipment	***Peak Particle Velocity @ 25 feet (inches/second)***	***Peak Particle Velocity @ 100 feet (inches/second)***
Large Bulldozer	0.089	0.011
Loaded Trucks	0.076	0.010
Small Bulldozer	0.003	0.000
Auger/drill Rigs	0.089	0.011
Jackhammer	0.035	0.004
Vibratory Hammer	0.070	0.009
Vibratory Compactor/roller	0.210	0.026

SOURCE: FEDERAL TRANSIT ADMINISTRATION, TRANSIT NOISE AND VIBRATION IMPACT ASSESSMENT GUIDELINES, MAY 2006

The Table NOISE-7 data indicate that construction vibration levels anticipated for the proposed Project are less than the 0.2 in/sec p.p.v. threshold of damage to buildings and less than the 0.1 in/sec threshold of annoyance criteria at distances over 25 feet. Therefore, construction vibrations are not predicted to cause damage to existing buildings or cause annoyance to sensitive receptors. Implementation of the proposed Project would have a ***less than significant*** impact relative to this environmental topic.

Response c): The Project site is not located within the vicinity of an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport. The closest airport or airstrip is the Stockton Metropolitan Airport, located approximately 5.5 miles north of the Project site. The proposed Project would, therefore, not expose people residing or working in the vicinity of the Project site to excessive noise levels associated with such airport facilities. The Project site is not located within the vicinity of a private airstrip. The proposed Project would, therefore, not expose people residing or working in the vicinity of the Project site to excessive noise levels associated with such private airport facilities. Implementation of the proposed Project would have ***no impact*** relative to this topic.

XIV. POPULATION AND HOUSING

Would the project:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			X	
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

Responses to Checklist Questions

Response a): According to the 2020 U.S. Census, the population in Manteca is 83,498 people, and the average persons per household is 3.11. The proposed Project would result in the construction of residential housing that would generate up to an estimated 382 people. This is an estimated 0.45 percent growth in Manteca. An estimated 0.45 percent growth in Manteca is not considered substantial growth in Manteca or the region and it is consistent with the assumed growth in the General Plan. The approximately 382 people may come from Manteca or surrounding communities. The proposed Project would not include upsizing of offsite infrastructure or roadways. The installation of new infrastructure would be limited to the internal Project site. The sizing of the infrastructure would be specific to the number of units proposed within the Project site. Implementation of the proposed Project would not induce substantial population growth in an area, either directly or indirectly. Implementation of the proposed Project would have a ***less than significant*** impact relative to this topic.

Response b): The Project site currently contains undeveloped agricultural land and a single unoccupied house. The proposed Project would not displace housing or people. Implementation of the proposed Project would have ***no impact*** relative to this topic.

XV. PUBLIC SERVICES

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?			X	
Police protection?			X	
Schools?			X	
Parks?		X		
Other public facilities?				X

Responses to Checklist Questions

Response a):

Fire Protection

The Project site is currently under the jurisdiction of the Manteca Fire Department. The Manteca Fire Department serves approximately 83,498 residents throughout approximately 17.2 square miles within the City limits. The Manteca Fire Department operates out of four (4) facilities that are strategically located in the City of Manteca. The nearest fire station to the Project site is located at 1154 Union Road, approximately 1.3 miles southeast of the Project site.

The Manteca Fire Department maintains a goal for the initial company of three (3) firefighters to arrive on scene for fire and emergency medical service (EMS) incidents within five (5) minutes 90% of the time (Response Effectiveness). In 2016, the Department averaged a response time for Code 3 emergencies such as fires, medical calls or auto accidents at 4:20 minutes City-wide. In 2017, the Department averaged a 4:22 response time City-wide. In 2017, the MFD on an average handled 7,579 emergency calls and 6,737 in 2016. The Department is currently meeting the Response Effectiveness goal.

ISO Rating

The Insurance Services Office (ISO) Public Protection Classification Program currently rates the Fire Department as a 2 on a scale of 1 to 10, with 1 being the highest possible protection rating and 10 being the lowest. The ISO rating measures individual fire protection agencies against a Fire Suppression Rating Schedule, which includes such criteria as facilities and support for handling and dispatching fire alarms, first-alarm response and initial attack, and adequacy of local water supply for fire-suppression purposes. The recent construction and staffing of Fire Station No. 4 and Fire Station No. 5 will have a positive impact on the City's ISO rating. The ISO ratings are used to establish fire insurance premiums. With the completion of Fire Station 5, the City plants to apply for ISO re-classification and the Fire Department will apply for Accreditation through the Commission of Fire Accreditation International (CFAI).

Fire Stations

The Manteca Fire Department currently operates five fire stations within its service area, each are listed below.

- Station 241 - 290 S. Powers Ave. Manteca CA 95336 (operational)
- Station 242 - 1154 S. Union Road Manteca CA 95337 (operational)
- Station 243 - 399 W. Louise Ave. Manteca CA 95336 (operational)
- Station 244 - 1465 W. Lathrop Rd. Manteca CA 95336 (operational)
- Station 245 - 1675 E. Woodward Ave. Manteca CA 95337 (operational)

Proposed Project

The proposed Project would add up to 123 residential units, which is anticipated to add 382 people to the City of Manteca. The additional of up to 382 people in the City of Manteca would place additional demands for police service on the Manteca Fire Department.

The City of Manteca receives funds for the provision of public services through development fees, property taxes, and connection and usage fees. As land is developed within the City and annexed into the City of Manteca, these fees apply. The City of Manteca reviews these fee structures on an annual basis to ensure that they provide adequate financing to cover the provision of city services. The City's Community Development, Public Works, and Finance Departments are responsible for continual oversight to ensure that the fee structures are adequate. The City reviews the referenced fees and user charges on an annual basis to determine the correct level of adjustment required to reverse any deficits and assure funding for needed infrastructure going forward. The City intends to include discussion of these fees and charges as part of the annual budget hearings.

The City of Manteca General Plan 2023 includes policies and implementation measures that would allow for the Department to continue providing adequate facilities and staffing levels. Below is a list of relevant policies:

- The City shall endeavor to maintain an overall fire insurance (ISO) rating of 4 or better (Policy PF-P-42).

- The City shall endeavor through adequate staffing and station locations to maintain the minimum feasible response time for fire and emergency calls (PF-P-43).

- The City shall provide fire services to serve the existing and projected population (PF-P-44).

- The City will establish the criteria for determining the circumstances under which fire service will be enhanced (PF-P-45).

- The Fire Department shall continuously monitor response times and report annually on the results of the monitoring (PF-I-24).

- The City shall encourage a pattern of development that promotes the efficient and timely development of public services and facilities (LU-P-3).

Impact fees from new development are collected based upon projected impacts from each development. The adequacy of impact fees is reviewed on an annual basis to ensure that the fee is commensurate with the service. Payment of the applicable impact fees by the Project applicant, and ongoing revenues that would come from property taxes, sales taxes, and other revenues generated by the proposed project, would fund capital and labor costs associated with fire protection services. Payment of such fees is adequate to ensure that the proposed Project would not result in any CEQA impacts related to this topic, including the potential for the proposed Project to cause substantial adverse physical impact associated with the provision of new or physically alternated governmental services, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts. Therefore, the impact of the proposed Project on the need for additional fire services facilities is ***less than significant***.

Police Protection

The Project site is currently under the jurisdiction of the Manteca Police Department. The Manteca Police Department operates out of its headquarters located at 1001 W. Center Street. The Project site is located approximately 1 mile southwest of the headquarters.

The Manteca Police Department is organized into two divisions: Operations and Services. Additionally, the Police Department operates a Public Affairs Unit. For budgeting purposes, the Police Department is organized into the following programs: administration, patrol, investigations, support services, dispatch, code enforcement, jail services, and animal services.

The proposed Project would add up to 123 residential units, which is anticipated to add approximately 382 people to the City of Manteca. The additional of up to 382 people in the City of Manteca would place additional demands for police service on the Manteca Police Department.

The City of Manteca receives funds for the provision of public services through development fees, property taxes, and connection and usage fees. As land is developed within the City and annexed into the City of Manteca, these fees apply. The City of Manteca reviews these fee structures on an annual basis to ensure that they provide adequate financing to cover the provision of city services. The City's Community Development, Public Works, and Finance Departments are responsible for continual oversight to ensure that the fee structures are adequate. The City reviews the referenced fees and user charges on an annual basis to determine the correct level of adjustment required to reverse any deficits and assure funding for needed infrastructure going forward. The City intends to include discussion of these fees and charges as part of the annual budget hearings.

The City's General Plan includes policies and implementation measures that would allow for the Manteca Police Department to continue providing adequate staffing levels. Below is a list of relevant policies:

- The City shall endeavor through adequate staffing and patrol arrangements to maintain the minimum feasible police response times for police calls. Currently the City has 76 sworn officers. With a population of 83,498, that equates to a staffing level of .91 officers per 1000 residents.
- The City shall provide police services to serve the existing and projected population. The Police Department will continuously monitor response times and report annually on the results of the monitoring.

Impact fees from new development are collected based upon projected impacts from each development. The adequacy of impact fees is reviewed on an annual basis to ensure that the fee is commensurate with the service. Payment of the applicable impact fees by the Project applicant, and ongoing revenues that would come from property taxes, sales taxes, and other revenues generated by the proposed project, would fund capital and labor costs associated with police services. Payment of such fees is adequate to ensure that the proposed Project would not result in any CEQA impacts related to this topic, including the potential for the proposed Project to cause substantial adverse physical impact associated with the provision of new or physically alternated governmental services, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts.

Based on the current adequacy of existing response times and the ability of the Manteca Police Department to serve the City, it is anticipated that the existing police department facilities are sufficient to serve the proposed project. Consequently, any impacts would be ***less than significant***.

Schools

Most schools within the City of Manteca are part of the Manteca Unified School District (MUSD). The MUSD provides school services for grades kindergarten through 12 (K-12) within the communities of Manteca, Manteca, Stockton, and French Camp. The District is approximately 113 square miles and serves more than 24,000 students. Within the City of Manteca, there are three elementary schools (Manteca Elementary School, Joseph Widmer School, and Mossdale Elementary School) and one high school (Sierra High School). River Islands has two charter elementary schools, located within the Banta Unified School District (River Islands Technology Academy and the S.T.E.A.M. Academy).

MUSD provides school services for grades K through 12 within the communities of Manteca, Lathrop, Stockton, and French Camp. MUSD operates 14 elementary and middle schools (grades K-8), four high schools (grades 9-12), one community day school (grades 7-12), and one vocational academy (grades 11-12). The schools in the City had a total enrollment of approximately 14,279 students, of which 9,416 were enrolled in elementary and middle school (grades K – 8) and 4,863 were enrolled in high school (grades 9 – 12).

The proposed Project includes residential units that would directly increase the student population in the area. The proposed Project would include the development of up to 123 dwelling units, which would directly cause population growth and increase enrollment in the local school districts. Utilizing the student generation rates provided by the MUSD in the NOP comment letter for the Oakwood Landing – Cerri & Denali Subdivisions Project (dated September 12, 2016), the proposed Project would be expected to generate up to roughly 87 new students, broken down by grades as follows:

- K–8: 59.1 students
- 9–12: 28.3 students

The MUSD collects impact fees from new developments under the provisions of the Leroy F. Greene School Facilities Act of 1998, enacted by Senate Bill 50 ("SB 50"). SB 50 restricts the ability of local agencies to deny or condition land use approvals on the basis that school facilities are inadequate and precludes local agencies from requiring anything other than payment of the prevailing developer fee adopted by the local school district. SB 50 sets forth the "exclusive methods of considering and mitigating impacts on school facilities" resulting from any planning and/or development project, regardless of whether its character is legislative, adjudicative, or both. Govt. Code § 65996(a) (emphasis added).

Section 65995(h) provides that "[t]he payment or satisfaction of a fee, charge, or other requirement levied or imposed pursuant to Section 17620 of the Education Code in the amount specified in Section 65995 … is hereby deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving but not limited to, the planning, use, or development of real property … on the provision of adequate school facilities." (emphasis added).

The reference in Section 65995(h) to fees "imposed pursuant to Section 17620 of the Education Code in the amount specified in Section 65995" is to per-square-foot school fees that can be imposed by school districts on new residential and commercial and industrial construction. Pursuant to this authority, the District has adopted a Level 1 fee in the amount of $3.79 per square foot of assessable space of new residential construction. Payment of this Level 1 fee by the Project applicant constitutes full and complete mitigation of all impacts of the proposed Project on the District's school facilities as a matter of law. (Gov't Code § 659959h).)

Under SB 50, the City of Manteca is legally precluded from concluding, under CEQA or otherwise, that payment of the prevailing Level 1 fee will not completely mitigate the impacts of the proposed Project. Government Code § 65995(a) provides that SB 50 constitutes sets forth the "exclusive methods of considering and mitigating impacts on school facilities" when evaluating a development project. Because the methods of both "considering and mitigating" impacts on school facilities set forth in Government Code section 65996(a) are exclusive, SB 50 obviates the need for CEQA documents even to contain a description and analysis of a development project's impacts on school facilities. See Chawanakee Unified Sch. Dist. v. Cty. of Madera, 196 Cal. App. 4th 1016, 1027 (2011). Further, these statutes prohibit local agencies from concluding that payment of the authorized fees do not constitute full and complete mitigation of a project's school facilities impacts. Local agencies have no power to supersede the legislature's express and unambiguous directives on this subject.

Nor does the City possess the authority to deny or condition the proposed Project unless the Project applicant agrees to pay fees or provide other mitigation beyond the duly adopted Level 1 fee. Under Government Code § 65995(a), a "local agency may not deny or refuse to approve a legislative or adjudicative act, or both, involving, but not limited to, the planning, use, or development of real property on the basis of a person's refusal to provide school facilities mitigation that exceeds the amounts authorized pursuant to [SB 50.]"

In short, payment of the Level 1 fee is "deemed to provide full and complete school facilities mitigation and, notwithstanding [Government Code] Section 65858, or [CEQA], or any other provision of state or local law, a state or local agency may not deny or refuse to approve [the] development of real property ... on the basis that school facilities are inadequate.".

Payment of the applicable impact fees by the Project applicant, and ongoing revenues that would come from taxes, would fund capital and labor costs associated with school services. The adequacy of fees is reviewed on an annual basis to ensure that the fee is commensurate with the service. Payment of the applicable impact fees by the Project applicant, and ongoing revenues that would come from property taxes and other revenues generated by the proposed project, would fund improvements associated with school services.

The provisions of State law are considered full and complete mitigation for the purposes of analysis under CEQA for school construction needed to serve new development. In fact, State law expressly precludes the City from reaching a conclusion under CEQA that payment of the Leroy

F. Greene School Facilities Act school impact fees would not completely mitigate new development impacts on school facilities. Consequently, the City of Manteca is without the legal authority under CEQA to impose any fee, condition, or other exaction on the proposed Project for the funding of new school construction other than the fees allowed by the Leroy F. Greene School Facilities Act. Additionally, local agencies are prohibited from using the inadequacy of school facilities as a basis for denying or conditioning approvals. Although MUSD may collect higher fees than those imposed by the Leroy F. Greene School Facilities Act, no such fees are required to mitigate the impact under CEQA. Because the proposed Project would pay fees as required by The Leroy F. Greene School Facilities Act, this impact would be ***less than significant***.

Parks

CEQA requires that the proposed Project is analyzed to determine whether any substantial adverse impacts would be associated with any new or physically altered governmental facilities that may be required to serve the proposed Project (in this case, for park and recreation facilities). The proposed Project directly increases the number of persons in the area as a result of employment potential, and residential uses. The proposed Project includes up to 123 residential units, which is projected to increase the population by up to an estimated 382 people (based on 3.11 persons per household). For the purposes of extractive and collecting fees to mitigate for increase park demands (Quimby Act), the California Government Code Section 66477 states: *The amount of land dedicated or fees paid shall be based upon the residential density, which shall be determined on the basis of the approved or conditionally approved tentative map or parcel map and the average number of persons per household. There shall be a rebuttable presumption that the average number of persons per household by units in a structure is the same as that disclosed by the most recent available federal census or a census taken pursuant to Chapter 17 (commencing with Section 40200) of Part 2 of Division 3 of Title 4.*

The City's General Plan identifies a park standard based on a goal of five acres of developed parkland per 1,000 residents within the city limits. However, Manteca Municipal Code Chapter 3.20.080, Neighborhood parks, requires in all new subdivisions, the developer to build and dedicate a neighborhood park that meets the required three acres per 1,000 people per the adopted park acquisition and improvement fee. Based on an estimate of 382 residents, the Project would require approximately 1.20 acres of parkland. The proposed Project does not include a dedicated park. The Quimby Act allows a development to provide the parkland onsite, or to pay the in-lieu fees to the City for the future development of park elsewhere in the City. In accordance with the Municipal Code Chapter 3.20, Park Acquisition and Improvement Fees, fees are deposited in specific funds that shall be used solely for the acquisition, improvement and expansion of public parks and recreation facilities as outlined in the park acquisition and improvement fee update.

The proposed Project is subject to the City park dedication in-lieu fees. The payment of the City park dedication in-lieu fees would serve as an adequate offset for the park demand. As such, with the implementation of Mitigation Measure PUBLIC-1, the proposed Project will result in a ***less-than-significant*** impact.

Mitigation Measure(s)

Mitigation Measure PUBLIC-1: *The Project applicant shall pay applicable park in-lieu fees or dedicate parkland in accordance with the City of Manteca Municipal Code standards outlined in Chapter 3.20. Proof of payment of the in-lieu fees shall be submitted to the City Engineer.*

Other Public Facilities

The proposed Project would not result in a need for other public facilities that are not addressed above, or in Section XVIII, Utilities and Service Systems. Implementation of the proposed Project would have ***no impact*** relative to this issue.

XVI. RECREATION

	Potentially Significant Impact	***Less Than Significant with Mitigation Incorporation***	***Less Than Significant Impact***	***No Impact***
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			X	
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

Responses to Checklist Questions

Responses a): The proposed Project would result in the construction of up to 123 multi-family residential homes, which would result in up to an estimated 382 individuals. The City of Manteca General Plan Policy PF-P-49 calls for city park acquisition efforts to be based on the goal of 5 acres of developed neighborhood and community parkland per 1,000 residents within the City parks. Therefore, the estimated new demand for parks generated by the proposed Project is approximately 1.91 acres of new parks. The proposed Project does not include the construction of new parks that would satisfy City of Manteca General Plan Policy PF-P-49; therefore, the Project applicant would be required to pay in-lieu fees. The in-lieu fees would ultimately fund the construction of new park land to offset the increased demand for these facilities. With implementation of Mitigation Measure PUBLIC-1, this potential impact would be reduced to a ***less than significant*** level.

Responses b): The proposed Project does not include the construction of recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. Implementation of the proposed Project would have ***no impact*** relative to this topic.

XVII. TRANSPORTATION

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

Existing Setting

This section summarizes applicable federal, state, regional, and local plans, laws, and regulations that are relevant to this analysis. This information provides a context for the discussion related to the proposed Project's consistency with applicable policies, plans, laws, and regulations.

Federal Regulations

This section summarizes federal agencies and laws pertinent to the proposed Project.

Federal Highway Administration

The Federal Highway Administration (FHWA) is the agency of the United States Department of Transportation (DOT) responsible for the federally funded roadway system, including the interstate highway network and portions of the primary state highway network, such as Interstate 5 (I-5).

State Regulations

This section summarizes State of California agencies, regulations, and policies that pertain to transportation in Manteca.

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) Guidelines, Appendix G Environmental Checklist Form describes four recommended categories of impacts related to transportation and traffic. These categories are recommended for formal environmental review of projects, but are referenced as appropriate for this TIA.

A project's impact is considered to be significant if it would:

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

b. Conflict or be inconsistent with CEQA Guideline section 15064.3, subdivision (b).

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

d. Result in inadequate emergency access.

Significance criteria "b" is related to the implementation of vehicle miles traveled (VMT) as the primary performance metric consistent with Senate Bill 743 as described below.

Senate Bill 743

Senate Bill 743 (SB 743) was signed into law in September 2013. Senate Bill 743 (Steinberg, 2013) required changes to the California Environmental Quality Act (CEQA) Guidelines regarding the analysis of transportation impacts. The purpose of SB 743 is to promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.

Prior to implementation of SB 743, CEQA transportation analyses of individual projects typically determined impacts on the circulation system in terms of roadway delay and/or capacity usage at specific locations, such as street intersections or freeway segments. The SB 743 changes include the elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts.

Under SB 743, a project's effect on automobile delay shall not constitute a significant environmental impact. Therefore, level of service (LOS) and other similar vehicle delay or capacity metrics can no longer serve as transportation impact metrics for CEQA analysis. The California Office of Planning and Research (OPR) updated the CEQA Guidelines and provided a final technical advisory in December 2018, which recommends vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts under CEQA. The California Natural Resources Agency certified and adopted the CEQA Guidelines including the Guidelines section implementing SB 743. The changes have been approved by the Office of the Administrative Law and are now in effect.

Revisions to CEQA transportation analysis requirements do not preclude the application of local general plan policies, municipal and zoning codes, conditions of approval, or any other planning requirements through a city's planning approval process. These requirements aim to ensure adequate operation of the transportation system in terms of transportation congestion measures related to vehicular delay and roadway capacity.

California Department of Transportation

The California Department of Transportation (Caltrans) is the primary State agency responsible for transportation issues. As owner/operator of the State Highway System, Caltrans may review projects and plans as a commenting agency or responsible agency under the California Environmental Quality Act (CEQA). IN relation to this role, Caltrans published the Vehicle Miles Traveled-Focused Transportation Impact Study Guide" in May, 2020. This replaced the "Guide for the Preparation of Traffic Impact Studies" (December 2002), which established Measures of Effectiveness based on level of service targets.

Caltrans recommends following the guidance on methods of VMT assessment found in OPR's Technical Advisory. Caltrans comments on a CEQA document may note methodological deviations from those methods and may recommend that significance determinations and mitigation be aligned with state greenhouse gas reduction goals as articulated in OPR's guidance, the California Air Resources Board's Scoping Plan, and related documentation.

Caltrans facilities within the Manteca study area include State Route 120 and its on- and off-ramps.

For projects that may physically affect facilities under its administration, Caltrans requires encroachment permits before any construction work may be undertaken.

Regional Regulations

This section summarizes regional agencies, plans, and policies that pertain to transportation in Manteca.

San Joaquin Council of Governments Regional Congestion Management Program

The San Joaquin Council of Governments (SJCOG) is responsible for the Regional Congestion Management Program (RCMP). The purpose of the RCM) is to monitor congestion, identify congestion problems, and establish a programming mechanism aimed at reducing congestion. Designation of a regional transportation system supports RCMP monitoring activities and focuses the implementation of the RCMP on a core network of key transportation facilities that facilitate regional travel within San Joaquin County.

The RCMP network includes the following facilities in the project study area:

- State Route 120
- Airport Way
- Louise Road
- Yosemite Avenue

The RCMP also designates multimodal corridors where quality of transportation service is monitored for transit, bicycles and pedestrians as well as vehicles. The following multimodal corridors are designated in the project study area:

- Yosemite Avenue, Airport Way to Northwoods Ave-Commerce Ave

Prior to 2021, the RCMP included LOS standards for the RCMP network that would affect the evaluation of local development traffic impacts. Consistent with the implementation of SB 743 CEQA streamlining legislation, the 2021 RCMP discontinues the use of LOS for the evaluation of RCMP congestion deficiencies.

The RCMP identifies deficient corridors based on combined speed-based congestion and reliability metrics. None of the deficient corridors identified in the 2021 RCMP are in the Manteca study area.

Local Regulations

This section summarizes City policies and regulations that pertain to transportation in Manteca.

Manteca General Plan

The 2021 update of the Manteca General Plan includes the following policies relevant to the transportation evaluation of the project (Table TT-1).

Table TT-1: Selected Manteca General Plan Policies

No.	Policy
C-1.1	Strive to balance levels of service (LOS) for all modes (vehicle, transit, bicycle, and pedestrian) to maintain a high level of access and mobility, while developing a safe, complete, and efficient circulation system. The impact of new development and land use proposals on VMT, LOS, and accessibility for all modes should be considered in the review process.
C-1.2	To the extent feasible, strive for a vehicular LOS of D or better during weekday AM and PM peak hours at all streets and intersections, except in the Downtown area or in accordance with Policy C-1.3.
C-1.3	At the discretion of the City Council or Planning Commission, certain locations may be allowed to fall below the City's LOS standard established by C-1.2 under the following circumstances: ▪ a. Where constructing facilities with enough capacity to provide LOS D is found to be unreasonably expensive. ▪ b. Where conditions are worse than LOS D and caused primarily by traffic from adjacent jurisdictions. ▪ C. Where maintaining LOS D will be a disincentive to use transit and active transportation modes (i.e., walking and bicycling) or to the implementation of transportation or land use improvements that would reduce vehicle travel. Examples include roadway or intersection widening in areas with substantial pedestrian activity or near major transit centers.
C-2.2	Design roadway improvements to occur in a contiguous, orderly fashion and strive to build roadway improvements in advance of new development particularly when addressing existing deficiencies. However, major circulation improvements shall be constructed no later than when abutting lands develop or redevelop, with dedication of right-of-way and construction of improvements, or participation in construction of such improvements, required as a condition of approval.
C-2.3	Require new development to pay a fair share of the costs of street and other transportation improvements based on impacts in conformance with the goals and policies established in this Circulation Element and the Public Facilities Implementation Program (PFIP).
C-2.13	Require development projects to arrange streets in an interconnected block pattern, so that pedestrians, bicyclists, and drivers are not forced onto arterial streets for inter- or intra-neighborhood travel. This approach will also ensure safe and efficient movement of emergency responders and ensure that vehicle miles traveled are minimized within the community. The street pattern shall include measures to provide a high level of connectivity and decrease vehicle miles traveled.

No.	Policy
C-2.14	Residential subdivisions with lots fronting on an existing arterial street shall provide for separate roadway access to the maximum extent feasible, with access to residential lots provided from residential or collector streets. For those properties that currently front arterial streets, consideration should be given to providing separate roadway access as a condition of approval for any redevelopment or subdivision of the property.
C-2.15	Ensure that development and infrastructure projects are designed in a way that provides pedestrian and bicycle connectivity to adjacent neighborhoods and areas (such as ensuring that sound walls, berms, and similar physical barriers are considered and gaps or other measures are provided to ensure connectivity).
C-2.19	In the development of new projects, give special attention to maintaining/ensuring adequate corner-sight distances appropriate for the speed and type of facility, including intersections of city streets and private access drives and roadways.

SOURCE: MANTECA GENERAL PLAN, MARCH, 2021, PP, 4-2 TO 4-11

Responses to Checklist Questions

Response a), b): Less than Significant. Kittelson & Associates prepared a Transportation Impact Analysis for the proposed Project. Kittelson & Associates evaluated the proposed development against the screening criteria as provided by the Office of Planning and Research (OPR) Technical Advisory (December 2018), which recommends vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts under CEQA. The following criteria are applicable to residential developments:

- Small projects – projects consistent with a Sustainable Communities Strategy and local general plan that generate or attract fewer than 110 trips per day.
- Projects near major transit stops – certain projects (residential, retail, office, or a mix of these uses) proposed within ½ mile of an existing major transit stop or an existing stop along a high-quality transit corridor.
- Affordable residential development – a project consisting of a high percentage of affordable housing may be a basis to find a less-than-significant impact on VMT.
- Projects in low VMT areas – residential and office projects that incorporate similar features (i.e., density, mix of uses, transit accessibility) as existing development in areas with low VMT will tend to exhibit similarly low VMT.

The proposed Project would generate more than 110 trips per day, would not be near a major transit stop, would not have a high percentage of affordable housing units, and would not be in an area already designated as a low VMT area. Since proposed Project would not meet the screening criteria, Kittelson & Associates prepared a VMT analysis.

VMT Impact Criteria

The travel model developed for the City of Manteca General Plan Update was used to develop baseline (2019) VMT per single family residential household. The established baseline VMT per single family household is 103.8. Therefore, single family residential projects that exceed 88.2 VMT per household (15 percent below base year levels) would be considered to have a significant transportation impact. Projects that generate less than 88.2 VMT per household would be considered to have a less than significant transportation impact.

Project VMT Analysis

Kittelson & Associates added the proposed Project to the travel model and calculated the total daily VMT (see Table TT-1). The project VMT per household would be 41.6 percent lower than the baseline VMT per household, which is a greater reduction than the threshold of 15 percent lower than baseline. Therefore, the proposed Project would not have a significant impact on VMT.

Table TT-1: Project VMT Evaluation

Scenario	*Residential Units*	*Daily VMT*	*VMT per Unit*
2019 Manteca Baseline	21,226	2,203,915	103.8
2040 Project	123	7,450	60.6
Comparison to Baseline			-41.6%

SOURCE: KITTELSON & ASSOCIATES, 2021

Therefore, impacts associated with the potential to conflict with a program plan, ordinance, or policy or conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) would be ***less than significant***.

Responses c), d): **Less than Significant.** The proposed project would include construction of two driveway entrances (one along Half Dome Drive, which would connect to the adjacent Yosemite Greens residential development, and the second along Airport Way). The construction of the project site driveways would provide access. Paved parking areas would also be located within the project site and would be connected to the project site driveway.

No site circulation or access issues have been identified that would cause a traffic safety problem/hazard or any unusual traffic congestion or delay within the proposed project. The volumes on the internal residential roadways (with residences fronting on them) would be relatively low such that no significant conflicts would be expected with through traffic and vehicles backing out of the driveways and/or garages within the project.

Emergency vehicles arriving to and from the proposed project would enter the project site from either of the driveways (i.e. from Half Dome Drive in the north and/or Airport Way in the west). All project site access points would be designed to City standards that accommodate turning requirements for fire trucks. The multiple entry/exit points provide flexibility for emergency vehicles to access or evacuate from multiple directions during an emergency.

The internal circulation network of the project site includes multiple access points, and several bulb-out areas. These bulb-outs would provide turn-around ability for large vehicles (including emergency vehicles such as fire trucks).

The Transportation Impact Analysis prepared by Kittelson & Associates found that there were no site circulation or access issues identified that would cause a traffic safety problem/hazard or any unusual traffic congestion or delay. The project access would be provided at a stop-sign controlled intersection on Airport Way which would not introduce hazardous geometric design features. The new intersection would be designed consistent with accepted design guidelines for safety. Furthermore, the straight alignment of Airport Way would ensure adequate sight distance.

Additionally, the internal project streets are designed to meet geometric design standards and would not create hazardous driving conditions. The proposed Project would have access to all parcels via an intersection on Airport Way and an interior street system. All streets would be designed to accommodate emergency vehicles. As parcels adjacent to the project develop in the future, the project has allowed for future street connections which would provide additional emergency access routes. The internal project streets would provide sidewalks so that pedestrians would be separated from vehicle traffic.

Therefore, impacts associated with design features and emergency access would be ***less than significant***.

XVIII. TRIBAL CULTURAL RESOURCES

	Potentially Significant Impact	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?		X		
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resources to a California Native American tribe.		X		

Responses to Checklist Questions

Responses a), b): A record search was conducted through the Central California Information Center (CCaIC) in August 2021 to identify previously recorded sites and previous cultural resources studies in and near the Project site. The record search indicates that: the Project site does not contain any recorded prehistoric or historic archaeological resources or historic buildings. The Project site has a moderate potential for the discovery of prehistoric, ethnohistoric, or historic archaeological sites that may meet the definition of TCRs. Although no TCRs have been documented in the Project site, the Project site is located in a region where significant cultural resources have been recorded and there remains a potential that undocumented archaeological resources that may meet the TCR definition could be unearthed or otherwise discovered during ground-disturbing and construction activities. Examples of significant archaeological discoveries that may meet the TCR definition would include villages and cemeteries. Due to the possible presence of undocumented TCRs within the Project site, construction-related impacts on tribal cultural resources would be potentially significant. With implementation of the following mitigation measures (as provided under Section V. Cultural Resources), the proposed Project would have a ***less than significant*** impact related to tribal cultural resources.

Mitigation Measures

Implement Mitigation Measures CLT-1 through CLT-4.

XIX. UTILITIES AND SERVICE SYSTEMS

Would the project:	***Potentially Significant Impact***	***Less Than Significant with Mitigation Incorporation***	***Less Than Significant Impact***	***No Impact***
a) Require or result in the relocation or construction of new or expanded water, wastewater or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			X	
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			X	
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the projects projected demand in addition to the providers existing commitments?			X	
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			X	
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			X	

Responses to Checklist Questions

Responses a)-c):

Water

It is anticipated that water supply for the proposed Project would be local groundwater and treated surface water from SSJID's SCWSP. Water distribution will be by an underground distribution system to be installed as per the City of Manteca standards and specifications. The Project applicant for the proposed Project will provide their proportionate share of required funding to the City for the acquisition and delivery of treated potable water supplies to the Project site through connection fees.

The principal component of future surface water supply for the City is deliveries from the SCWSP. The City, along with three other cities/retail water suppliers (Escalon, Lathrop, and Tracy), signed water supply agreements with SSJID to supply treated potable water to the participating cities.

Water supply in Manteca is also provided by groundwater. According to the City's 2015 UWMP, the sustainable yield of the groundwater basin was estimated in the 2019 GSP[3] to be approximately 1 acre-foot per acre per year (715,000 AFY plus or minus 10 percent over the subbasin area of 1,195 square miles, an average of 0.935 AF/acre). In 2005, the City began

[3] "Eastern San Joaquin County Groundwater Subbasin. Groundwater Sustainability Plan." Eastern San Joaquin Groundwater Authority, November 2019.

receiving treated surface water from SCWSP and the City has had limited groundwater pumping since the implementation of the SCWSP. Although groundwater pumping in some years prior to 2005 has exceeded that rate, as part of the SCWSP, the City intends to limit groundwater pumping to that rate or less. Projected groundwater availability is therefore based on an assumption that up to 1 AFY of groundwater is available per acre of City service area.

The total groundwater pumping that occurs within the City boundaries include City-owned municipal wells and City-owned park irrigation wells, in addition to irrigation and domestic wells owned and operated by others.

Adjusted City Water Demand Factors: Unit water use factors for projecting water demand based on the proposed future land uses within the City's General Plan were developed as part of the City of Manteca 2005 Water Master Plan. These unit water use factors assume a per capita water use of approximately 225 gallons per capita per day (GPCD) and do not account for conservation goals, water recycling and other possible conservation-derived sources. In the City's 2015 Urban Water Management Plan (UWMP), water demand projections assume that the City is able to meet its SB X7-7 2020 per capita water use target of 179 GPCD. Therefore, to reflect the City's 2020 conservation goals, the water use factor for MDR was reduced by 20 percent, corresponding to the overall per capita water use reduction from 225 GPCD to 179 GPCD. The unit water use factor for MDR land uses is 3500 gallons per day per acre (gpd/ac). The corresponding adjusted unit water use factor for MDR land uses is 2800 gpd/ac. Backbone right-of-way (ROW) land uses are assumed to not require water. 2800 gpd/ac over 12.8 acres equates to 35,840 gallons per day for the proposed project.

The City's 2023 General Plan designates the Project site as MDR, which allows for residential densities of up to 15 dwelling units per acre. Therefore, the City's 2023 General Plan anticipated up to 198 units and an associated population of 616 persons within the Project site. The proposed Project is well below this total allowed units and would result in less water consumption compared to the maximum allowed units of 198. The analysis included in the City's UWMP assumed that the Project site would be developed with MDR uses. The proposed Project would not increase demand beyond the levels assumed for the Project site in the City's UWMP.

As discussed in the UWMP, the principal component of future water supply for the City is deliveries from the SSJID's South County Water Supply Program (SCWSP). The City, along with four other cities/retail water suppliers (Escalon, Lathrop, Tracy, and Ripon), signed water supply agreements with SSJID to supply treated potable water to the participating cities.

The Nick C. DeGroot Water Treatment Plant (WTP) is commissioned for the SCWSP and is currently operated by SSJID. The WTP has a total Phase 1 capacity of 31,522 AFY and the Phase 2 capacity is anticipated to be 43,090 AFY. Phase 2 has not yet been implemented but is expected by 2040, according to the SSJID 2020 UWMP. Currently, the City is allotted 11,500 AFY under Phase 1 and 18,500 AFY under Phase 2. The term of the City's water supply agreement with SSJID is through December 2029. The City and SSJID signed a new contract to extend this contract through 2049. Historically, the City has not utilized its full allocation of surface water due to system constraints and State and SSJID supply limits in response to the drought conditions.

The proposed Project would not result in insufficient water supplies available to serve the proposed Project from existing entitlements and resources. Therefore, a ***less than significant*** impact would occur related to water supply and water infrastructure.

Wastewater

The City of Manteca owns and operates a wastewater collection, treatment, and disposal system, and provides sanitary sewerage service to the City of Manteca and a portion of the City of Lathrop. On February 18, 2021, the RWQCB adopted Waste Discharge Requirements Order No. R5-2021-0003 NPDES NO. CA0081558, prescribing waste discharge requirements for the City of Manteca WQCF and allowing expansion of the plant up to 17.5 mgd.

The Manteca WQCF is an activated sludge plant with denitrification. The WQCF consists of an influent pump station, aerated grit tanks, primary sedimentation basins, fine-bubble activated sludge aeration basins, secondary clarifiers, secondary effluent equalization pond, tertiary filters, UV disinfection and effluent pumping station. Secondary effluent is land applied during the spring and summer. Tertiary filtered and UV disinfected water is discharged to the San Joaquin River during the winter.

The 2006 Wastewater Master Plan Update projected a capacity requirement of 27 mgd ADWF at buildout for the WQCF at buildout. Expansion of the WQCF to buildout would occur in multiple phases, which would increase the ADWF capacity to 17.5 mgd, then to 27 mgd. The Wastewater Master Plan projected a potential reclaimed water use of 3.28 mgd. The 2005 Urban Water Management Plan projected a reclaimed water usage of 2 mgd by 2030. All of these flows may be adjusted based on historical reductions in water usage as part of a new Wastewater Master Plan which will start in 2021 and finish in 2023.

According to the City's 2012 Wastewater Collection System Master Plan Update, Medium Density Residential uses (8.1 to 15.0 units per gross acre) are estimated to generated 2,183 gallons per acre per day. The Project site includes 12.8 gross developable acres of Medium Density Residential. Using this rate, the proposed Medium Density Residential uses would generate approximately 27,942 gallons per day (gpd) of wastewater. The proposed Project would increase the amount of wastewater requiring treatment. The wastewater would be treated at the WQCF. Occupancy of the proposed Project would be prohibited without sewer allocation.

The City's available capacity would ensure that there would not be a determination by the wastewater treatment and/or collection provider that there is inadequate capacity to serve the proposed project's projected demand in addition to the provider's existing commitments. Additionally, any planned expansion to the WQCF with a subsequent allocation of capacity to the proposed Project would ensure that there would not be a determination by the wastewater treatment and/or collection provider that there is inadequate capacity to serve the proposed Project's projected demand in addition to the provider's existing commitments.

New wastewater collection and conveyance infrastructure needed for the proposed Project will require trenching/excavation of earth, and placement of pipe within the trenches at specific locations, elevations, and gradients. The applicant will refine the wastewater collection/conveyance infrastructure design through the development of improvements plans which undergo review by the Public Works Department to ensure consistency with the City's engineering standards. This improvement plan process will include full engineering design (i.e. location, depth, slope, etc.) of all conveyance infrastructure as well as a review of new sewer pump stations and new force mains if needed. Ultimately, the sanitary sewer collection system will be an underground collection system installed as per the City of Manteca standards and specifications. Sanitary sewer disposal and treatment will be to the City of Manteca WQCF.

As noted above, the City's 2023 General Plan designates the Project site as MDR, which allows for residential densities of up to 15 dwelling units per acre. Therefore, the City's 2023 General Plan anticipated up to 198 units and an associated population of 616 persons within the Project site.

Because the Project applicant would pay City Public Facilities Implementation Plan (PFIP) fees to develop the Project site (paid at the issuance of a building permit for development), and adequate long-term wastewater treatment capacity is available to serve full build-out of the proposed Project, a ***less than significant*** impact would occur related to requiring or resulting in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

Responses d), e): The City of Manteca Solid Waste Division (SWD) provides solid waste hauling service for the City of Manteca and would serve the proposed project. Solid waste from Manteca is primarily landfilled at the Forward Sanitary Landfill, located northeast of Manteca. Other landfills used include Foothill Sanitary and North County.

The residential uses of the proposed Project are estimated to generate roughly 10 pounds per day per household. It is estimated that the proposed 123 residential units would generate 1230 pounds per day (0.62 tons per day) of solid waste.

The City's solid waste per capita generation has decreased since 2007 due to the waste diversion efforts of the City. The permitted maximum disposal at the Forward Landfill is 8,668 tons per day. Currently, the average daily disposal is 620 tons per day. The total permitted capacity of the landfill is 51.04 million cubic yards. The remaining capacity is 23,700,000 cubic yards. Solid waste generated by the proposed Project was estimated based on CalRecycle generation rate estimates by use. The addition of solid waste associated with the proposed project, approximately 0.62 tons per day at total buildout, to the Forward Landfill would not exceed the landfill's remaining capacity.

To increase the lifespan of the landfill, Forward, Inc. has planned to expand its disposal footprint. The City's projected increase in solid waste generation associated with future buildout of the proposed General Plan is within the permitted capacity of the Forward Sanitary Landfill expansion. The vast majority of landfill disposed from the City of Manteca went to Forward Sanitary Landfill.[4] Other landfills that received waste from the City of Manteca include:

- Lovelace Materials Recovery Facility and Transfer Station
- San Joaquin County Hazardous Waste
- Foothill Sanitary Landfill
- North County

Forward Sanitary Landfill originally had a cease operation date in the year 2020. A 17.3-acre expansion was approved in January of 2020 inside the landfill's existing boundaries along Austin Road east of Stockton Metropolitan Airport. The lifespan of the landfill will extend from 2030 to 2036 and an additional 8.2 million cubic yards of waste will be processed on two sites, an 8.7-acre parcel in the northeast corner and an 8.6-acre parcel on the south end of the property. The City will need to secure a new location or expand existing facilities when the Forward Landfill is ultimately closed. There are several options that the City will have to consider for solid waste

[4] Note: data provided by CalRecycle, based on information provided by County disposal reports.

disposal at that time which is estimated to be 2036, including the construction of new facilities or expansion of existing facilities.

At the closure of the Forward Landfill, the City can potentially utilize the Foothill Landfill and the North County Landfill as locations for solid waste disposal. The permitted maximum disposal at the Foothill Landfill is 1,500 tons per day and the North County Landfill is 825 tons per day. The remaining capacity of these landfills include 125 million cubic yards of solid waste at the Foothill Landfill, with an estimated cease operation date of 2054, and 35.4 million cubic yards of solid waste at the North County Landfill, which has an estimated cease operation date of 2035. The addition of solid waste associated with the proposed Project to the Foothill Landfill and North County Landfill would not exceed the combined landfills' remaining capacity of 160.4 cubic yards.

The City of Manteca General Plan EIR states that there may be a potentially significant impact for the General Plan 2023 to create demand for solid waste services beyond the capacity of current landfill facilities. However, this is mitigated through the following goals and policies:

Goal PF-11	Provide for the implementation and enforcement of the provisions for the Source Reduction and Recycling Element, as mandated by the State.
Goal PF-12	Maintain efficient, effective and economical solid waste services for the residents, businesses and visitors to Manteca.
PF-P-30	The City shall support the continued use of the Lovelace Transfer Station on Lovelace Road, between Union Road and Airport Way, for the processing and shipping of solid waste materials.

Additionally, the City of Manteca General Plan EIR states that there may be a potentially significant impact for the General Plan 2023 relating to compliance with statutes and regulations related to solid waste. However, this is mitigated through the following goals and policies:

Goal PF-11	Provide for the implementation and enforcement of the provisions for the Source Reduction and Recycling Element, as mandated by the State.
PF-P-29	The City will implement and enforce the provisions of its Source Reduction and Recycling Element.

Development of the Project site has been planned for under the City General Plan, and the General Plan EIR mitigates potential impacts to solid waste to an insignificant impact related to solid waste. Once the Forward Landfill closes, the City can utilize the Foothill Landfill as a location for solid waste disposal. Alternatively, the City may look for other facilities for disposal of solid waste for all waste generated in the City. Because the proposed Project would increase the local waste stream, the proposed Project would subject to the City's waste connection fee

Development of the Project site for MDR uses, which allows for up to 15 units per acre of residential, was assumed in the City's General Plan EIR. The proposed Project would not interfere with regulations related to solid waste, or generate waste in excess of the capacity of local infrastructure. Therefore, implementation of the proposed Project would have a ***less than significant*** impact relative to this topic.

XX. WILDFIRE

Would the project:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?			X	
d) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?			X	
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?			X	
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?			X	

Existing Setting

There are no State Responsibility Areas (SRAs) within the vicinity of the Manteca Planning Area. The City of Manteca is not categorized as a "Very High" Fire Hazard Severity Zone (FHSZ) by CalFire. No cities or communities within San Joaquin County are categorized as a "Very High" FHSZ by CalFire. Although this CEQA topic only applies to areas within a SRA or Very High FHSZ, out of an abundance of caution, these checklist questions are analyzed below.

Responses to Checklist Questions

Response a): The Project site will connect to an existing network of City streets. The proposed circulation improvements would allow for greater emergency access relative to existing conditions. The proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, impacts from project implementation would be considered ***less than significant*** relative to this topic.

Response b): The risk of wildfire is related to a variety of parameters, including fuel loading (vegetation), fire weather (winds, temperatures, humidity levels and fuel moisture contents) and topography (degree of slope). Steep slopes contribute to fire hazard by intensifying the effects of wind and making fire suppression difficult. Fuels such as grass are highly flammable because they have a high surface area to mass ratio and require less heat to reach the ignition point. The County has areas with an abundance of flashy fuels (i.e. grassland) in the foothill areas of the eastern and western portion of the County. The Project site is located in an area that is predominately agricultural and urban, which is not considered at a significant risk of wildlife. Therefore, impacts from project implementation would be considered ***less than significant*** relative to this topic.

Response c): The proposed Project includes development of infrastructure (water, sewer, and storm drainage). The proposed infrastructure improvements would allow for decreased fire risk relative to existing conditions. The proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, impacts from project implementation would be considered ***less than significant*** relative to this topic.

Response d): The Project site will be connecting to an existing network of City streets. The proposed circulation improvements would allow for greater emergency access relative to existing conditions. The proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Landslides include rockfalls, deep slope failure, and shallow slope failure. Factors such as the geological conditions, drainage, slope, vegetation, and others directly affect the potential for landslides. One of the most common causes of landslides is construction activity that is associated with road building (i.e. cut and fill). The Project site is relatively flat; therefore, the potential for a landslide in the Project site is essentially non-existent.

Therefore, impacts from proposed Project implementation would be considered ***less than significant*** relative to this topic.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	***Less Than Significant with Mitigation Incorporation***	***Less Than Significant Impact***	***No Impact***
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?			X	
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?			X	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

Responses to Checklist Questions

Response a): This Initial Study includes an analysis of the impacts associated with aesthetics, agricultural and forest resources, air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation and traffic, and utilities and service systems. The analysis covers a broad spectrum of topics relative to the potential for the proposed Project to have environmental impacts. This includes the potential for the proposed Project to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. It was found that the proposed Project would have either no impact, a less than significant impact, or a less than significant impact with the implementation of mitigation measures. For the reasons presented throughout this Initial Study, the proposed Project would not substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. With the implementation of mitigation measures presented in this Initial Study, the proposed Project would have a ***less than significant*** impact relative to this topic.

Response b): This Initial Study includes an analysis of the impacts associated with aesthetics, agricultural and forest resources, air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation/traffic, and utilities and service systems. The analysis covers a broad spectrum of topics relative to the potential for the proposed Project to have environmental impacts. It was found that the proposed Project would have either no impact, a less than significant impact, or a less than significant impact with the implementation of mitigation measures. These mitigation measures would also function to reduce the proposed Project's contribution to cumulative impacts.

The proposed Project would increase the population and use of public services and systems; however, it was found that there is adequate capacity to accommodate the proposed Project.

There are no significant cumulative or cumulatively considerable effects that are identified associated with the proposed Project after the implementation of all mitigation measures presented in this Initial Study. With the implementation of all mitigation measures presented in this Initial Study, the proposed Project would have a ***less than significant*** impact relative to this topic.

Responses c): The construction phase could affect surrounding neighbors through increased air emissions, noise, and traffic; however, the construction effects are temporary and are not substantial. The operational phase could also affect surrounding neighbors through increased air emissions, noise, and traffic; however, mitigation measures have been incorporated into the proposed Project that would reduce the impacts to a less than significant level. The proposed Project would not cause substantial adverse effects on human beings. Implementation of the proposed Project would have a ***less than significant*** impact relative to this topic.

REFERENCES

Army Corps of Engineers. 1987. Army Corps of Engineers Wetland Delineation Manual.

Barbour and Major 1988. Terrestrial Vegetation of California.

Bay Area Air Quality Management. 2017. Bay Area Air Quality Management District CEQA Guidelines. May 2017. Available: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en&rev=4cfd0d5df7094cd4bc4099b087797799

C Donald Ahrens. 2006. Meteorology Today: An Introduction to Weather, Climate, & the Environment.

California Air Resources Board. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. October 2000. Available at: <https://www.arb.ca.gov/diesel/documents/rrpFinal.pdf>.

California Air Resources Board. 2016. ARB Databases: Aerometric Data Analysis and Management System (ADAM). Available at: <http://www.arb.ca.gov/html/databases.htm>.

California Air Resources Board. 2021. EMFAC 2021 Emissions Inventory. Available: https://arb.ca.gov/emfac/emissions-inventory/c5a21aa85c0d98bad4d0f52e9a8ab3dbc1155c88

California Department of Conservation, Division of Land Resource Protection Conservation Program Support. 2016. San Joaquin County Williamson Act FY 2015/2016. The Williamson Act. Available at: https://www.conservation.ca.gov/dlrp/wa/Pages/stats_reports.aspx

California Department of Conservation, Division of Land Resources Protection. 2018. Farmland Mapping and Monitoring Program. San Joaquin County Important Farmland 2016. Available: https://www.conservation.ca.gov/dlrp/fmmp/Pages/SanJoaquin.aspx

California Department of Conversation. 2012. Author: Smith, J.D. and Clinkenbeard J.P. Special Report 199. Update of Mineral Land Classification for Portland Cement Concrete-Grade Aggregate in the Stockton-Lodi Production-Consumption Region, San Joaquin and Stanislaus Counties, California. Available: https://maps.conservation.ca.gov/cgs/informationwarehouse/mlc/

California Department of Forestry and Fire Protection (CAL FIRE). 2007. Fire Hazard Severity Zones in State Responsibility Area (SRA). Adopted by CAL FIRE on October 2, 2007. Available at: http://frap.fire.ca.gov/webdata/maps/san_joaquin/fhszs_map.39.pdf

California Department of Forestry and Fire Protection (CAL FIRE). 2007. Draft Fire Hazard Severity Zones in LRA. Adopted by CAL FIRE on November 7, 2007. Available: http://frap.fire.ca.gov/webdata/maps/san_joaquin/fhszl06_1_map.39.pdf

California Department of Toxic Substances Control (DTSC). 2017. EnviroStor database. Accessed on October 15, 2021. Available at: https://www.envirostor.dtsc.ca.gov/public/

California Energy Commission. 2005. Global Climate Change: In Support of the 2005 Integrated Energy Policy Report. (CEC-600-2005-007.) Available at:

http://www.energy.ca.gov/2005publications/CEC-100-2005-007/CEC-100-2005-007-CMF.PDF.

California Energy Commission. 2006. Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004. (CEC-600-2006-013-SF.) Available at: http://www.energy.ca.gov/2006publications/CEC-600-2006-013/CEC-600-2006-013-SF.PDF.

California Energy Commission. 2016. California Greenhouse Gas Emission Inventory – 2016 Edition. Available at: https://www.arb.ca.gov/cc/inventory/data/data.htm

California Natural Diversity Database (CNDDB). 2021. Version 10/2021. Accessed on February 20, 2019.

City of Manteca. Adopted December 17, 1991. City of Manteca Comprehensive General Plan.

City of Manteca, 2003. Manteca General Plan 2023 Draft Environmental Impact Report. Certified October 6, 2003.

City of Manteca, 2004. Central Manteca Specific Plan.

City of Manteca, 2004. Central Manteca Specific Plan Draft EIR.

City of Manteca. 2011. City of Manteca General Plan 2023. Policy Document. Adopted October 6, 2003. Housing Element Amended June 15, 2010. Circulation Element Amended April 5, 2011. Available: https://www.ci.manteca.ca.us/CommunityDevelopment/Documents/City%20of%20Manteca%20General%20Plan.pdf

City of Manteca. 2013. City of Manteca Climate Action Plan. Adopted October 15, 2013. http://www.ci.manteca.ca.us/communitydevelopment/Documents/Final%20Climate%20Action%20Plan.pdf .

City of Manteca, 2013. 2012 Wastewater Collection System Master Plan Update. January 2013. Available: https://www.ci.manteca.ca.us/pwt/Documents/Wastewater%20Collection%20System%20Master%20Plan%20-%20Complete.pdf

City of Manteca. 2018. Municipal Service Review and Sphere Of Influence Plan.

City of Manteca. 2021. Manteca Municipal Code. Current through Ordinance O2021-12 and the September 2021 code supplement.

Hickman, James C. 1993. Jepson Manual: Higher Plants of California.

Intergovernmental Panel on Climate Change. 2013. "Climate Change 2013: The Physical Science Basis, Summary for Policymakers." Available at: http://www.climatechange2013.org/images/report/WG1AR5_SPM_FINAL.pdf

Kittleson & Associates. 320 Airport Way Transportation Impact Analysis. November 19, 2021.

Manteca Unified School District. 2016. Re: Environmental Impact of Oakwood Landing – Cerri & Denali Subdivisions and recommended conditions of approval. September 12, 2016.

Sawyer, John and Todd Keeler-Wolf. 1995. A Manual of California Vegetation.

Saxelby, Luke. 2021. Environmental Noise Assessment – 320 Airport Way. October 2021.

Skinner, Mark W. and Bruce M. Pavlik, Eds. 2001. California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California.

San Joaquin Air Pollution Control District (SJVAPCD). 2017. Small Project Analysis Level (SPAL). March 1, 2017. Available: http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI-SPAL.PDF

West Yost Associates, 2018. Technical Memorandum: Infrastructure Analysis for the City of Manteca General Plan Update. June 29, 2018.

U.S. Environmental Protection Agency. 2014. Climate Change Indicators in the United States: Global Greenhouse Gas Emissions. Updated May 2014. Available at: www.epa.gov/climatechange/indicators

This page left intentionally blank.

APPENDIX A: AIR QUALITY/GREENHOUSE GAS/ENERGY MODELING OUTPUTS

This page left intentionally blank.

APPENDIX B: CULTURAL RESOURCES REPORT

This page left intentionally blank.

APPENDIX C: NOISE REPORT

This page left intentionally blank.

APPENDIX D: TRANSPORTATION IMPACT ANALYSIS REPORT

This page left intentionally blank.

APPENDIX A: AIR QUALITY/GREENHOUSE GAS/ENERGY MODELING OUTPUTS

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Kiper Homes - 320 Airport Way

San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	116.00	Dwelling Unit	12.00	116,000.00	368
Single Family Housing	7.00	Dwelling Unit	0.80	12,600.00	22

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	51
Climate Zone	2			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 116 Condo/Townhouse land use subtype and 7 single family housing selected as best proxy for project land uses, based on Tentative Map provided by project applicant. Total developable acres =12.8 acres

Construction Phase -

Demolition - One small residences and two small farm buildings to be demolished (approximately 6000 sf total).

Grading - Site is relatively flat.

Architectural Coating -

Vehicle Trips -

Woodstoves - Assumes no hearths.

Area Coating - Assumes maximum of 100 g/L for interior coatings (per non-specialty coating limitations providded in SJVAPCD Rule 4601)

Energy Use -

Land Use Change - Assumes removal of 12.8 acres of grassland.

Construction Off-road Equipment Mitigation - Water Exposed Area 2x daily; Clean Paved Road (9% fugitive dust PM reduction); Unpaved road mitigation: Limit on-site construction vehicle speeds to 5 mph; Soil Stabilizer for unpaved (10% reduction)

Fleet Mix - Fleet mix adjusted to reflect vehicle fleet mix from Traffic Impact Analysis.

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Interior	150	100
tblAreaCoating	Area_EF_Residential_Interior	150	100
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	150
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	100	150
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	5
tblFireplaces	FireplaceDayYear	82.00	0.00
tblFireplaces	FireplaceDayYear	82.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	3,078.40	0.00
tblFireplaces	FireplaceWoodMass	3,078.40	0.00
tblFireplaces	NumberNoFireplace	3.15	7.00
tblFireplaces	NumberNoFireplace	52.20	116.00
tblLandUse	LotAcreage	7.25	12.00
tblLandUse	LotAcreage	2.27	0.80
tblWoodstoves	NumberCatalytic	0.80	0.00
tblWoodstoves	NumberCatalytic	12.00	0.00
tblWoodstoves	NumberNoncatalytic	0.80	0.00
tblWoodstoves	NumberNoncatalytic	12.00	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00

tblWoodstoves	WoodstoveWoodMass	3,019.20	0.00
tblWoodstoves	WoodstoveWoodMass	3,019.20	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					
2022	0.2989	2.6607	2.6239	5.1300e-003	0.3210	0.1271	0.4481	0.1277	0.1188	0.2465	0.0000	450.1759	450.1759	0.0991	5.8600e-003	454.3986
2023	1.3120	0.8718	1.0897	2.0500e-003	0.0411	0.0412	0.0823	0.0110	0.0387	0.0497	0.0000	179.9230	179.9230	0.0351	2.7200e-003	181.6132
Maximum	**1.3120**	**2.6607**	**2.6239**	**5.1300e-003**	**0.3210**	**0.1271**	**0.4481**	**0.1277**	**0.1188**	**0.2465**	**0.0000**	**450.1759**	**450.1759**	**0.0991**	**5.8600e-003**	**454.3986**

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					
2022	0.2989	2.6607	2.6239	5.1300e-003	0.1831	0.1271	0.3102	0.0680	0.1188	0.1867	0.0000	450.1754	450.1754	0.0991	5.8600e-003	454.3981
2023	1.3120	0.8718	1.0897	2.0500e-003	0.0380	0.0412	0.0791	0.0103	0.0387	0.0489	0.0000	179.9228	179.9228	0.0351	2.7200e-003	181.6130
Maximum	**1.3120**	**2.6607**	**2.6239**	**5.1300e-003**	**0.1831**	**0.1271**	**0.3102**	**0.0680**	**0.1188**	**0.1867**	**0.0000**	**450.1754**	**450.1754**	**0.0991**	**5.8600e-003**	**454.3981**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	38.94	0.00	26.59	43.60	0.00	20.42	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	1-1-2022	3-31-2022	1.1469	1.1469
2	4-1-2022	6-30-2022	0.6017	0.6017
3	7-1-2022	9-30-2022	0.6083	0.6083
4	10-1-2022	12-31-2022	0.6103	0.6103
5	1-1-2023	3-31-2023	0.5466	0.5466
6	4-1-2023	6-30-2023	1.0211	1.0211
7	7-1-2023	9-30-2023	0.6114	0.6114
		Highest	1.1469	1.1469

2.2 Overall Operational

Unmitigated Operational

	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					
Area	0.6203	0.0105	0.9135	5.0000e-005		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	1.4918	1.4918	1.4300e-003	0.0000	1.5277
Energy	0.0127	0.1085	0.0462	6.9000e-004		8.7700e-003	8.7700e-003		8.7700e-003	8.7700e-003	0.0000	183.1162	183.1162	0.0117	3.4300e-003	184.4311
Mobile	0.4560	0.7315	4.3700	0.0101	0.9841	8.2900e-003	0.9924	0.2632	7.7700e-003	0.2709	0.0000	929.2156	929.2156	0.0518	0.0491	945.1524
Waste						0.0000	0.0000		0.0000	0.0000	12.4393	0.0000	12.4393	0.7351	0.0000	30.8178
Water						0.0000	0.0000		0.0000	0.0000	2.5425	5.6482	8.1907	0.2621	6.2800e-003	16.6124
Total	**1.0890**	**0.8505**	**5.3296**	**0.0108**	**0.9841**	**0.0221**	**1.0062**	**0.2632**	**0.0216**	**0.2848**	**14.9818**	**1,119.4719**	**1,134.4536**	**1.0621**	**0.0589**	**1,178.5414**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	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					
Area	0.6203	0.0105	0.9135	5.0000e-005		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	1.4918	1.4918	1.4300e-003	0.0000	1.5277
Energy	0.0127	0.1085	0.0462	6.9000e-004		8.7700e-003	8.7700e-003		8.7700e-003	8.7700e-003	0.0000	183.1162	183.1162	0.0117	3.4300e-003	184.4311
Mobile	0.4560	0.7315	4.3700	0.0101	0.9841	8.2900e-003	0.9924	0.2632	7.7700e-003	0.2709	0.0000	929.2156	929.2156	0.0518	0.0491	945.1524
Waste						0.0000	0.0000		0.0000	0.0000	12.4393	0.0000	12.4393	0.7351	0.0000	30.8178
Water						0.0000	0.0000		0.0000	0.0000	2.5425	5.6482	8.1907	0.2621	6.2800e-003	16.6124
Total	**1.0890**	**0.8505**	**5.3296**	**0.0108**	**0.9841**	**0.0221**	**1.0062**	**0.2632**	**0.0216**	**0.2848**	**14.9818**	**1,119.4719**	**1,134.4536**	**1.0621**	**0.0589**	**1,178.5414**

	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

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	-55.1680
Total	**-55.1680**

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	1/1/2022	1/28/2022	5	20	
2	Site Preparation	Site Preparation	1/29/2022	2/11/2022	5	10	
3	Grading	Grading	2/12/2022	3/25/2022	5	30	
4	Building Construction	Building Construction	3/26/2022	5/19/2023	5	300	
5	Paving	Paving	5/20/2023	6/16/2023	5	20	
6	Architectural Coating	Architectural Coating	6/17/2023	7/14/2023	5	20	

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 90

Acres of Paving: 0

Residential Indoor: 260,415; Residential Outdoor: 86,805; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

OffRoad Equipment

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
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
Architectural Coating	Air Compressors	1	6.00	78	0.48

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	27.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building Construction	9	86.00	13.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	17.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 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					
Fugitive Dust					3.0000e-003	0.0000	3.0000e-003	4.5000e-004	0.0000	4.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**	**3.0000e-003**	**0.0124**	**0.0154**	**4.5000e-004**	**0.0116**	**0.0120**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

3.2 Demolition - 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	5.0000e-005	2.0700e-003	3.9000e-004	1.0000e-005	2.3000e-004	2.0000e-005	2.5000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	0.7985	0.7985	1.0000e-005	1.3000e-004	0.8361
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	4.7000e-004	3.3000e-004	3.7300e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	0.9702	0.9702	3.0000e-005	3.0000e-005	0.9797
Total	**5.2000e-004**	**2.4000e-003**	**4.1200e-003**	**2.0000e-005**	**1.4200e-003**	**3.0000e-005**	**1.4500e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**1.7687**	**1.7687**	**4.0000e-005**	**1.6000e-004**	**1.8158**

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					1.3500e-003	0.0000	1.3500e-003	2.0000e-004	0.0000	2.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**	**1.3500e-003**	**0.0124**	**0.0138**	**2.0000e-004**	**0.0116**	**0.0118**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 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	5.0000e-005	2.0700e-003	3.9000e-004	1.0000e-005	2.1000e-004	2.0000e-005	2.4000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	0.7985	0.7985	1.0000e-005	1.3000e-004	0.8361
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	4.7000e-004	3.3000e-004	3.7300e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9702	0.9702	3.0000e-005	3.0000e-005	0.9797
Total	**5.2000e-004**	**2.4000e-003**	**4.1200e-003**	**2.0000e-005**	**1.3100e-003**	**3.0000e-005**	**1.3500e-003**	**3.5000e-004**	**3.0000e-005**	**3.8000e-004**	**0.0000**	**1.7687**	**1.7687**	**4.0000e-005**	**1.6000e-004**	**1.8158**

3.3 Site Preparation - 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					
Fugitive Dust					0.0983	0.0000	0.0983	0.0505	0.0000	0.0505	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0983**	**8.0600e-003**	**0.1064**	**0.0505**	**7.4200e-003**	**0.0579**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

3.3 Site Preparation - 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	0.0000	0.0000	0.0000	0.0000	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	2.8000e-004	2.0000e-004	2.2400e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5821	0.5821	2.0000e-005	2.0000e-005	0.5878
Total	**2.8000e-004**	**2.0000e-004**	**2.2400e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5821**	**0.5821**	**2.0000e-005**	**2.0000e-005**	**0.5878**

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					0.0442	0.0000	0.0442	0.0227	0.0000	0.0227	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0442**	**8.0600e-003**	**0.0523**	**0.0227**	**7.4200e-003**	**0.0302**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

3.3 Site Preparation - 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	0.0000	0.0000	0.0000	0.0000	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	2.8000e-004	2.0000e-004	2.2400e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.8000e-004	0.0000	1.8000e-004	0.0000	0.5821	0.5821	2.0000e-005	2.0000e-005	0.5878
Total	**2.8000e-004**	**2.0000e-004**	**2.2400e-003**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**6.6000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**0.5821**	**0.5821**	**2.0000e-005**	**2.0000e-005**	**0.5878**

3.4 Grading - 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					
Fugitive Dust					0.1381	0.0000	0.1381	0.0548	0.0000	0.0548	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0544	0.5827	0.4356	9.3000e-004		0.0245	0.0245		0.0226	0.0226	0.0000	81.8019	81.8019	0.0265	0.0000	82.4633
Total	**0.0544**	**0.5827**	**0.4356**	**9.3000e-004**	**0.1381**	**0.0245**	**0.1626**	**0.0548**	**0.0226**	**0.0774**	**0.0000**	**81.8019**	**81.8019**	**0.0265**	**0.0000**	**82.4633**

3.4 Grading - 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	0.0000	0.0000	0.0000	0.0000	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	9.5000e-004	6.6000e-004	7.4600e-003	2.0000e-005	2.3900e-003	1.0000e-005	2.4000e-003	6.4000e-004	1.0000e-005	6.5000e-004	0.0000	1.9403	1.9403	6.0000e-005	6.0000e-005	1.9594
Total	**9.5000e-004**	**6.6000e-004**	**7.4600e-003**	**2.0000e-005**	**2.3900e-003**	**1.0000e-005**	**2.4000e-003**	**6.4000e-004**	**1.0000e-005**	**6.5000e-004**	**0.0000**	**1.9403**	**1.9403**	**6.0000e-005**	**6.0000e-005**	**1.9594**

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					0.0621	0.0000	0.0621	0.0247	0.0000	0.0247	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0544	0.5827	0.4356	9.3000e-004		0.0245	0.0245		0.0226	0.0226	0.0000	81.8018	81.8018	0.0265	0.0000	82.4632
Total	**0.0544**	**0.5827**	**0.4356**	**9.3000e-004**	**0.0621**	**0.0245**	**0.0866**	**0.0247**	**0.0226**	**0.0472**	**0.0000**	**81.8018**	**81.8018**	**0.0265**	**0.0000**	**82.4632**

3.4 Grading - 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	0.0000	0.0000	0.0000	0.0000	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	9.5000e-004	6.6000e-004	7.4600e-003	2.0000e-005	2.2000e-003	1.0000e-005	2.2200e-003	5.9000e-004	1.0000e-005	6.0000e-004	0.0000	1.9403	1.9403	6.0000e-005	6.0000e-005	1.9594
Total	**9.5000e-004**	**6.6000e-004**	**7.4600e-003**	**2.0000e-005**	**2.2000e-003**	**1.0000e-005**	**2.2200e-003**	**5.9000e-004**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**1.9403**	**1.9403**	**6.0000e-005**	**6.0000e-005**	**1.9594**

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	0.1706	1.5616	1.6363	2.6900e-003		0.0809	0.0809		0.0761	0.0761	0.0000	231.7252	231.7252	0.0555	0.0000	233.1131
Total	**0.1706**	**1.5616**	**1.6363**	**2.6900e-003**		**0.0809**	**0.0809**		**0.0761**	**0.0761**	**0.0000**	**231.7252**	**231.7252**	**0.0555**	**0.0000**	**233.1131**

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	2.7400e-003	0.0717	0.0198	2.7000e-004	8.5900e-003	7.9000e-004	9.3800e-003	2.4800e-003	7.5000e-004	3.2400e-003	0.0000	26.0251	26.0251	1.9000e-004	3.9400e-003	27.2051
Worker	0.0272	0.0190	0.2139	6.1000e-004	0.0685	3.6000e-004	0.0689	0.0182	3.3000e-004	0.0185	0.0000	55.6226	55.6226	1.8300e-003	1.6800e-003	56.1702
Total	**0.0299**	**0.0906**	**0.2337**	**8.8000e-004**	**0.0771**	**1.1500e-003**	**0.0782**	**0.0207**	**1.0800e-003**	**0.0218**	**0.0000**	**81.6477**	**81.6477**	**2.0200e-003**	**5.6200e-003**	**83.3753**

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	0.1706	1.5616	1.6363	2.6900e-003		0.0809	0.0809		0.0761	0.0761	0.0000	231.7250	231.7250	0.0555	0.0000	233.1128
Total	**0.1706**	**1.5616**	**1.6363**	**2.6900e-003**		**0.0809**	**0.0809**		**0.0761**	**0.0761**	**0.0000**	**231.7250**	**231.7250**	**0.0555**	**0.0000**	**233.1128**

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	2.7400e-003	0.0717	0.0198	2.7000e-004	8.0500e-003	7.9000e-004	8.8300e-003	2.3500e-003	7.5000e-004	3.1000e-003	0.0000	26.0251	26.0251	1.9000e-004	3.9400e-003	27.2051
Worker	0.0272	0.0190	0.2139	6.1000e-004	0.0632	3.6000e-004	0.0635	0.0169	3.3000e-004	0.0172	0.0000	55.6226	55.6226	1.8300e-003	1.6800e-003	56.1702
Total	**0.0299**	**0.0906**	**0.2337**	**8.8000e-004**	**0.0712**	**1.1500e-003**	**0.0724**	**0.0193**	**1.0800e-003**	**0.0203**	**0.0000**	**81.6477**	**81.6477**	**2.0200e-003**	**5.6200e-003**	**83.3753**

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	0.0786	0.7192	0.8122	1.3500e-003		0.0350	0.0350		0.0329	0.0329	0.0000	115.9024	115.9024	0.0276	0.0000	116.5917
Total	**0.0786**	**0.7192**	**0.8122**	**1.3500e-003**		**0.0350**	**0.0350**		**0.0329**	**0.0329**	**0.0000**	**115.9024**	**115.9024**	**0.0276**	**0.0000**	**116.5917**

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	6.9000e-004	0.0288	8.4600e-003	1.3000e-004	4.3000e-003	1.8000e-004	4.4800e-003	1.2400e-003	1.8000e-004	1.4200e-003	0.0000	12.5235	12.5235	6.0000e-005	1.8900e-003	13.0893
Worker	0.0125	8.2600e-003	0.0978	2.9000e-004	0.0343	1.7000e-004	0.0344	9.1100e-003	1.6000e-004	9.2600e-003	0.0000	26.9141	26.9141	8.2000e-004	7.7000e-004	27.1648
Total	**0.0132**	**0.0370**	**0.1063**	**4.2000e-004**	**0.0386**	**3.5000e-004**	**0.0389**	**0.0104**	**3.4000e-004**	**0.0107**	**0.0000**	**39.4376**	**39.4376**	**8.8000e-004**	**2.6600e-003**	**40.2541**

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	0.0786	0.7192	0.8122	1.3500e-003		0.0350	0.0350		0.0329	0.0329	0.0000	115.9022	115.9022	0.0276	0.0000	116.5915
Total	**0.0786**	**0.7192**	**0.8122**	**1.3500e-003**		**0.0350**	**0.0350**		**0.0329**	**0.0329**	**0.0000**	**115.9022**	**115.9022**	**0.0276**	**0.0000**	**116.5915**

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	6.9000e-004	0.0288	8.4600e-003	1.3000e-004	4.0200e-003	1.8000e-004	4.2100e-003	1.1700e-003	1.8000e-004	1.3500e-003	0.0000	12.5235	12.5235	6.0000e-005	1.8900e-003	13.0893
Worker	0.0125	8.2600e-003	0.0978	2.9000e-004	0.0316	1.7000e-004	0.0318	8.4500e-003	1.6000e-004	8.6100e-003	0.0000	26.9141	26.9141	8.2000e-004	7.7000e-004	27.1648
Total	**0.0132**	**0.0370**	**0.1063**	**4.2000e-004**	**0.0356**	**3.5000e-004**	**0.0360**	**9.6200e-003**	**3.4000e-004**	**9.9600e-003**	**0.0000**	**39.4376**	**39.4376**	**8.8000e-004**	**2.6600e-003**	**40.2541**

3.6 Paving - 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	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0269	20.0269	6.4800e-003	0.0000	20.1888
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0103**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0269**	**20.0269**	**6.4800e-003**	**0.0000**	**20.1888**

3.6 Paving - 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	4.4000e-004	2.9000e-004	3.4100e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	0.9389	0.9389	3.0000e-005	3.0000e-005	0.9476
Total	**4.4000e-004**	**2.9000e-004**	**3.4100e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**0.9389**	**0.9389**	**3.0000e-005**	**3.0000e-005**	**0.9476**

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	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0268	20.0268	6.4800e-003	0.0000	20.1888
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0103**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0268**	**20.0268**	**6.4800e-003**	**0.0000**	**20.1888**

3.6 Paving - 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	4.4000e-004	2.9000e-004	3.4100e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9389	0.9389	3.0000e-005	3.0000e-005	0.9476
Total	**4.4000e-004**	**2.9000e-004**	**3.4100e-003**	**1.0000e-005**	**1.1000e-003**	**1.0000e-005**	**1.1100e-003**	**2.9000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9389**	**0.9389**	**3.0000e-005**	**3.0000e-005**	**0.9476**

3.7 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	1.2070					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**1.2089**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

3.7 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	4.9000e-004	3.3000e-004	3.8700e-003	1.0000e-005	1.3500e-003	1.0000e-005	1.3600e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.0640	1.0640	3.0000e-005	3.0000e-005	1.0740
Total	**4.9000e-004**	**3.3000e-004**	**3.8700e-003**	**1.0000e-005**	**1.3500e-003**	**1.0000e-005**	**1.3600e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.0640**	**1.0640**	**3.0000e-005**	**3.0000e-005**	**1.0740**

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	1.2070					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**1.2089**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

3.7 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	4.9000e-004	3.3000e-004	3.8700e-003	1.0000e-005	1.2500e-003	1.0000e-005	1.2600e-003	3.3000e-004	1.0000e-005	3.4000e-004	0.0000	1.0640	1.0640	3.0000e-005	3.0000e-005	1.0740
Total	**4.9000e-004**	**3.3000e-004**	**3.8700e-003**	**1.0000e-005**	**1.2500e-003**	**1.0000e-005**	**1.2600e-003**	**3.3000e-004**	**1.0000e-005**	**3.4000e-004**	**0.0000**	**1.0640**	**1.0640**	**3.0000e-005**	**3.0000e-005**	**1.0740**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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					
Mitigated	0.4560	0.7315	4.3700	0.0101	0.9841	8.2900e-003	0.9924	0.2632	7.7700e-003	0.2709	0.0000	929.2156	929.2156	0.0518	0.0491	945.1524
Unmitigated	0.4560	0.7315	4.3700	0.0101	0.9841	8.2900e-003	0.9924	0.2632	7.7700e-003	0.2709	0.0000	929.2156	929.2156	0.0518	0.0491	945.1524

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse	849.12	944.24	728.48	2,450,030	2,450,030
Single Family Housing	66.08	66.78	59.85	189,198	189,198
Total	915.20	1,011.02	788.33	2,639,228	2,639,228

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse	10.80	7.30	7.50	45.60	19.00	35.40	86	11	3
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Condo/Townhouse	0.531667	0.052263	0.168651	0.155495	0.027235	0.006385	0.012362	0.016685	0.000479	0.000329	0.023608	0.001135	0.003707
Single Family Housing	0.531667	0.052263	0.168651	0.155495	0.027235	0.006385	0.012362	0.016685	0.000479	0.000329	0.023608	0.001135	0.003707

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	57.4570	57.4570	9.3000e-003	1.1300e-003	58.0251
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	57.4570	57.4570	9.3000e-003	1.1300e-003	58.0251
NaturalGas Mitigated	0.0127	0.1085	0.0462	6.9000e-004		8.7700e-003	8.7700e-003		8.7700e-003	8.7700e-003	0.0000	125.6592	125.6592	2.4100e-003	2.3000e-003	126.4060
NaturalGas Unmitigated	0.0127	0.1085	0.0462	6.9000e-004		8.7700e-003	8.7700e-003		8.7700e-003	8.7700e-003	0.0000	125.6592	125.6592	2.4100e-003	2.3000e-003	126.4060

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
Condo/Townhouse	2.18915e+006	0.0118	0.1009	0.0429	6.4000e-004		8.1600e-003	8.1600e-003		8.1600e-003	8.1600e-003	0.0000	116.8216	116.8216	2.2400e-003	2.1400e-003	117.5158
Single Family Housing	165612	8.9000e-004	7.6300e-003	3.2500e-003	5.0000e-005		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	8.8377	8.8377	1.7000e-004	1.6000e-004	8.8902
Total		**0.0127**	**0.1085**	**0.0462**	**6.9000e-004**		**8.7800e-003**	**8.7800e-003**		**8.7800e-003**	**8.7800e-003**	**0.0000**	**125.6592**	**125.6592**	**2.4100e-003**	**2.3000e-003**	**126.4060**

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
Condo/Townhouse	2.18915e+006	0.0118	0.1009	0.0429	6.4000e-004		8.1600e-003	8.1600e-003		8.1600e-003	8.1600e-003	0.0000	116.8216	116.8216	2.2400e-003	2.1400e-003	117.5158
Single Family Housing	165612	8.9000e-004	7.6300e-003	3.2500e-003	5.0000e-005		6.2000e-004	6.2000e-004		6.2000e-004	6.2000e-004	0.0000	8.8377	8.8377	1.7000e-004	1.6000e-004	8.8902
Total		**0.0127**	**0.1085**	**0.0462**	**6.9000e-004**		**8.7800e-003**	**8.7800e-003**		**8.7800e-003**	**8.7800e-003**	**0.0000**	**125.6592**	**125.6592**	**2.4100e-003**	**2.3000e-003**	**126.4060**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Condo/Townhouse	565645	52.3356	8.4700e-003	1.0300e-003	52.8531
Single Family Housing	55351.7	5.1214	8.3000e-004	1.0000e-004	5.1720
Total		**57.4570**	**9.3000e-003**	**1.1300e-003**	**58.0251**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Condo/Townhouse	565645	52.3356	8.4700e-003	1.0300e-003	52.8531
Single Family Housing	55351.7	5.1214	8.3000e-004	1.0000e-004	5.1720
Total		**57.4570**	**9.3000e-003**	**1.1300e-003**	**58.0251**

6.0 Area Detail

6.1 Mitigation Measures Area

	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					
Mitigated	0.6203	0.0105	0.9135	5.0000e-005		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	1.4918	1.4918	1.4300e-003	0.0000	1.5277
Unmitigated	0.6203	0.0105	0.9135	5.0000e-005		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	1.4918	1.4918	1.4300e-003	0.0000	1.5277

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0905					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5023					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0275	0.0105	0.9135	5.0000e-005		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	1.4918	1.4918	1.4300e-003	0.0000	1.5277
Total	**0.6203**	**0.0105**	**0.9135**	**5.0000e-005**		**5.0600e-003**	**5.0600e-003**		**5.0600e-003**	**5.0600e-003**	**0.0000**	**1.4918**	**1.4918**	**1.4300e-003**	**0.0000**	**1.5277**

6.2 Area by SubCategory

Mitigated

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0905					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5023					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0275	0.0105	0.9135	5.0000e-005		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	1.4918	1.4918	1.4300e-003	0.0000	1.5277
Total	**0.6203**	**0.0105**	**0.9135**	**5.0000e-005**		**5.0600e-003**	**5.0600e-003**		**5.0600e-003**	**5.0600e-003**	**0.0000**	**1.4918**	**1.4918**	**1.4300e-003**	**0.0000**	**1.5277**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	8.1907	0.2621	6.2800e-003	16.6124
Unmitigated	8.1907	0.2621	6.2800e-003	16.6124

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Condo/Townhouse	7.55787 / 4.76474	7.7246	0.2471	5.9200e-003	15.6670
Single Family Housing	0.456078 / 0.287528	0.4661	0.0149	3.6000e-004	0.9454
Total		**8.1907**	**0.2620**	**6.2800e-003**	**16.6124**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Condo/Townhouse	7.55787 / 4.76474	7.7246	0.2471	5.9200e-003	15.6670
Single Family Housing	0.456078 / 0.287528	0.4661	0.0149	3.6000e-004	0.9454
Total		**8.1907**	**0.2620**	**6.2800e-003**	**16.6124**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	12.4393	0.7351	0.0000	30.8178
Unmitigated	12.4393	0.7351	0.0000	30.8178

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Condo/Townhouse	53.36	10.8316	0.6401	0.0000	26.8348
Single Family Housing	7.92	1.6077	0.0950	0.0000	3.9830
Total		**12.4393**	**0.7351**	**0.0000**	**30.8178**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Condo/Townhouse	53.36	10.8316	0.6401	0.0000	26.8348
Single Family Housing	7.92	1.6077	0.0950	0.0000	3.9830
Total		**12.4393**	**0.7351**	**0.0000**	**30.8178**

9.0 Operational Offroad

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-55.1680	0.0000	0.0000	-55.1680

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	12.8 / 0	-55.1680	0.0000	0.0000	-55.1680
Total		**-55.1680**	**0.0000**	**0.0000**	**-55.1680**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Kiper Homes - 320 Airport Way

San Joaquin County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	116.00	Dwelling Unit	12.00	116,000.00	368
Single Family Housing	7.00	Dwelling Unit	0.80	12,600.00	22

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	51
Climate Zone	2			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 116 Condo/Townhouse land use subtype and 7 single family housing selected as best proxy for project land uses, based on Tentative Map provided by project applicant. Total developable acres =12.8 acres

Construction Phase -

Demolition - One small residences and two small farm buildings to be demolished (approximately 6000 sf total).

Grading - Site is relatively flat.

Architectural Coating -

Vehicle Trips -

Woodstoves - Assumes no hearths.

Area Coating - Assumes maximum of 100 g/L for interior coatings (per non-specialty coating limitations providded in SJVAPCD Rule 4601)

Energy Use -

Land Use Change - Assumes removal of 12.8 acres of grassland.

Construction Off-road Equipment Mitigation - Water Exposed Area 2x daily; Clean Paved Road (9% fugitive dust PM reduction); Unpaved road mitigation: Limit on-site construction vehicle speeds to 5 mph; Soil Stabilizer for unpaved (10% reduction)

Fleet Mix - Fleet mix adjusted to reflect vehicle fleet mix from Traffic Impact Analysis.

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Interior	150	100
tblAreaCoating	Area_EF_Residential_Interior	150	100
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	150
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	100	150
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	5
tblFireplaces	FireplaceDayYear	82.00	0.00
tblFireplaces	FireplaceDayYear	82.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	3,078.40	0.00
tblFireplaces	FireplaceWoodMass	3,078.40	0.00
tblFireplaces	NumberNoFireplace	3.15	7.00
tblFireplaces	NumberNoFireplace	52.20	116.00
tblLandUse	LotAcreage	7.25	12.00
tblLandUse	LotAcreage	2.27	0.80
tblWoodstoves	NumberCatalytic	0.80	0.00
tblWoodstoves	NumberCatalytic	12.00	0.00
tblWoodstoves	NumberNoncatalytic	0.80	0.00
tblWoodstoves	NumberNoncatalytic	12.00	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00

tblWoodstoves	WoodstoveWoodMass	3,019.20	0.00
tblWoodstoves	WoodstoveWoodMass	3,019.20	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2022	3.6959	38.8834	29.6001	0.0636	19.8049	1.6357	21.4182	10.1417	1.5049	11.6259	0.0000	6,165.3533	6,165.3533	1.9487	0.0608	6,215.2755
2023	120.9494	15.0856	18.6001	0.0359	0.7946	0.7068	1.5014	0.2128	0.6651	0.8778	0.0000	3,471.5151	3,471.5151	0.7170	0.0577	3,504.3542
Maximum	**120.9494**	**38.8834**	**29.6001**	**0.0636**	**19.8049**	**1.6357**	**21.4182**	**10.1417**	**1.5049**	**11.6259**	**0.0000**	**6,165.3533**	**6,165.3533**	**1.9487**	**0.0608**	**6,215.2755**

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	lb/day										lb/day					
2022	3.6959	38.8834	29.6001	0.0636	8.9820	1.6357	10.5953	4.5825	1.5049	6.0667	0.0000	6,165.3533	6,165.3533	1.9487	0.0608	6,215.2755
2023	120.9494	15.0856	18.6001	0.0359	0.7337	0.7068	1.4405	0.1978	0.6651	0.8628	0.0000	3,471.5151	3,471.5151	0.7170	0.0577	3,504.3542
Maximum	**120.9494**	**38.8834**	**29.6001**	**0.0636**	**8.9820**	**1.6357**	**10.5953**	**4.5825**	**1.5049**	**6.0667**	**0.0000**	**6,165.3533**	**6,165.3533**	**1.9487**	**0.0608**	**6,215.2755**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	52.84	0.00	47.49	53.83	0.00	44.58	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	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	lb/day										lb/day					
Area	3.5539	0.1170	10.1499	5.4000e-004		0.0562	0.0562		0.0562	0.0562	0.0000	18.2719	18.2719	0.0176	0.0000	18.7112
Energy	0.0696	0.5945	0.2530	3.7900e-003		0.0481	0.0481		0.0481	0.0481		758.9895	758.9895	0.0146	0.0139	763.4998
Mobile	3.2368	4.1527	27.9028	0.0651	6.1880	0.0506	6.2386	1.6507	0.0474	1.6981		6,622.6520	6,622.6520	0.3293	0.3182	6,725.6997
Total	**6.8603**	**4.8643**	**38.3057**	**0.0694**	**6.1880**	**0.1549**	**6.3429**	**1.6507**	**0.1517**	**1.8024**	**0.0000**	**7,399.9134**	**7,399.9134**	**0.3614**	**0.3321**	**7,507.9107**

Mitigated Operational

	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	lb/day										lb/day					
Area	3.5539	0.1170	10.1499	5.4000e-004		0.0562	0.0562		0.0562	0.0562	0.0000	18.2719	18.2719	0.0176	0.0000	18.7112
Energy	0.0696	0.5945	0.2530	3.7900e-003		0.0481	0.0481		0.0481	0.0481		758.9895	758.9895	0.0146	0.0139	763.4998
Mobile	3.2368	4.1527	27.9028	0.0651	6.1880	0.0506	6.2386	1.6507	0.0474	1.6981		6,622.6520	6,622.6520	0.3293	0.3182	6,725.6997
Total	**6.8603**	**4.8643**	**38.3057**	**0.0694**	**6.1880**	**0.1549**	**6.3429**	**1.6507**	**0.1517**	**1.8024**	**0.0000**	**7,399.9134**	**7,399.9134**	**0.3614**	**0.3321**	**7,507.9107**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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

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	1/1/2022	1/28/2022	5	20	
2	Site Preparation	Site Preparation	1/29/2022	2/11/2022	5	10	
3	Grading	Grading	2/12/2022	3/25/2022	5	30	
4	Building Construction	Building Construction	3/26/2022	5/19/2023	5	300	
5	Paving	Paving	5/20/2023	6/16/2023	5	20	
6	Architectural Coating	Architectural Coating	6/17/2023	7/14/2023	5	20	

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 90

Acres of Paving: 0

Residential Indoor: 260,415; Residential Outdoor: 86,805; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

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
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
Architectural Coating	Air Compressors	1	6.00	78	0.48

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	27.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	86.00	13.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	17.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 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	lb/day										lb/day					
Fugitive Dust					0.2999	0.0000	0.2999	0.0454	0.0000	0.0454			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.781 2	3,746.781 2	1.0524		3,773.092 0
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.2999**	**1.2427**	**1.5426**	**0.0454**	**1.1553**	**1.2007**		**3,746.781 2**	**3,746.781 2**	**1.0524**		**3,773.092 0**

3.2 Demolition - 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	lb/day										lb/day					
Hauling	5.2300e-003	0.1981	0.0388	8.3000e-004	0.0236	2.0800e-003	0.0257	6.4800e-003	1.9900e-003	8.4700e-003		87.9980	87.9980	6.2000e-004	0.0138	92.1378
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
Worker	0.0533	0.0300	0.4190	1.1400e-003	0.1232	6.3000e-004	0.1239	0.0327	5.8000e-004	0.0333		115.4571	115.4571	3.3400e-003	3.0300e-003	116.4447
Total	**0.0585**	**0.2281**	**0.4578**	**1.9700e-003**	**0.1469**	**2.7100e-003**	**0.1496**	**0.0392**	**2.5700e-003**	**0.0417**		**203.4550**	**203.4550**	**3.9600e-003**	**0.0169**	**208.5825**

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	lb/day										lb/day					
Fugitive Dust					0.1350	0.0000	0.1350	0.0204	0.0000	0.0204			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.1350**	**1.2427**	**1.3776**	**0.0204**	**1.1553**	**1.1757**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

3.2 Demolition - 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	lb/day										lb/day					
Hauling	5.2300e-003	0.1981	0.0388	8.3000e-004	0.0220	2.0800e-003	0.0241	6.0900e-003	1.9900e-003	8.0800e-003		87.9980	87.9980	6.2000e-004	0.0138	92.1378
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
Worker	0.0533	0.0300	0.4190	1.1400e-003	0.1136	6.3000e-004	0.1142	0.0303	5.8000e-004	0.0309		115.4571	115.4571	3.3400e-003	3.0300e-003	116.4447
Total	**0.0585**	**0.2281**	**0.4578**	**1.9700e-003**	**0.1356**	**2.7100e-003**	**0.1383**	**0.0364**	**2.5700e-003**	**0.0390**		**203.4550**	**203.4550**	**3.9600e-003**	**0.0169**	**208.5825**

3.3 Site Preparation - 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	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.3 Site Preparation - 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	lb/day										lb/day					
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
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
Worker	0.0639	0.0360	0.5028	1.3700e-003	0.1479	7.5000e-004	0.1486	0.0392	6.9000e-004	0.0399		138.5485	138.5485	4.0000e-003	3.6400e-003	139.7337
Total	**0.0639**	**0.0360**	**0.5028**	**1.3700e-003**	**0.1479**	**7.5000e-004**	**0.1486**	**0.0392**	**6.9000e-004**	**0.0399**		**138.5485**	**138.5485**	**4.0000e-003**	**3.6400e-003**	**139.7337**

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	lb/day										lb/day					
Fugitive Dust					8.8457	0.0000	8.8457	4.5461	0.0000	4.5461			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**8.8457**	**1.6126**	**10.4582**	**4.5461**	**1.4836**	**6.0297**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.3 Site Preparation - 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	lb/day										lb/day					
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
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
Worker	0.0639	0.0360	0.5028	1.3700e-003	0.1363	7.5000e-004	0.1371	0.0364	6.9000e-004	0.0371		138.5485	138.5485	4.0000e-003	3.6400e-003	139.7337
Total	**0.0639**	**0.0360**	**0.5028**	**1.3700e-003**	**0.1363**	**7.5000e-004**	**0.1371**	**0.0364**	**6.9000e-004**	**0.0371**		**138.5485**	**138.5485**	**4.0000e-003**	**3.6400e-003**	**139.7337**

3.4 Grading - 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	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 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	lb/day										lb/day					
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
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
Worker	0.0710	0.0400	0.5586	1.5200e-003	0.1643	8.3000e-004	0.1651	0.0436	7.7000e-004	0.0444		153.9427	153.9427	4.4500e-003	4.0500e-003	155.2596
Total	**0.0710**	**0.0400**	**0.5586**	**1.5200e-003**	**0.1643**	**8.3000e-004**	**0.1651**	**0.0436**	**7.7000e-004**	**0.0444**		**153.9427**	**153.9427**	**4.4500e-003**	**4.0500e-003**	**155.2596**

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	lb/day										lb/day					
Fugitive Dust					4.1416	0.0000	4.1416	1.6442	0.0000	1.6442			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**4.1416**	**1.6349**	**5.7765**	**1.6442**	**1.5041**	**3.1483**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 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	lb/day										lb/day					
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
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
Worker	0.0710	0.0400	0.5586	1.5200e-003	0.1514	8.3000e-004	0.1523	0.0404	7.7000e-004	0.0412		153.9427	153.9427	4.4500e-003	4.0500e-003	155.2596
Total	**0.0710**	**0.0400**	**0.5586**	**1.5200e-003**	**0.1514**	**8.3000e-004**	**0.1523**	**0.0404**	**7.7000e-004**	**0.0412**		**153.9427**	**153.9427**	**4.4500e-003**	**4.0500e-003**	**155.2596**

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

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	lb/day										lb/day					
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
Vendor	0.0278	0.6864	0.1946	2.7100e-003	0.0881	7.8600e-003	0.0960	0.0254	7.5200e-003	0.0329		286.7735	286.7735	2.0600e-003	0.0434	299.7700
Worker	0.3054	0.1719	2.4021	6.5500e-003	0.7065	3.5900e-003	0.7101	0.1874	3.3000e-003	0.1907		661.9537	661.9537	0.0191	0.0174	667.6163
Total	**0.3332**	**0.8583**	**2.5967**	**9.2600e-003**	**0.7946**	**0.0115**	**0.8060**	**0.2128**	**0.0108**	**0.2236**		**948.7272**	**948.7272**	**0.0212**	**0.0608**	**967.3863**

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

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	lb/day										lb/day					
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
Vendor	0.0278	0.6864	0.1946	2.7100e-003	0.0825	7.8600e-003	0.0903	0.0240	7.5200e-003	0.0315		286.7735	286.7735	2.0600e-003	0.0434	299.7700
Worker	0.3054	0.1719	2.4021	6.5500e-003	0.6512	3.5900e-003	0.6548	0.1738	3.3000e-003	0.1771		661.9537	661.9537	0.0191	0.0174	667.6163
Total	**0.3332**	**0.8583**	**2.5967**	**9.2600e-003**	**0.7337**	**0.0115**	**0.7451**	**0.1978**	**0.0108**	**0.2086**		**948.7272**	**948.7272**	**0.0212**	**0.0608**	**967.3863**

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	lb/day										lb/day					
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
Vendor	0.0142	0.5507	0.1668	2.6100e-003	0.0881	3.6700e-003	0.0918	0.0254	3.5100e-003	0.0289		275.8762	275.8762	1.3800e-003	0.0417	288.3337
Worker	0.2800	0.1500	2.1893	6.3400e-003	0.7065	3.3800e-003	0.7099	0.1874	3.1100e-003	0.1905		640.4289	640.4289	0.0171	0.0160	645.6144
Total	**0.2942**	**0.7007**	**2.3561**	**8.9500e-003**	**0.7946**	**7.0500e-003**	**0.8016**	**0.2128**	**6.6200e-003**	**0.2194**		**916.3052**	**916.3052**	**0.0184**	**0.0577**	**933.9482**

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	lb/day										lb/day					
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
Vendor	0.0142	0.5507	0.1668	2.6100e-003	0.0825	3.6700e-003	0.0861	0.0240	3.5100e-003	0.0275		275.8762	275.8762	1.3800e-003	0.0417	288.3337
Worker	0.2800	0.1500	2.1893	6.3400e-003	0.6512	3.3800e-003	0.6546	0.1738	3.1100e-003	0.1769		640.4289	640.4289	0.0171	0.0160	645.6144
Total	**0.2942**	**0.7007**	**2.3561**	**8.9500e-003**	**0.7337**	**7.0500e-003**	**0.7407**	**0.1978**	**6.6200e-003**	**0.2044**		**916.3052**	**916.3052**	**0.0184**	**0.0577**	**933.9482**

3.6 Paving - 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	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 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	lb/day										lb/day					
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
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
Worker	0.0488	0.0262	0.3819	1.1100e-003	0.1232	5.9000e-004	0.1238	0.0327	5.4000e-004	0.0332		111.7027	111.7027	2.9700e-003	2.7900e-003	112.6072
Total	**0.0488**	**0.0262**	**0.3819**	**1.1100e-003**	**0.1232**	**5.9000e-004**	**0.1238**	**0.0327**	**5.4000e-004**	**0.0332**		**111.7027**	**111.7027**	**2.9700e-003**	**2.7900e-003**	**112.6072**

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	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 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	lb/day										lb/day					
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
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
Worker	0.0488	0.0262	0.3819	1.1100e-003	0.1136	5.9000e-004	0.1142	0.0303	5.4000e-004	0.0309		111.7027	111.7027	2.9700e-003	2.7900e-003	112.6072
Total	**0.0488**	**0.0262**	**0.3819**	**1.1100e-003**	**0.1136**	**5.9000e-004**	**0.1142**	**0.0303**	**5.4000e-004**	**0.0309**		**111.7027**	**111.7027**	**2.9700e-003**	**2.7900e-003**	**112.6072**

3.7 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	lb/day										lb/day					
Archit. Coating	120.7024					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**120.8940**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 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	lb/day										lb/day					
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
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
Worker	0.0554	0.0297	0.4328	1.2500e-003	0.1397	6.7000e-004	0.1403	0.0370	6.1000e-004	0.0377		126.5964	126.5964	3.3700e-003	3.1600e-003	127.6215
Total	**0.0554**	**0.0297**	**0.4328**	**1.2500e-003**	**0.1397**	**6.7000e-004**	**0.1403**	**0.0370**	**6.1000e-004**	**0.0377**		**126.5964**	**126.5964**	**3.3700e-003**	**3.1600e-003**	**127.6215**

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	lb/day										lb/day					
Archit. Coating	120.7024					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**120.8940**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 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	lb/day										lb/day					
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
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
Worker	0.0554	0.0297	0.4328	1.2500e-003	0.1287	6.7000e-004	0.1294	0.0344	6.1000e-004	0.0350		126.5964	126.5964	3.3700e-003	3.1600e-003	127.6215
Total	**0.0554**	**0.0297**	**0.4328**	**1.2500e-003**	**0.1287**	**6.7000e-004**	**0.1294**	**0.0344**	**6.1000e-004**	**0.0350**		**126.5964**	**126.5964**	**3.3700e-003**	**3.1600e-003**	**127.6215**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	lb/day										lb/day					
Mitigated	3.2368	4.1527	27.9028	0.0651	6.1880	0.0506	6.2386	1.6507	0.0474	1.6981		6,622.6520	6,622.6520	0.3293	0.3182	6,725.6997
Unmitigated	3.2368	4.1527	27.9028	0.0651	6.1880	0.0506	6.2386	1.6507	0.0474	1.6981		6,622.6520	6,622.6520	0.3293	0.3182	6,725.6997

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse	849.12	944.24	728.48	2,450,030	2,450,030
Single Family Housing	66.08	66.78	59.85	189,198	189,198
Total	915.20	1,011.02	788.33	2,639,228	2,639,228

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse	10.80	7.30	7.50	45.60	19.00	35.40	86	11	3
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Condo/Townhouse	0.531667	0.052263	0.168651	0.155495	0.027235	0.006385	0.012362	0.016685	0.000479	0.000329	0.023608	0.001135	0.003707
Single Family Housing	0.531667	0.052263	0.168651	0.155495	0.027235	0.006385	0.012362	0.016685	0.000479	0.000329	0.023608	0.001135	0.003707

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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	lb/day										lb/day					
NaturalGas Mitigated	0.0696	0.5945	0.2530	3.7900e-003		0.0481	0.0481		0.0481	0.0481		758.9895	758.9895	0.0146	0.0139	763.4998
NaturalGas Unmitigated	0.0696	0.5945	0.2530	3.7900e-003		0.0481	0.0481		0.0481	0.0481		758.9895	758.9895	0.0146	0.0139	763.4998

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
Condo/Townhouse	5997.68	0.0647	0.5527	0.2352	3.5300e-003		0.0447	0.0447		0.0447	0.0447		705.6094	705.6094	0.0135	0.0129	709.8025
Single Family Housing	453.731	4.8900e-003	0.0418	0.0178	2.7000e-004		3.3800e-003	3.3800e-003		3.3800e-003	3.3800e-003		53.3801	53.3801	1.0200e-003	9.8000e-004	53.6973
Total		**0.0696**	**0.5945**	**0.2530**	**3.8000e-003**		**0.0481**	**0.0481**		**0.0481**	**0.0481**		**758.9895**	**758.9895**	**0.0145**	**0.0139**	**763.4998**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
Condo/Townhouse	5.99768	0.0647	0.5527	0.2352	3.5300e-003		0.0447	0.0447		0.0447	0.0447		705.6094	705.6094	0.0135	0.0129	709.8025
Single Family Housing	0.453731	4.8900e-003	0.0418	0.0178	2.7000e-004		3.3800e-003	3.3800e-003		3.3800e-003	3.3800e-003		53.3801	53.3801	1.0200e-003	9.8000e-004	53.6973
Total		**0.0696**	**0.5945**	**0.2530**	**3.8000e-003**		**0.0481**	**0.0481**		**0.0481**	**0.0481**		**758.9895**	**758.9895**	**0.0145**	**0.0139**	**763.4998**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	lb/day										lb/day					
Mitigated	3.5539	0.1170	10.1499	5.4000e-004		0.0562	0.0562		0.0562	0.0562	0.0000	18.2719	18.2719	0.0176	0.0000	18.7112
Unmitigated	3.5539	0.1170	10.1499	5.4000e-004		0.0562	0.0562		0.0562	0.0562	0.0000	18.2719	18.2719	0.0176	0.0000	18.7112

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.4960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.7520					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.3058	0.1170	10.1499	5.4000e-004		0.0562	0.0562		0.0562	0.0562		18.2719	18.2719	0.0176		18.7112
Total	**3.5539**	**0.1170**	**10.1499**	**5.4000e-004**		**0.0562**	**0.0562**		**0.0562**	**0.0562**	**0.0000**	**18.2719**	**18.2719**	**0.0176**	**0.0000**	**18.7112**

6.2 Area by SubCategory

Mitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.4960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.7520					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.3058	0.1170	10.1499	5.4000e-004		0.0562	0.0562		0.0562	0.0562		18.2719	18.2719	0.0176		18.7112
Total	**3.5539**	**0.1170**	**10.1499**	**5.4000e-004**		**0.0562**	**0.0562**		**0.0562**	**0.0562**	**0.0000**	**18.2719**	**18.2719**	**0.0176**	**0.0000**	**18.7112**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Kiper Homes - 320 Airport Way

San Joaquin County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	116.00	Dwelling Unit	12.00	116,000.00	368
Single Family Housing	7.00	Dwelling Unit	0.80	12,600.00	22

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	51
Climate Zone	2			**Operational Year**	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 116 Condo/Townhouse land use subtype and 7 single family housing selected as best proxy for project land uses, based on Tentative Map provided by project applicant. Total developable acres =12.8 acres

Construction Phase -

Demolition - One small residences and two small farm buildings to be demolished (approximately 6000 sf total).

Grading - Site is relatively flat.

Architectural Coating -

Vehicle Trips -

Woodstoves - Assumes no hearths.

Area Coating - Assumes maximum of 100 g/L for interior coatings (per non-specialty coating limitations providded in SJVAPCD Rule 4601)

Energy Use -

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use Change - Assumes removal of 12.8 acres of grassland.

Construction Off-road Equipment Mitigation - Water Exposed Area 2x daily; Clean Paved Road (9% fugitive dust PM reduction); Unpaved road mitigation: Limit on-site construction vehicle speeds to 5 mph; Soil Stabilizer for unpaved (10% reduction)

Fleet Mix - Fleet mix adjusted to reflect vehicle fleet mix from Traffic Impact Analysis.

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Interior	150	100
tblAreaCoating	Area_EF_Residential_Interior	150	100
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	100	150
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	100	150
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	5
tblFireplaces	FireplaceDayYear	82.00	0.00
tblFireplaces	FireplaceDayYear	82.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	3,078.40	0.00
tblFireplaces	FireplaceWoodMass	3,078.40	0.00
tblFireplaces	NumberNoFireplace	3.15	7.00
tblFireplaces	NumberNoFireplace	52.20	116.00
tblLandUse	LotAcreage	7.25	12.00
tblLandUse	LotAcreage	2.27	0.80
tblWoodstoves	NumberCatalytic	0.80	0.00
tblWoodstoves	NumberCatalytic	12.00	0.00
tblWoodstoves	NumberNoncatalytic	0.80	0.00
tblWoodstoves	NumberNoncatalytic	12.00	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00

tblWoodstoves	WoodstoveWoodMass	3,019.20	0.00
tblWoodstoves	WoodstoveWoodMass	3,019.20	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2022	3.6913	38.8919	29.5416	0.0635	19.8049	1.6357	21.4182	10.1417	1.5049	11.6259	0.0000	6,150.4621	6,150.4621	1.9492	0.0633	6,200.5648
2023	120.9460	15.1553	18.3874	0.0353	0.7946	0.7068	1.5014	0.2128	0.6651	0.8778	0.0000	3,410.2911	3,410.2911	0.7174	0.0600	3,443.8732
Maximum	**120.9460**	**38.8919**	**29.5416**	**0.0635**	**19.8049**	**1.6357**	**21.4182**	**10.1417**	**1.5049**	**11.6259**	**0.0000**	**6,150.4621**	**6,150.4621**	**1.9492**	**0.0633**	**6,200.5648**

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	lb/day										lb/day					
2022	3.6913	38.8919	29.5416	0.0635	8.9820	1.6357	10.5953	4.5825	1.5049	6.0667	0.0000	6,150.4621	6,150.4621	1.9492	0.0633	6,200.5648
2023	120.9460	15.1553	18.3874	0.0353	0.7337	0.7068	1.4405	0.1978	0.6651	0.8629	0.0000	3,410.2911	3,410.2911	0.7174	0.0600	3,443.8732
Maximum	**120.9460**	**38.8919**	**29.5416**	**0.0635**	**8.9820**	**1.6357**	**10.5953**	**4.5825**	**1.5049**	**6.0667**	**0.0000**	**6,150.4621**	**6,150.4621**	**1.9492**	**0.0633**	**6,200.5648**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	52.84	0.00	47.49	53.83	0.00	44.58	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	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	lb/day										lb/day					
Area	3.5539	0.1170	10.1499	5.4000e-004		0.0562	0.0562		0.0562	0.0562	0.0000	18.2719	18.2719	0.0176	0.0000	18.7112
Energy	0.0696	0.5945	0.2530	3.7900e-003		0.0481	0.0481		0.0481	0.0481		758.9895	758.9895	0.0146	0.0139	763.4998
Mobile	2.7136	4.7069	27.9723	0.0603	6.1880	0.0507	6.2386	1.6507	0.0475	1.6982		6,142.6231	6,142.6231	0.3714	0.3427	6,254.0384
Total	**6.3370**	**5.4184**	**38.3752**	**0.0646**	**6.1880**	**0.1549**	**6.3429**	**1.6507**	**0.1517**	**1.8024**	**0.0000**	**6,919.8845**	**6,919.8845**	**0.4035**	**0.3566**	**7,036.2494**

Mitigated Operational

	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	lb/day										lb/day					
Area	3.5539	0.1170	10.1499	5.4000e-004		0.0562	0.0562		0.0562	0.0562	0.0000	18.2719	18.2719	0.0176	0.0000	18.7112
Energy	0.0696	0.5945	0.2530	3.7900e-003		0.0481	0.0481		0.0481	0.0481		758.9895	758.9895	0.0146	0.0139	763.4998
Mobile	2.7136	4.7069	27.9723	0.0603	6.1880	0.0507	6.2386	1.6507	0.0475	1.6982		6,142.6231	6,142.6231	0.3714	0.3427	6,254.0384
Total	**6.3370**	**5.4184**	**38.3752**	**0.0646**	**6.1880**	**0.1549**	**6.3429**	**1.6507**	**0.1517**	**1.8024**	**0.0000**	**6,919.8845**	**6,919.8845**	**0.4035**	**0.3566**	**7,036.2494**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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

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	1/1/2022	1/28/2022	5	20	
2	Site Preparation	Site Preparation	1/29/2022	2/11/2022	5	10	
3	Grading	Grading	2/12/2022	3/25/2022	5	30	
4	Building Construction	Building Construction	3/26/2022	5/19/2023	5	300	
5	Paving	Paving	5/20/2023	6/16/2023	5	20	
6	Architectural Coating	Architectural Coating	6/17/2023	7/14/2023	5	20	

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 90

Acres of Paving: 0

Residential Indoor: 260,415; Residential Outdoor: 86,805; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

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
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
Architectural Coating	Air Compressors	1	6.00	78	0.48

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	27.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	86.00	13.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	17.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 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	lb/day										lb/day					
Fugitive Dust					0.2999	0.0000	0.2999	0.0454	0.0000	0.0454			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.781 2	3,746.781 2	1.0524		3,773.092 0
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.2999**	**1.2427**	**1.5426**	**0.0454**	**1.1553**	**1.2007**		**3,746.781 2**	**3,746.781 2**	**1.0524**		**3,773.092 0**

3.2 Demolition - 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	lb/day										lb/day					
Hauling	5.0500e-003	0.2114	0.0397	8.3000e-004	0.0236	2.0800e-003	0.0257	6.4800e-003	1.9900e-003	8.4800e-003		88.0542	88.0542	6.1000e-004	0.0139	92.1965
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
Worker	0.0498	0.0363	0.3751	1.0300e-003	0.1232	6.3000e-004	0.1239	0.0327	5.8000e-004	0.0333		104.2886	104.2886	3.7700e-003	3.4500e-003	105.4118
Total	**0.0549**	**0.2477**	**0.4148**	**1.8600e-003**	**0.1469**	**2.7100e-003**	**0.1496**	**0.0392**	**2.5700e-003**	**0.0417**		**192.3428**	**192.3428**	**4.3800e-003**	**0.0173**	**197.6083**

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	lb/day										lb/day					
Fugitive Dust					0.1350	0.0000	0.1350	0.0204	0.0000	0.0204			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.1350**	**1.2427**	**1.3776**	**0.0204**	**1.1553**	**1.1757**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

3.2 Demolition - 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	lb/day										lb/day					
Hauling	5.0500e-003	0.2114	0.0397	8.3000e-004	0.0220	2.0800e-003	0.0241	6.0900e-003	1.9900e-003	8.0800e-003		88.0542	88.0542	6.1000e-004	0.0139	92.1965
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
Worker	0.0498	0.0363	0.3751	1.0300e-003	0.1136	6.3000e-004	0.1142	0.0303	5.8000e-004	0.0309		104.2886	104.2886	3.7700e-003	3.4500e-003	105.4118
Total	**0.0549**	**0.2477**	**0.4148**	**1.8600e-003**	**0.1356**	**2.7100e-003**	**0.1383**	**0.0364**	**2.5700e-003**	**0.0390**		**192.3428**	**192.3428**	**4.3800e-003**	**0.0173**	**197.6083**

3.3 Site Preparation - 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	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.3 Site Preparation - 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	lb/day										lb/day					
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
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
Worker	0.0598	0.0436	0.4501	1.2400e-003	0.1479	7.5000e-004	0.1486	0.0392	6.9000e-004	0.0399		125.1464	125.1464	4.5300e-003	4.1400e-003	126.4941
Total	**0.0598**	**0.0436**	**0.4501**	**1.2400e-003**	**0.1479**	**7.5000e-004**	**0.1486**	**0.0392**	**6.9000e-004**	**0.0399**		**125.1464**	**125.1464**	**4.5300e-003**	**4.1400e-003**	**126.4941**

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	lb/day										lb/day					
Fugitive Dust					8.8457	0.0000	8.8457	4.5461	0.0000	4.5461			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**8.8457**	**1.6126**	**10.4582**	**4.5461**	**1.4836**	**6.0297**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.3 Site Preparation - 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	lb/day										lb/day					
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
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
Worker	0.0598	0.0436	0.4501	1.2400e-003	0.1363	7.5000e-004	0.1371	0.0364	6.9000e-004	0.0371		125.1464	125.1464	4.5300e-003	4.1400e-003	126.4941
Total	**0.0598**	**0.0436**	**0.4501**	**1.2400e-003**	**0.1363**	**7.5000e-004**	**0.1371**	**0.0364**	**6.9000e-004**	**0.0371**		**125.1464**	**125.1464**	**4.5300e-003**	**4.1400e-003**	**126.4941**

3.4 Grading - 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	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 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	lb/day										lb/day					
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
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
Worker	0.0664	0.0484	0.5001	1.3800e-003	0.1643	8.3000e-004	0.1651	0.0436	7.7000e-004	0.0444		139.0515	139.0515	5.0300e-003	4.6000e-003	140.5490
Total	**0.0664**	**0.0484**	**0.5001**	**1.3800e-003**	**0.1643**	**8.3000e-004**	**0.1651**	**0.0436**	**7.7000e-004**	**0.0444**		**139.0515**	**139.0515**	**5.0300e-003**	**4.6000e-003**	**140.5490**

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	lb/day										lb/day					
Fugitive Dust					4.1416	0.0000	4.1416	1.6442	0.0000	1.6442			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**4.1416**	**1.6349**	**5.7765**	**1.6442**	**1.5041**	**3.1483**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 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	lb/day										lb/day					
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
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
Worker	0.0664	0.0484	0.5001	1.3800e-003	0.1514	8.3000e-004	0.1523	0.0404	7.7000e-004	0.0412		139.0515	139.0515	5.0300e-003	4.6000e-003	140.5490
Total	**0.0664**	**0.0484**	**0.5001**	**1.3800e-003**	**0.1514**	**8.3000e-004**	**0.1523**	**0.0404**	**7.7000e-004**	**0.0412**		**139.0515**	**139.0515**	**5.0300e-003**	**4.6000e-003**	**140.5490**

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

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	lb/day										lb/day					
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
Vendor	0.0271	0.7317	0.2015	2.7100e-003	0.0881	7.8800e-003	0.0960	0.0254	7.5400e-003	0.0329		287.0232	287.0232	2.0200e-003	0.0435	300.0403
Worker	0.2857	0.2083	2.1505	5.9200e-003	0.7065	3.5900e-003	0.7101	0.1874	3.3000e-003	0.1907		597.9215	597.9215	0.0216	0.0198	604.3607
Total	**0.3128**	**0.9399**	**2.3520**	**8.6300e-003**	**0.7946**	**0.0115**	**0.8060**	**0.2128**	**0.0108**	**0.2236**		**884.9447**	**884.9447**	**0.0237**	**0.0633**	**904.4010**

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	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

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	lb/day										lb/day					
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
Vendor	0.0271	0.7317	0.2015	2.7100e-003	0.0825	7.8800e-003	0.0903	0.0240	7.5400e-003	0.0315		287.0232	287.0232	2.0200e-003	0.0435	300.0403
Worker	0.2857	0.2083	2.1505	5.9200e-003	0.6512	3.5900e-003	0.6548	0.1738	3.3000e-003	0.1771		597.9215	597.9215	0.0216	0.0198	604.3607
Total	**0.3128**	**0.9399**	**2.3520**	**8.6300e-003**	**0.7337**	**0.0115**	**0.7451**	**0.1978**	**0.0108**	**0.2087**		**884.9447**	**884.9447**	**0.0237**	**0.0633**	**904.4010**

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	lb/day										lb/day					
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
Vendor	0.0133	0.5888	0.1724	2.6100e-003	0.0881	3.6800e-003	0.0918	0.0254	3.5200e-003	0.0289		276.4015	276.4015	1.3400e-003	0.0418	288.8914
Worker	0.2628	0.1816	1.9710	5.7300e-003	0.7065	3.3800e-003	0.7099	0.1874	3.1100e-003	0.1905		578.6797	578.6797	0.0194	0.0182	584.5757
Total	**0.2761**	**0.7704**	**2.1434**	**8.3400e-003**	**0.7946**	**7.0600e-003**	**0.8016**	**0.2128**	**6.6300e-003**	**0.2194**		**855.0812**	**855.0812**	**0.0207**	**0.0600**	**873.4672**

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	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	lb/day										lb/day					
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
Vendor	0.0133	0.5888	0.1724	2.6100e-003	0.0825	3.6800e-003	0.0861	0.0240	3.5200e-003	0.0275		276.4015	276.4015	1.3400e-003	0.0418	288.8914
Worker	0.2628	0.1816	1.9710	5.7300e-003	0.6512	3.3800e-003	0.6546	0.1738	3.1100e-003	0.1769		578.6797	578.6797	0.0194	0.0182	584.5757
Total	**0.2761**	**0.7704**	**2.1434**	**8.3400e-003**	**0.7337**	**7.0600e-003**	**0.7407**	**0.1978**	**6.6300e-003**	**0.2044**		**855.0812**	**855.0812**	**0.0207**	**0.0600**	**873.4672**

3.6 Paving - 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	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 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	lb/day										lb/day					
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
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
Worker	0.0458	0.0317	0.3438	1.0000e-003	0.1232	5.9000e-004	0.1238	0.0327	5.4000e-004	0.0332		100.9325	100.9325	3.3800e-003	3.1700e-003	101.9609
Total	**0.0458**	**0.0317**	**0.3438**	**1.0000e-003**	**0.1232**	**5.9000e-004**	**0.1238**	**0.0327**	**5.4000e-004**	**0.0332**		**100.9325**	**100.9325**	**3.3800e-003**	**3.1700e-003**	**101.9609**

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	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 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	lb/day										lb/day					
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
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
Worker	0.0458	0.0317	0.3438	1.0000e-003	0.1136	5.9000e-004	0.1142	0.0303	5.4000e-004	0.0309		100.9325	100.9325	3.3800e-003	3.1700e-003	101.9609
Total	**0.0458**	**0.0317**	**0.3438**	**1.0000e-003**	**0.1136**	**5.9000e-004**	**0.1142**	**0.0303**	**5.4000e-004**	**0.0309**		**100.9325**	**100.9325**	**3.3800e-003**	**3.1700e-003**	**101.9609**

3.7 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	lb/day										lb/day					
Archit. Coating	120.7024					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**120.8940**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 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	lb/day										lb/day					
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
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
Worker	0.0519	0.0359	0.3896	1.1300e-003	0.1397	6.7000e-004	0.1403	0.0370	6.1000e-004	0.0377		114.3902	114.3902	3.8300e-003	3.5900e-003	115.5557
Total	**0.0519**	**0.0359**	**0.3896**	**1.1300e-003**	**0.1397**	**6.7000e-004**	**0.1403**	**0.0370**	**6.1000e-004**	**0.0377**		**114.3902**	**114.3902**	**3.8300e-003**	**3.5900e-003**	**115.5557**

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	lb/day										lb/day					
Archit. Coating	120.7024					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**120.8940**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 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	lb/day										lb/day					
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
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
Worker	0.0519	0.0359	0.3896	1.1300e-003	0.1287	6.7000e-004	0.1294	0.0344	6.1000e-004	0.0350		114.3902	114.3902	3.8300e-003	3.5900e-003	115.5557
Total	**0.0519**	**0.0359**	**0.3896**	**1.1300e-003**	**0.1287**	**6.7000e-004**	**0.1294**	**0.0344**	**6.1000e-004**	**0.0350**		**114.3902**	**114.3902**	**3.8300e-003**	**3.5900e-003**	**115.5557**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	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	lb/day										lb/day					
Mitigated	2.7136	4.7069	27.9723	0.0603	6.1880	0.0507	6.2386	1.6507	0.0475	1.6982		6,142.6231	6,142.6231	0.3714	0.3427	6,254.0384
Unmitigated	2.7136	4.7069	27.9723	0.0603	6.1880	0.0507	6.2386	1.6507	0.0475	1.6982		6,142.6231	6,142.6231	0.3714	0.3427	6,254.0384

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse	849.12	944.24	728.48	2,450,030	2,450,030
Single Family Housing	66.08	66.78	59.85	189,198	189,198
Total	915.20	1,011.02	788.33	2,639,228	2,639,228

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse	10.80	7.30	7.50	45.60	19.00	35.40	86	11	3
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Condo/Townhouse	0.531667	0.052263	0.168651	0.155495	0.027235	0.006385	0.012362	0.016685	0.000479	0.000329	0.023608	0.001135	0.003707
Single Family Housing	0.531667	0.052263	0.168651	0.155495	0.027235	0.006385	0.012362	0.016685	0.000479	0.000329	0.023608	0.001135	0.003707

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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	lb/day										lb/day					
NaturalGas Mitigated	0.0696	0.5945	0.2530	3.7900e-003		0.0481	0.0481		0.0481	0.0481		758.9895	758.9895	0.0146	0.0139	763.4998
NaturalGas Unmitigated	0.0696	0.5945	0.2530	3.7900e-003		0.0481	0.0481		0.0481	0.0481		758.9895	758.9895	0.0146	0.0139	763.4998

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
Condo/Townhouse	5997.68	0.0647	0.5527	0.2352	3.5300e-003		0.0447	0.0447		0.0447	0.0447		705.6094	705.6094	0.0135	0.0129	709.8025
Single Family Housing	453.731	4.8900e-003	0.0418	0.0178	2.7000e-004		3.3800e-003	3.3800e-003		3.3800e-003	3.3800e-003		53.3801	53.3801	1.0200e-003	9.8000e-004	53.6973
Total		**0.0696**	**0.5945**	**0.2530**	**3.8000e-003**		**0.0481**	**0.0481**		**0.0481**	**0.0481**		**758.9895**	**758.9895**	**0.0145**	**0.0139**	**763.4998**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
Condo/Townhouse	5.99768	0.0647	0.5527	0.2352	3.5300e-003		0.0447	0.0447		0.0447	0.0447		705.6094	705.6094	0.0135	0.0129	709.8025
Single Family Housing	0.453731	4.8900e-003	0.0418	0.0178	2.7000e-004		3.3800e-003	3.3800e-003		3.3800e-003	3.3800e-003		53.3801	53.3801	1.0200e-003	9.8000e-004	53.6973
Total		**0.0696**	**0.5945**	**0.2530**	**3.8000e-003**		**0.0481**	**0.0481**		**0.0481**	**0.0481**		**758.9895**	**758.9895**	**0.0145**	**0.0139**	**763.4998**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	lb/day										lb/day					
Mitigated	3.5539	0.1170	10.1499	5.4000e-004		0.0562	0.0562		0.0562	0.0562	0.0000	18.2719	18.2719	0.0176	0.0000	18.7112
Unmitigated	3.5539	0.1170	10.1499	5.4000e-004		0.0562	0.0562		0.0562	0.0562	0.0000	18.2719	18.2719	0.0176	0.0000	18.7112

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.4960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.7520					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.3058	0.1170	10.1499	5.4000e-004		0.0562	0.0562		0.0562	0.0562		18.2719	18.2719	0.0176		18.7112
Total	**3.5539**	**0.1170**	**10.1499**	**5.4000e-004**		**0.0562**	**0.0562**		**0.0562**	**0.0562**	**0.0000**	**18.2719**	**18.2719**	**0.0176**	**0.0000**	**18.7112**

6.2 Area by SubCategory

Mitigated

	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
SubCategory	lb/day										lb/day					
Architectural Coating	0.4960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.7520					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.3058	0.1170	10.1499	5.4000e-004		0.0562	0.0562		0.0562	0.0562		18.2719	18.2719	0.0176		18.7112
Total	**3.5539**	**0.1170**	**10.1499**	**5.4000e-004**		**0.0562**	**0.0562**		**0.0562**	**0.0562**	**0.0000**	**18.2719**	**18.2719**	**0.0176**	**0.0000**	**18.7112**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Source: EMFAC2021 (v1.0.1) Emissions Inventory
Region Type: County
Region: San Joaquin
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC202x Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Total VMT	Fuel Consumption	**MPG (Derived)**		
San Joaquin	2022	All Other Buses	Aggregate	Aggregate	Diesel	64.18276106	3366.829671	0.389691959	**8.64**		
San Joaquin	2022	LDA	Aggregate	Aggregate	Gasoline	245832.5119	9843786.33	350.2212345	**28.11**		
San Joaquin	2022	LDA	Aggregate	Aggregate	Diesel	747.597033	24646.14058	0.583778913	**42.22**		
San Joaquin	2022	LDT1	Aggregate	Aggregate	Gasoline	22627.08052	734599.6603	31.32540592	**23.45**		
San Joaquin	2022	LDT1	Aggregate	Aggregate	Diesel	7.047782881	82.54563139	0.003373225	**24.47**		
San Joaquin	2022	LDT2	Aggregate	Aggregate	Gasoline	97154.07981	3824225.477	170.1310105	**22.48**		
San Joaquin	2022	LDT2	Aggregate	Aggregate	Diesel	248.8605386	10706.81848	0.341876391	**31.32**		
San Joaquin	2022	LHD1	Aggregate	Aggregate	Gasoline	10032.88768	343680.3481	37.7668391	**9.10**		
San Joaquin	2022	LHD1	Aggregate	Aggregate	Diesel	9047.421916	317992.0884	20.14770499	**15.78**		
San Joaquin	2022	LHD2	Aggregate	Aggregate	Gasoline	1192.956774	41208.16578	5.018015304	**8.21**		
San Joaquin	2022	LHD2	Aggregate	Aggregate	Diesel	3132.378704	115997.9174	8.943835947	**12.97**		
San Joaquin	2022	MCY	Aggregate	Aggregate	Gasoline	12156.83121	65858.40609	1.654828161	**39.80**		
San Joaquin	2022	MDV	Aggregate	Aggregate	Gasoline	95564.44336	3308853.745	181.5233801	**18.23**		
San Joaquin	2022	MDV	Aggregate	Aggregate	Diesel	1375.554752	54411.91619	2.299205396	**23.67**		
San Joaquin	2022	MH	Aggregate	Aggregate	Gasoline	1600.88645	13846.61175	3.139811955	**4.41**		
San Joaquin	2022	MH	Aggregate	Aggregate	Diesel	647.0575838	5702.86501	0.606220894	**9.41**		
San Joaquin	2022	Motor Coach	Aggregate	Aggregate	Diesel	17.36532658	2483.716889	0.452484161	**5.49**		
San Joaquin	2022	OBUS	Aggregate	Aggregate	Gasoline	190.8863856	8510.791984	1.830675135	**4.65**		
San Joaquin	2022	PTO	Aggregate	Aggregate	Diesel	0	19519.60984	4.029793127	**4.84**		
San Joaquin	2022	SBUS	Aggregate	Aggregate	Gasoline	125.3894152	6800.304136	0.672127455	**10.12**		
San Joaquin	2022	SBUS	Aggregate	Aggregate	Diesel	485.9784004	11054.11176	1.356913622	**8.15**	**MHD:**	
San Joaquin	2022	T6 CAIRP Class 4	Aggregate	Aggregate	Diesel	10.0890437	674.016739	0.076433926	**8.82**		**8.35**
San Joaquin	2022	T6 CAIRP Class 5	Aggregate	Aggregate	Diesel	13.58227373	924.6297618	0.104569007	**8.84**		
San Joaquin	2022	T6 CAIRP Class 6	Aggregate	Aggregate	Diesel	41.03348839	2416.084021	0.270634413	**8.93**		
San Joaquin	2022	T6 CAIRP Class 7	Aggregate	Aggregate	Diesel	72.78191568	15154.9002	1.588811418	**9.54**		
San Joaquin	2022	T6 Instate Delivery (	Aggregate	Aggregate	Diesel	239.0980349	8144.704224	1.000320522	**8.14**		
San Joaquin	2022	T6 Instate Delivery (	Aggregate	Aggregate	Diesel	153.4261699	5297.730681	0.656352805	**8.07**		
San Joaquin	2022	T6 Instate Delivery (	Aggregate	Aggregate	Diesel	669.7781872	22991.08224	2.828216057	**8.13**		
San Joaquin	2022	T6 Instate Delivery (	Aggregate	Aggregate	Diesel	121.8173307	6617.297423	0.812288721	**8.15**		
San Joaquin	2022	T6 Instate Other Cla	Aggregate	Aggregate	Diesel	458.6664735	18101.37983	2.149210013	**8.42**		
San Joaquin	2022	T6 Instate Other Cla	Aggregate	Aggregate	Diesel	1145.440922	51106.28168	6.02735177	**8.48**		
San Joaquin	2022	T6 Instate Other Cla	Aggregate	Aggregate	Diesel	900.2348993	37958.55985	4.460516181	**8.51**		
San Joaquin	2022	T6 Instate Other Cla	Aggregate	Aggregate	Diesel	546.2729605	25280.42306	2.912405845	**8.68**		
San Joaquin	2022	T6 Instate Tractor Cl	Aggregate	Aggregate	Diesel	10.69873229	502.5537125	0.059266826	**8.48**		
San Joaquin	2022	T6 Instate Tractor Cl	Aggregate	Aggregate	Diesel	714.4980333	42511.37106	4.757598802	**8.94**		
San Joaquin	2022	T6 OOS Class 4	Aggregate	Aggregate	Diesel	5.824249623	385.9057822	0.043744785	**8.82**		
San Joaquin	2022	T6 OOS Class 5	Aggregate	Aggregate	Diesel	7.810009498	529.3933382	0.059864386	**8.84**		
San Joaquin	2022	T6 OOS Class 6	Aggregate	Aggregate	Diesel	23.64662077	1383.319939	0.154937614	**8.93**		
San Joaquin	2022	T6 OOS Class 7	Aggregate	Aggregate	Diesel	39.99335241	10058.4561	1.052763317	**9.55**		
San Joaquin	2022	T6 Public Class 4	Aggregate	Aggregate	Diesel	32.46897249	1053.944591	0.142137471	**7.41**		
San Joaquin	2022	T6 Public Class 5	Aggregate	Aggregate	Diesel	75.18627001	2757.372447	0.361045439	**7.64**		
San Joaquin	2022	T6 Public Class 6	Aggregate	Aggregate	Diesel	127.0726581	4427.407716	0.578988462	**7.65**		
San Joaquin	2022	T6 Public Class 7	Aggregate	Aggregate	Diesel	155.0745132	6737.725962	0.892631207	**7.55**		
San Joaquin	2022	T6 Utility Class 5	Aggregate	Aggregate	Diesel	33.0723596	1348.866841	0.155261469	**8.69**		
San Joaquin	2022	T6 Utility Class 6	Aggregate	Aggregate	Diesel	6.301149589	254.387594	0.029400527	**8.65**		
San Joaquin	2022	T6 Utility Class 7	Aggregate	Aggregate	Diesel	7.184731387	354.5989242	0.040513377	**8.75**		
San Joaquin	2022	T6TS	Aggregate	Aggregate	Gasoline	579.4901376	27135.21064	5.908823236	**4.59**	HHD:	
San Joaquin	2022	T7 CAIRP Class 8	Aggregate	Aggregate	Diesel	1465.651998	302315.9619	50.54575704	**5.98**		**5.31**
San Joaquin	2022	T7 NNOOS Class 8	Aggregate	Aggregate	Diesel	1314.51908	357430.6707	59.7702667	**5.98**		
San Joaquin	2022	T7 NOOS Class 8	Aggregate	Aggregate	Diesel	547.746265	129848.2136	21.84471347	**5.94**		
San Joaquin	2022	T7 Other Port Class	Aggregate	Aggregate	Diesel	29.96782331	5172.478866	0.884067902	**5.85**		
San Joaquin	2022	T7 POAK Class 8	Aggregate	Aggregate	Diesel	130.9212733	12859.98461	2.247722968	**5.72**		
San Joaquin	2022	T7 POLA Class 8	Aggregate	Aggregate	Diesel	133.7447014	17464.08518	3.05394227	**5.72**		
San Joaquin	2022	T7 Public Class 8	Aggregate	Aggregate	Diesel	387.8868943	16412.94802	3.221247427	**5.10**		
San Joaquin	2022	T7 Single Concrete/T	Aggregate	Aggregate	Diesel	116.7544211	8582.751358	1.476599326	**5.81**		
San Joaquin	2022	T7 Single Dump Clas	Aggregate	Aggregate	Diesel	478.1812367	30565.06913	5.302067473	**5.76**		
San Joaquin	2022	T7 Single Other Clas	Aggregate	Aggregate	Diesel	984.7457086	55881.25942	9.612278311	**5.81**		
San Joaquin	2022	T7 SWCV Class 8	Aggregate	Aggregate	Diesel	177.8487212	11527.61697	4.624282207	**2.49**		
San Joaquin	2022	T7 Tractor Class 8	Aggregate	Aggregate	Diesel	2518.433603	207897.807	34.44610116	**6.04**		
San Joaquin	2022	T7 Utility Class 8	Aggregate	Aggregate	Diesel	22.55419755	1067.730312	0.187532496	**5.69**		
San Joaquin	2022	T7IS	Aggregate	Aggregate	Gasoline	2.652755373	57.24617818	0.018571387	**3.08**		
San Joaquin	2022	UBUS	Aggregate	Aggregate	Gasoline	48.76869755	3674.265574	0.782054973	**4.70**		
San Joaquin	2022	UBUS	Aggregate	Aggregate	Diesel	81.19085432	5625.255691	0.641005885	**8.78**		

On-road Mobile (Operational) Energy Usage

Note: Assumes that all vehicles that are generated as part of proposed project use gasoline as a fuel source (for simplicity), since the vast majority of vehicles generated by the project would use gasoline

Unmitigated:

Step 1:

Therefore:

Average Daily VMT:

7,231 Note: Estimated via CalEEMod output (2,639,228 annual VMT, divided by 365 days per year).

Step 2: Given:

Fleet Mix (CalEEMod Output)

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
53.17%	5.23%	16.87%	15.55%	2.72%	0.64%	1.24%	1.67%	0.05%	0.03%	2.36%	0.11%	0.37%

And:

Gasoline MPG Factors for each Vehicle Class - Year 2022 (EMFAC2021 Output)

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
28.11	23.45	22.48	18.23	9.10	8.21	N/A	N/A	4.65	4.70	39.80	10.12	4.41

Therefore:

Weighted Average MPG Factors

Gasoline: **24.1**

Step 3: **Therefore:**

300 daily gallons of gasoline

or

109,669 annual gallons of gasoline

Off-road (i.e. On-site) Mobile (Construction) Energy Usage

Note: For the sake of simplicity, and as a conservative estimation, it was assumed that all off-road vehicles use diesel fuel as an energy source.
Demolition, Site preparation and grading off-road mobile vehicle on-site gallons of fuel are calculated below.

Given Factor:	**133.5**	**metric tons**	**CO_2 (provided in CalEEMod Output File)**	
Conversion Factor:	2204.6262	pounds	per metric ton	
Intermediate Result:	**294,421**	**pounds**	**CO_2**	
Conversion Factor:	22.38	pounds	CO_2 per 1 gallon of diesel fuel	Source: U.S. EIA, 2016
Final Result:	**13,156**	**gallons**	**diesel fuel**	http://www.eia.gov/tools/faqs/faq.cfm?id=307&t=11

Mitigated Onsite Scenario	Total CO_2 (MT/yr) (provided in CalEEMod Output File)
Demolition	34.2289
Site Preparation	16.8549
Grading	82.4632

On-road Mobile (Construction) Energy Usage - Demolition

Note: Year 2020 MPG factors were derived for construction-releated energy consumption (for the sake of a conservative estimate).

Step 1:

Total Daily Worker Trips (CalEEMod output)

15

Worker Trip Length (miles) (CalEEMod output)

10.8

Therefore:

Average Worker Daily VMT:

162

Step 2:

Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class - Year 2020 (EMFAC2021 output)

LDA	LDT1	LDT2
28.11	23.45	22.48

Therefore:

Weighted Average Worker MPG Factor

25.54

Step 3:

Therefore:

6 Worker daily gallons of gasoline (all workers)

Step 4:

20 **# of Days (CalEEMod ouput)**

Therefore:

Result: **127 Total gallons of gasoline (all workers)**

Total Hauler Trips (CalEEMod Output)

27

Note: Hauler trips are total values (not daily).

Hauler Trip Length (miles) (CalEEMod Output)

20

Average Hauler Daily VMT:

540

Fleet Mix for Workers (CalEEMod Output)

MHD	HHD
0%	100%

Diesel MPG Factors for each Vehicle Class - Year 2020 (EMFAC2021 output)

MHD	HHD
8.35	5.31

Therefore:

Weighted Average Hauler (Diesel) MPG Factor

5.31

Therefore:

102 Worker daily gallons of gasoline (all workers)

Therefore:

Result: **102 Hauler gallons of diesel**

On-road Mobile (Construction) Energy Usage - Site Preparation

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

18

Worker Trip Length (miles) (CalEEMod Output)

10.8

Therefore:

Average Worker Daily VMT:

194

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2021) - Year 2020

LDA	LDT1	LDT2
28.11	23.45	22.48

Therefore:

Weighted Average Worker MPG Factor

25.54

Step 3: **Therefore:**

8 **Worker daily gallons of gasoline**

Step 4: 10 **# of Days (CalEEMod Output)**

Therefore:

Result: **76** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Grading

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

20

Worker Trip Length (miles) (CalEEMod Output)

10.8

Therefore:

Average Worker Daily VMT:

216

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	**LDT1**	**LDT2**
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2021) - Year 2020

LDA	**LDT1**	**LDT2**
28.11	23.45	22.48

Therefore:

Weighted Average Worker MPG Factor

25.54

Step 3: **Therefore:**

8 Worker daily gallons of gasoline

Step 4: 30 **# of Days (CalEEMod Output)**

Therefore:

Result: **254** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Building Construction

Step 1:

Total Daily Worker Trips (CalEEMod Output)
86

Total Daily Vendor Trips (CalEEMod Output)
13

Worker Trip Length (miles) (CalEEMod Output)
10.8

Vendor Trip Length (miles) (CalEEMod Output)
7.3

Therefore:

Average Worker Daily VMT:
929

Average Vendor Daily VMT:
95

Step 2:

Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	**LDT1**	**LDT2**
0.5	0.25	0.25

Assumed Fleet Mix for Vendors

Fleet Mix for Workers (CalEEMod Output)

MHD	**HHD**
0%	100%

And:

MPG Factors for each Vehicle Class (from EMFAC2021) - Year 2020

<u>Gasoline:</u>

LDA	**LDT1**	**LDT2**
28.11	23.45	22.48

<u>Diesel:</u>

MHD	**HHD**
8.35	5.31

Therefore:

Weighted Average Worker (Gasoline) MPG Factor
25.54

Weighted Average Vendor (Diesel) MPG Factor
5.31

Step 3:

Therefore:
36 Worker daily gallons of gasoline

Therefore:
18 Vendor daily gallons of diesel

Step 4:

300 **# of Days (CalEEMod Output)**

Therefore:
10,912 Total gallons of gasoline

Therefore:
5,366 Total gallons of diesel

On-road Mobile (Construction) Energy Usage - Paving

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

15

Worker Trip Length (miles) (CalEEMod Output)

10.8

Therefore:

Average Worker Daily VMT:

162

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2021) - Year 2020

LDA	LDT1	LDT2
28.11	23.45	22.48

Therefore:

Weighted Average Worker MPG Factor

25.5

Step 3: **Therefore:**

6 Worker daily gallons of gasoline

Step 4: 20 **# of Days (CalEEMod Output)**

Therefore:

Result: **127 Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Architectural Coating

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

17

Worker Trip Length (miles) (CalEEMod Output)

10.8

Therefore:

Average Worker Daily VMT:

184

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (EMFAC2021 Output) - Year 2020

LDA	LDT1	LDT2
28.11	23.45	22.48

Therefore:

Weighted Average Worker MPG Factor

25.5

Step 3: **Therefore:**

7 Worker daily gallons of gasoline

Step 4: 20 **# of Days (CalEEMod Output)**

Therefore:

Result: **144 Total gallons of gasoline**

APPENDIX B: CULTURAL RESOURCES REPORT

CULTURAL RESOURCE ASSESSMENT FOR THE

320 AIRPORT PROJECT SITE, CITY OF MANTECA,

SAN JOAQUIN COUNTY, CALIFORNIA

Prepared by

Peak & Associates, Inc.
3941 Park Drive, Suite 20 PMB 329
El Dorado Hills, CA 95762
(916) 939-2405

Prepared for

De Novo Planning Group
1020 Suncast Lane, Suite 106
El Dorado Hills, CA 95762

September 17, 2021
(Job #21-059)

PROJECT DESCRIPTION

The 13.2-acre Project site is located in the City of Manteca, and the project proponent has proposed the development of a residential neighborhood of 123 units, both duplexes and single-family homes. The Project site is located on the eastern side of Airport Way at 320 N. Airport Way (Figure 1). The Project site is located within Section 31 of Township 1 South, Range 7 East Mount Diablo Base and Meridian (MDBM). Figure 2 illustrates the project location on the USGS Manteca and Lathrop, California, 7.5-minute series quadrangle maps.

Cultural Resource Investigations

Melinda Peak served as principal investigator for the project, with Michael Lawson completing the field survey. Resumes are included in Appendix 1.

STATE REGULATIONS

State historic preservation regulations affecting this project include the statutes and guidelines contained in the California Environmental Quality Act (CEQA; Public Resources Code sections 21083.2 and 21084.1 and sections 15064.5 and 15126.4 (b) of the CEQA Guidelines). CEQA Section 15064.5 requires that lead agencies determine whether projects may have a significant effect on archaeological and historical resources. Public Resources Code Section 21098.1 further cites: A project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.

An "historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record or manuscript that is historically or archaeologically significant (Public Resources Code section 5020.1).

Advice on procedures to identify such resources, evaluate their importance, and estimate potential effects is given in several agency publications such as the series produced by the Governor's Office of Planning and Research (OPR), *CEQA and Archaeological Resources,* 1994. The technical advice series produced by OPR strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities, including, but not limited to, museums, historical commissions, associations and societies be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains,

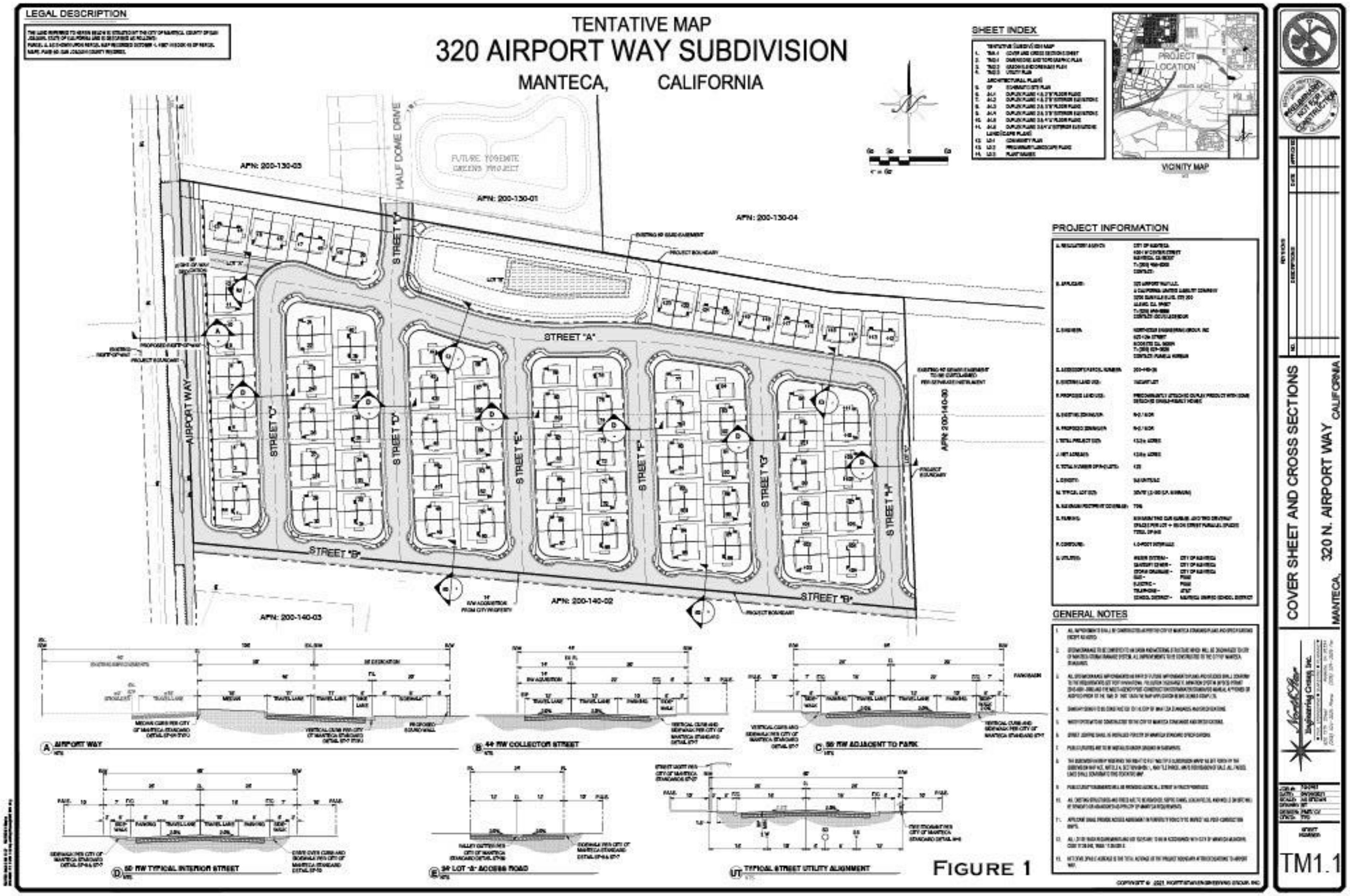

LEGAL DESCRIPTION
TENTATIVE MAP
320 AIRPORT WAY SUBDIVISION
MANTECA, CALIFORNIA
SHEET INDEX
VICINITY MAP
PROJECT LOCATION
PROJECT INFORMATION
GENERAL NOTES
APN: 200-130-03
APN: 200-130-01
APN: 200-130-04
APN: 200-140-03
APN: 200-140-02
HALF DOME DRIVE
AIRPORT WAY
STREET "A"
STREET "B"
STREET "C"
STREET "D"
STREET "E"
STREET "F"
STREET "G"
STREET "H"
FUTURE YOSEMITE GREENS PROJECT
COVER SHEET AND CROSS SECTIONS
320 N. AIRPORT WAY
MANTECA, CALIFORNIA
TM1.1

FIGURE 1

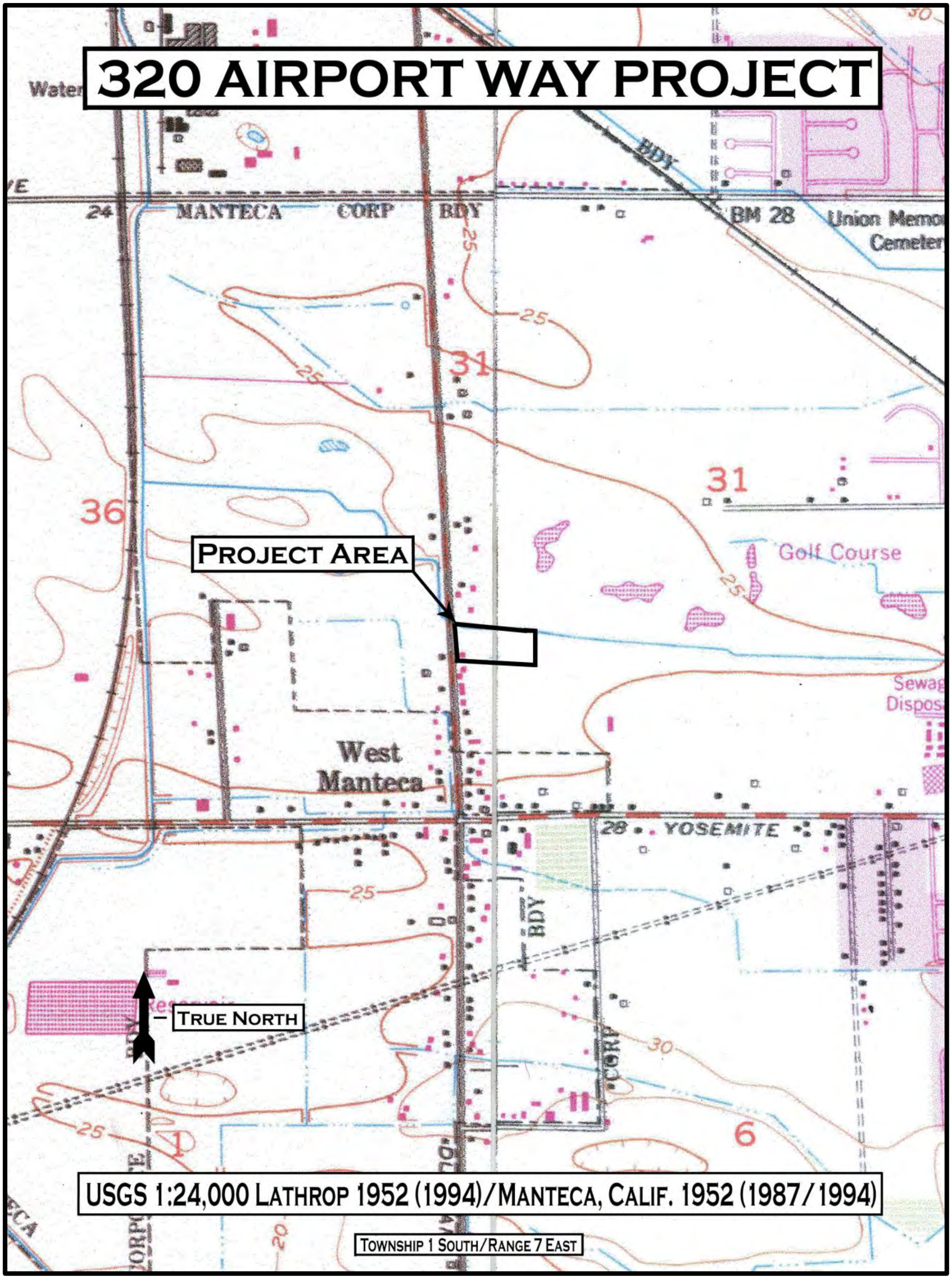

320 AIRPORT WAY PROJECT
PROJECT AREA
TRUE NORTH
MANTECA CORP BDY
BM 28
Union Memo
Cemeter
Golf Course
West Manteca
YOSEMITE
Sewag
Dispos
BDY
CORP
31
36
6
1
25
30
USGS 1:24,000 LATHROP 1952 (1994)/MANTECA, CALIF. 1952 (1987/1994)
TOWNSHIP 1 SOUTH/RANGE 7 EAST

Figure 2

and associated grave goods regardless of the antiquity and provides for the sensitive treatment and disposition of those remains (California Health and Safety Code Section 7050.5, California Public Resources Codes Sections 5097.94 et al).

The California Register of Historical Resources (Public Resources Code Section 5020 et seq.)

The State Historic Preservation Office (SHPO) maintains the California Register of Historical Resources (CRHR). Properties listed, or formally designated as eligible for listing, on the National Register of Historic Places are automatically listed on the CRHR, as are State Landmarks and Points of Interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

For the purposes of CEQA, an historical resource is a resource listed in, or determined eligible for listing in the California Register of Historical Resources. When a project will impact a site, it needs to be determined whether the site is an historical resource. The criteria are set forth in Section 15064.5(a) (3) of the CEQA Guidelines, and are defined as any resource that does any of the following:

A. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

B. Is associated with the lives of persons important in our past;

C. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

D. Has yielded, or may be likely to yield, information important in prehistory or history.

In addition, the CEQA Guidelines, Section 15064.5(a) (4) states:

The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code section 5020.1(j) or 5024.1.

California Health and Safety Code Sections 7050.5, 7051, And 7054

These sections collectively address the illegality of interference with human burial remains, as well as the disposition of Native American burials in archaeological sites. The law protects such remains from disturbance, vandalism, or inadvertent destruction, and establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project, including the treatment of remains prior to, during, and after evaluation, and reburial procedures.

California Public Resources Code Section 15064.5(e)

This law addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction. The section establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project and establishes the Native American Heritage Commission as the entity responsible to resolve disputes regarding the disposition of such remains.

Senate Bill 18

Senate Bill (SB) 18, requires local (city and county) governments to consult with California Native American tribes to aid in the protection of traditional tribal cultural places ("cultural places") through local land use planning. This legislation, which amended §65040.2, §65092, §65351, §65352, and §65560, and added §65352.3, §653524, and §65562.5 to the Government Code; also requires the Governor's Office of Planning and Research (OPR) to include in the General Plan Guidelines advice to local governments on how to conduct these consultations. The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places. These consultation and notice requirements apply to adoption and amendment of both general plans (defined in Government Code §65300 et seq.) and specific plans (defined in Government Code §65450 et seq.).

Assembly Bill 52

Assembly Bill (AB) 52 establishes a formal consultation process for California tribes as part of CEQA and equates significant impacts on tribal cultural resources with significant environmental impacts. AB 52 defines a "California Native American Tribe" as a Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission. AB 52 requires formal consultation with California Native

American Tribes prior to determining the level of environmental document if a tribe has requested to be informed by the lead agency of proposed projects. AB 52 also requires that consultation address project alternatives, mitigation measures, for significant effects, if requested by the California Native American Tribe, and that consultation be considered concluded when either the parties agree to measures to mitigate or avoid a significant effect, or the agency concludes that mutual agreement cannot be reached. Under AB 52, such measures shall be recommended for inclusion in the environmental document and adopted mitigation monitoring program if determined to avoid or lessen a significant impact on a tribal cultural resource.

CULTURAL SETTING

Prehistory

The Central Valley region was among the first in the state to attract intensive fieldwork, and research has continued to the present day. This has resulted in a substantial accumulation of data.

In the early decades of the 1900s, E.J. Dawson explored numerous sites near Stockton and Lodi, later collaborating with W.E. Schenck (Schenck and Dawson 1929). By 1933, the focus of work was directed to the Cosumnes locality, where survey and excavation studies were conducted by the Sacramento Junior College (Lillard and Purves 1936). Excavation data, in particular from the stratified Windmiller site (CA-Sac-107), suggested two temporally distinct cultural traditions. Later work at other mounds by Sacramento Junior College and the University of California, Berkeley, enabled the investigators to identify a third cultural tradition, intermediate between the previously postulated Early and Late Horizons. The three-horizon sequence, based on discrete changes in ornamental artifacts and mortuary practices, as well as on observed differences in soils within sites (Lillard, Heizer and Fenenga 1939), was later refined by Beardsley (1954). An expanded definition of artifacts diagnostic of each time period was developed, and its application extended to parts of the central California coast. Traits held in common allow the application of this system within certain limits of time and space to other areas of prehistoric central California.

The Windmiller Culture (Early Horizon) is characterized by ventrally-extended burials (some dorsal extensions are known), with westerly orientation of heads; a high percentage of burials with grave goods; frequent presence of red ocher in graves; large projectile points, of which 60 percent are of materials other than obsidian; rectangular *Haliotis* beads; *Olivella* shell beads (types A1a and L); rare use of bone; some use of baked clay objects; and well-fashioned charm stones, usually perforated.

The Cosumnes Culture (Middle Horizon) displays considerable changes from the preceding cultural expression. The burial mode is predominately flexed, with variable cardinal orientation and some cremations present. There are a lower percentage of burials with grave goods, and ocher staining is common in graves. *Olivella* beads of types C1, F and G predominate, and there is abundant use of green *Haliotis sp.* rather than red *Haliotis sp.* Other characteristic artifacts include perforated and canid teeth; asymmetrical and "fishtail" charmstones, usually unperforated; cobble mortars and evidence of wooden mortars; extensive use of bone for tools and ornaments; large projectile points, with considerable use of rock other than obsidian; and use of baked clay.

Hotchkiss Culture (Late Horizon) -- The burial pattern retains the use of the flexed mode, and there is wide spread evidence of cremation, lesser use of red ocher, heavy use of baked clay, *Olivella* beads of Types E and M, extensive use of *Haliotis* ornaments of many elaborate shapes and forms, shaped mortars and cylindrical pestles, bird-bone tubes with elaborate geometric designs, clam shell disc beads, small projectile points indicative of the introduction of the bow and arrow, flanged tubular pipes of steatite and schist, and use of magnesite (Moratto 1984:181-183). The characteristics noted are not all-inclusive, but cover the more important traits.

Schulz (1981), in an extensive examination of the central California evidence for the use of acorns, used the terms Early, Middle and Late Complexes, but the traits attributed to them remain generally the same. While it is not altogether clear, Schulz seemingly uses the term "Complex" to refer to the particular archeological entities (above called "Horizons") as defined in this region. Ragir's (1972) cultures are the same as Schulz's complexes.

Bennyhoff and Hughes (1984) have presented alternative dating schemes for the Central California Archeological Sequence. The primary emphasis is a more elaborate division of the horizons to reflect what is seen as cultural/temporal changes within the three horizons and a compression of the temporal span.

There have been other chronologies proposed, including Fredrickson (1973), and since it is correlated with Bennyhoff's (1977) work, it does merit discussion. The particular archeological cultural entities Fredrickson has defined, based upon the work of Bennyhoff, are patterns, phases and aspects. Bennyhoff's (1977) work in the Plains Miwok area is the best definition of the Cosumnes District, which likely conforms to Fredrickson's pattern. Fredrickson also proposed periods of time associated heavily with economic modes, which provides a temporal term for comparing contemporary cultural entities. It corresponds with Willey and Phillips' (1958) earlier "tradition", although it is tied more specifically to the archeological record in California.

Ethnohistory

The Project site lies within the northern portion of the ethnographic territory of the Yokuts people. The Yokuts were members of the Penutian language family which held all of the Central Valley, San Francisco Bay Area, and the Pacific Coast from Marin County to near Point Sur. The Yokuts

differed from other ethnographic groups in California as they had true tribal divisions with group names (Kroeber 1925; Latta 1949). Each tribe spoke a particular dialect, common to its members, but similar enough to other Yokuts that they were mutually intelligible (Kroeber 1925).

The Yokuts held portions of the San Joaquin Valley from the Tehachapi mountains in the south to Stockton in the north. On the north they were bordered by the Plains Miwok, and on the west by the Saclan or Bay Miwok and Costonoan peoples. Although neighbors were often from distinct language families, differences between the people appear to have been more influenced by environmental factors as opposed to linguistic affinities. Thus, the Plains Miwok were more similar to the nearby Yokuts than to foothill members of their own language group. Similarities in cultural inventory co-varied with distance from other groups and proximity to culturally diverse people. The material culture of the southern San Joaquin Yokuts was therefore more closely related to that of their non-Yokuts neighbors than to that of Delta members of their own language group.

Trade was well developed, with mutually beneficial interchange of needed or desired goods. Obsidian, rare in the San Joaquin Valley, was obtained by trade with Paiute and Shoshoni groups on the eastern side of the Sierra Nevada, where numerous sources of this material are located, and to some extent from the Napa Valley to the north. Shell beads, obtained by the Yokuts from coastal people, and acorns, rare in the Great Basin, were among many items exported to the east by Yokuts traders (Davis 1961).

Economic subsistence was based on the acorn, with substantial dependency on gathering and processing of wild seeds and other vegetable foods. The rivers, streams, and sloughs that formed a maze within the valley provided abundant food resources such as fish, shellfish, and turtles. Game, wild fowl, and small mammals were trapped and hunted to provide protein augmentation of the diet. In general, the eastern portion of the San Joaquin Valley provided a lush environment of varied food resources, with the estimated large population centers reflecting this abundance (Cook 1955; Baumhoff 1963).

Settlements were oriented along the water ways, with their village sites normally placed adjacent to these features for their nearby water and food resources. House structures varied in size and shape (Latta 1949; Kroeber 1925), with most constructed from the readily available tules found in the extensive marshes of the low-lying valley areas. The housepit depressions for the structures ranged in diameter from 3 meters to 18 meters (Wallace 1978:470).

Historical Background

The first extensive wheat-growing in the San Joaquin Valley took place on the sand plains in the region between Stockton and Manteca and on the west side of the valley between Tracy and Newman. The wheat growing was due to an initial experiment of John Wheeler Jones, who planted 160 acres to wheat in 1855 which included the central town site of what is now Manteca. He plowed his fields with a walking plow. The famous Stockton gang-plow was reported to be invented near the present site of Manteca (Smith 1960: 221, 243).

When the Visalia Branch of the Central Pacific Railroad (later the Fresno Branch of the Southern Pacific) was completed through the San Joaquin Valley, a shipping point was set up in the region and named Cowell or Cowell Station for Joshua Cowell, who had donated the right of way for the railroad. Maps of the area printed in the early San Joaquin County history shows scattered ranches in the area on large tracts of land (Thompson and West 1879). The town became a supply center for the region.

The station was re-named Manteca in 1904 or 1905 by the Southern Pacific for a local creamery that had taken its name from the Spanish word for “butter” or “lard” (Gudde 1969: 191). Another version of the naming of the town is that the Southern Pacific misprinted the name of the “Monteca” as “Manteca”, and would not change the spelling (Hillman and Covello 1985).

After irrigation systems were developed, the large tracts of land formerly cultivated by dry land crops such as grain could be converted to use for orchards, alfalfa, diversified crops and large-scale dairying. Within a short time after the completion of the first irrigation system in the region by the Stanislaus and San Joaquin Water Company, the population of the town grew from 80 to about 500. Further growth occurred with the creation of the South San Joaquin Irrigation District in 1909 and the completion of Goodwin Dam on the Stanislaus River and associated canals in 1913 (Hillman and Covello 1985).

Industries in the area were agricultural in nature for many years, with stockyards, dairy farms, pumpkins and sugar beets being important economically. The Spreckels Sugar Company opened a mill in 1918 that remained an important industry in the region.

The population of Manteca began to grow at a rapid rate in the early 1950s, with the town serving as a bedroom community for industrial plants in San Joaquin County communities. Beginning in the 1970s, improvements to community infrastructure and the attractive pricing of homes brought even more growth (Hillman and Covelo 1985). The pattern of rapid growth continues to this day, with industrial development in the area, as well as many residents commuting regularly to the Bay Area.

RESEARCH

Records of previously recorded cultural resources and cultural resource investigations were examined by the Central California Information Center of the California Historical Resources Information System on for the Project site and a ¼-mile radius (CCIC File # 11875I, Appendix 2) on August 26, 2021.

There are no resources recorded in the Project site. In the ¼-mile radius search area, there have been two sections of ditches recorded, as well as a historic building at 495 Airport Way.

The Project site is shown as included as part of report done for the Windmiller and Napoli in 2002 (SJ-04786). This is an overview, with limited survey, and most private property would not have been surveyed in 2002. Another report for a nine-acre survey by Busby is reported to include the property; maps received do not outline clearly enough to allow an elimination of any portion of the Project site as previously surveyed (SJ-05840).

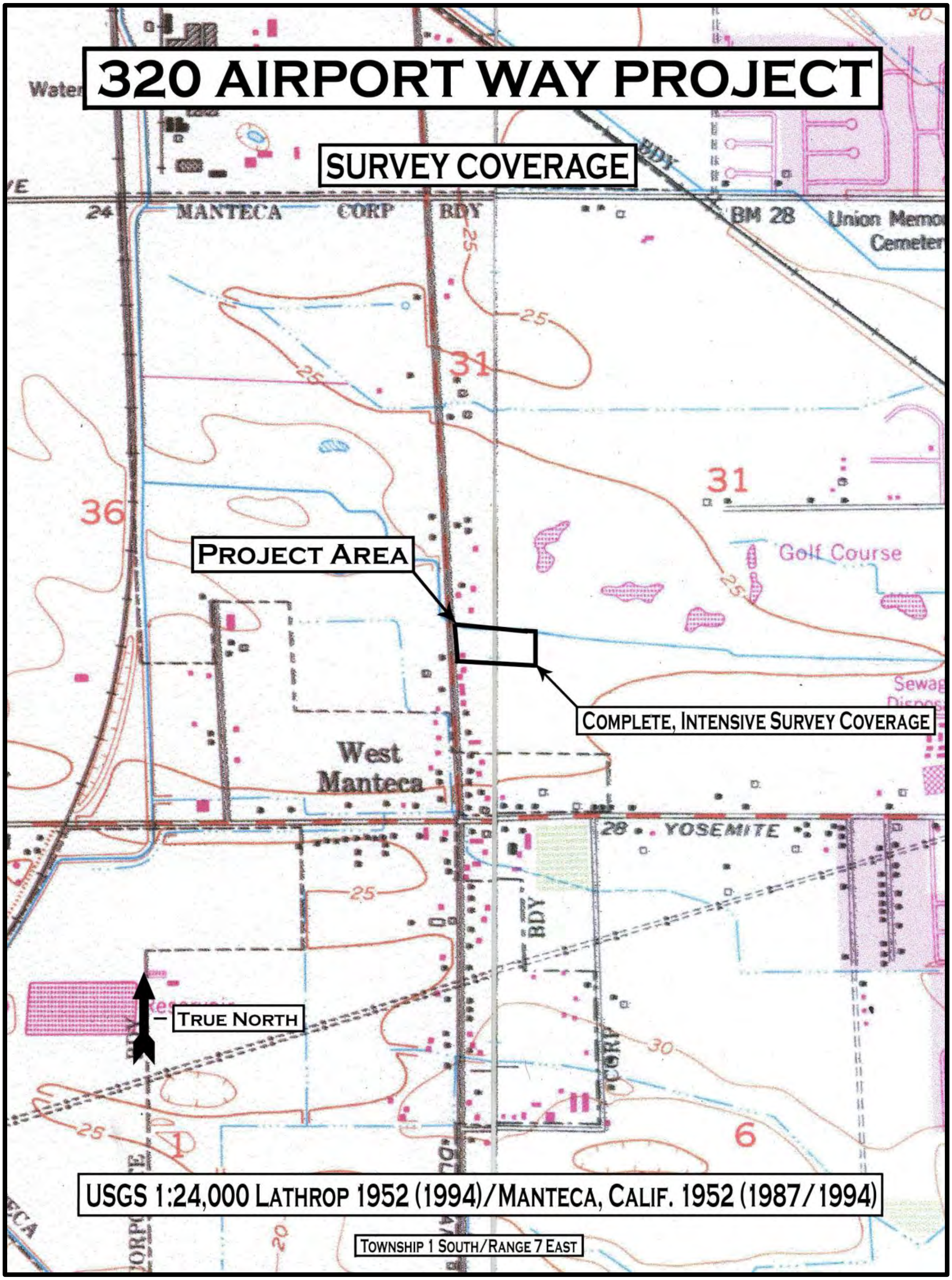
Several other surveys have been completed in the search radius (completed citations in the Report List in Appendix 2).

FIELD INVESTIGATIONS

The property was surveyed on August 31, 2021 by Michael Lawson of Peak & Associates. He investigated the property by walking linear transects spaced no more than ten meters apart across the entire property. Transects were narrowed in portions of the property such as near the buildings and other features (Figure 3).

The landform is flat, apparently leveled for agricultural purposes, and irrigation. Currently the fields behind (east of) the house and farm complex are plowed, with weeds and other volunteer vegetation growing in some areas. The building complex and the fields appear to be at the same elevation.

Around the building complex the soil is fine and medium brown loam with areas of gravel and other introduced rock. In the animal enclosures the soil appeared darker brown and somewhat more loam with obvious organic material present. The soil in the fields is uniformly loamy but more sandy and lighter in color, with occasional native pebbles, mostly of quartz and sandstone.



320 AIRPORT WAY PROJECT
SURVEY COVERAGE
PROJECT AREA
COMPLETE, INTENSIVE SURVEY COVERAGE
TRUE NORTH
USGS 1:24,000 LATHROP 1952 (1994)/MANTECA, CALIF. 1952 (1987/1994)
TOWNSHIP 1 SOUTH/RANGE 7 EAST
MANTECA CORP BDY
BM 28
Union Memo
Cemeter
Golf Course
West
Manteca
YOSEMITE
BDY
31
36
6
1

Figure 3

The soil visibility was excellent throughout survey area. Plowing, animal burrowing and vehicular disturbance allowed for clear viewing of the surface as well as subsurface soil.

There is no evidence of prehistoric period use or occupancy of the property.

One historic period building complex is present within the southwestern portion of the Project site that is more than 50 years in age. The site has been recorded, with a DPR 523 form prepared (Appendix 3).

Building Complex at 320 Airport Way

The resource consists of a single-family residence and three outbuildings located on a roughly 13.2-acre parcel that is located at 320 Airport Way. The single-family residence is single story, rectangular shaped, with a low- pitched gable roof with wide eaves. An addition has been added to the east facing façade. The residence was constructed in 1960 according to assessor's records. It is a Side-Gabled Roof subtype of the Ranch Style that was popular between 1935-1975 (McAlester 2017:596-611). The Side-Gabled Roof subtype represents about 10 percent of Ranch Style homes and was particularly popular in rural areas (McAlester 2017:598).

The single-family residence is sided with stucco and has composition asphalt shingles for roofing. Windows are modern aluminum sliders. There is an external brick chimney along the west facing façade. A small addition with a shed roof has been added to the east facing façade.

Building No. 1 is a single story, irregular shaped barn located north of the single-family residence. It has a sheet metal roof, and the sides are a combination of cinder block and vertical wood boards. Building No. 2 is a small pumphouse with sheet metal sides and roof. Building No. 3 is single story, rectangular shaped with a gable roof. The roof is covered with sheet metal and the sides are clad with vertical wood boards. The building is apparently used for equipment storage.

RESOURCE EVALAUTION

Under CRHR criterion A, the site must "be associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage." This complex is not associated with any significant contribution.

For a property to be eligible under Criterion B of the CRHR, the features must be associated with persons important in the past. There is no evidence to suggest that this property was ever associated with a significant person in our past.

For CRHR Criterion C, the resource must embody "the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values." The residence is a Side-Gable Roof subtype of the common Ranch Style dwelling, and the outbuildings are utilitarian exhibiting no special design elements. Ranch Style homes were constructed in huge numbers across California from the period between 1935 and 1975 (McAlester 2017:596-611).

For Criterion D, there were no associated archeological deposits observed during the field inspection and recordation and it is unlikely given the relatively late construction date of 1960 that such a deposit would be present.

We conclude that this complex does not meet the threshold under criteria A - D of the CRHR and is not a historical resource.

RECOMMENDATIONS

Although unlikely, there is always a slight possibility that a site may exist in the Project site and be obscured by vegetation, siltation or historic activities, leaving no surface evidence. In order to assist in the recognition of cultural resources, a training session for all workers should be conducted in advance of the initiation of construction activities at the site. The training session will provide information on recognition of artifacts, human remains, and cultural deposits to help in the recognition of potential issues.

In addition, during the initial grading we recommend that a qualified archeologist be present to observe the initial land disturbance, and be able to halt work in the immediate vicinity should artifacts, exotic rock, shell or bone are uncovered during the construction. The monitor will be able to document the finding, and determine if additional work is necessary to excavate or remove the artifacts or feature.

Discovery of Human Remains

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area suspected to overlie adjacent remains until the San Joaquin County Coroner has determined that the remains are not subject to any provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains.

If the San Joaquin County Coroner determines that the remains are not subject to his or her authority and if the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission (NAHC).

After notification, the NAHC will follow the procedures outlined in Public Resources Code Section 5097.98, that include notification of most likely descendants (MLDs), and recommendations for treatment of the remains. The MLDs will have 48 hours after notification by the NAHC to make their recommendations (PRC Section 5097.98).

BIBLIOGRAPHY

Baumhoff, Martin A.

1963 Ecological Determinants of Aboriginal California Populations. *University of California Publications in American Archaeology and Ethnology* 49(2):155-236. Berkeley.

Beardsley, Richard K.

1954 Temporal and Areal Relationships in Central California Archeology (parts 1 and 11). *University of California Archaeological Survey Reports* 24, 25. Berkeley.

Bennyhoff, James A.

1977 Ethnogeography of the Plains Miwok. *Center for Archaeological Research at Davis, Publications* 5. University of California, Davis.

Bennyhoff, James A. and Robert F. Heizer

1958 Cross-Dating Great Basin Sites by Californian Shell Beads. *University of California Archaeological Survey Report*, 42:60-92. Berkeley.

Cook, Sherburne F.

1955 The Aboriginal Populations of the San Joaquin Valley, California. *University of California Anthropological Records* 16(2). Berkeley.

Davis, James T.

1961 Trade Routes and Economic Exchange among the Indians of California. *University of California Archaeological Survey Reports* 54:1-71. Berkeley.

Fredrickson, David A.

1973 *Early Cultures of the North Coast Ranges, California*. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Davis.

Gilbert, Colonel F.T.

1879 *History of San Joaquin County, California*. Thompson & West, Oakland.

Gudde, Erwin

1969 *California Place Names: The Origin and Etymology of Current Geographical Names*. University of California Press, Berkeley.

Hillman, Raymond W. and Leonard A. Covello

1985 *Cities & Towns of San Joaquin County Since 1847*. Panorama West Books, Fresno.

Hoover, Mildred, Hero E. Rensch, Ethel G. Rensch and William N. Abeloe

1990 *Historic Spots in California* (Fourth Edition), revised by Douglas E. Kyle. Stanford University Press, Stanford.

Kroeber, Alfred L.

1953 *Handbook of the California Indians*. California Book Company, Ltd., Berkeley.

Latta, F. F.

1949 *Handbook of the Yokuts Indians*. Bear State Books, Oildale, California.

Lillard, Jeremiah B., Robert F. Heizer and Franklin Fenenga

1939 An Introduction to the Archaeology of Central California. *Sacramento Junior College, Department of Anthropology Bulletin* 2. Sacramento.

Lillard, Jeremiah B. and William K. Purves

1936 The Archeology of the Deer Creek-Cosumnes Area, Sacramento County, California. *Sacramento Junior College, Department of Anthropology Bulletin* 1. Sacramento.

Moratto, Michael J.

1984 *California Archaeology*. Academic Press, New York.

Ragir, Sonia

1972 The Early Horizon in Central California Prehistory. *University of California Research Contributions* 15. Berkeley.

Schulz, Peter D.

1981 *Osteoarchaeology and Subsistence Change in Prehistoric Central California*. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Davis.

Schenck, W. Egbert and Elmer Dawson

1929 Archaeology of the Northern San Joaquin Valley. *University of California Publications in American Archaeology and Ethnology* 25(4):289-413. Berkeley.

Shippee, L. W.

1890 *An Illustrated History of San Joaquin County, California*. The Lewis Publishing Company, Chicago.

Smith, Wallace

1960 *Garden of the Sun*. Eighth edition. Original publication in 1939, privately printed.

Thompson and West

1879 *History of San Joaquin County, California, with Illustrations*. Reprinted in 1968 by Howell-North Books, Berkeley.

Tinkham, George H.

1923 *History of San Joaquin County, California*. The Historic Record Company, Los Angeles.

Wallace, William J.

1978 Northern Valley Yokuts. In *California*, edited by Robert F. Heizer, pp. 462-470. Handbook of North American Indians, vol. 8, William G. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Willey, Gordon R. and Phillip Phillips

1958 *Method and Theory in American Archaeology*. The University of Chicago Press, Chicago.

APPENDIX 1

Resumes

PEAK & ASSOCIATES, INC.

RESUME

MELINDA A. PEAK **January 2021**
Senior Historian/Archeologist
3941 Park Drive, Suite 20 #329
El Dorado Hills, CA 95762
(916) 939-2405

PROFESSIONAL EXPERIENCE

Ms. Peak has served as the principal investigator on a wide range of prehistoric and historic excavations throughout California. She has directed laboratory analyses of archeological materials, including the historic period. She has also conducted a wide variety of cultural resource assessments in California, including documentary research, field survey, Native American consultation and report preparation.

In addition, Ms. Peak has developed a second field of expertise in applied history, specializing in site-specific research for historic period resources. She is a registered professional historian and has completed a number of historical research projects for a wide variety of site types.

Through her education and experience, Ms. Peak meets the Secretary of Interior Standards for historian, architectural historian, prehistoric archeologist and historic archeologist.

EDUCATION

M.A. - History - California State University, Sacramento, 1989

Thesis: *The Bellevue Mine: A Historical Resources Management Site Study in Plumas and Sierra Counties, California*

B.A. - Anthropology - University of California, Berkeley

PROJECTS

In recent years, Ms. Peak has led the team completing the cultural resource sections for General Plan and General Plan Updates, for a number of cities/neighborhoods including Campbell, Milpitas, Yountville, Manteca, The Springs, Sebastopol, Martinez, Brentwood, Colusa County and Foster City. Older General Plan efforts include Wheatland, Rocklin, Sheridan, Granite Bay and South Sutter County.

In recent months, Ms. Peak has completed a number of determinations of eligibility and effect documents in coordination with the Corps of Engineers for projects requiring federal permits, assessing the eligibility of a number of sites for the National Register of Historic Places.

She has also completed historical research projects on a wide variety of topics for a number of projects including the development of a winery in a ranch in Folsom, commercial buildings in the City of Davis, a lumber mill in Clovis, older farmhouses dating to the 1860s, an early roadhouse, bridges, canals, former small-town site, and a section of an electric railway line.

In recent years, Ms. Peak has prepared a number of cultural resource overviews and predictive models for blocks of land proposed for future development for general and specific plans. She has been able to direct a number of surveys of these areas, allowing the model to be tested.

Ms. Peak completed the cultural resource research and contributed to the text prepared for the DeSabla-Centerville PAD for the initial stage of the FERC relicensing. She also served cultural resource project manager for the FERC relicensing of the Beardsley-Donnells Project. For the South Feather Power Project and the Woodleaf-Palermo and Sly Creek Transmission Lines, her team completing the technical work for the project.

She served as principal investigator for the multi-phase Twelve Bridges Golf Club project in Placer County. She served as liaison with the various agencies, helped prepare the historic properties treatment plan, managed the various phases of test and data recovery excavations, and completed the final report on the analysis of the test phase excavations of a number of prehistoric sites. She is currently involved as the principal investigator for the Clover Valley Lakes project adjacent to Twelve Bridges in the City of Rocklin, coordinating contacts with Native Americans, the Corps of Engineers and the Office of Historic Preservation.

Ms. Peak has served as project manager for a number of major survey and excavation projects in recent years, including the many surveys and site definition excavations for the 172-mile-long Pacific Pipeline proposed for construction in Santa Barbara, Ventura and Los Angeles counties. She also completed an archival study in the City of Los Angeles for the project, and served as principal investigator for a major coaxial cable removal project for AT&T.

Additionally, she completed a number of small surveys, served as a construction monitor at several urban sites, and conducted emergency recovery excavations for sites found during monitoring. She has directed the excavations of several historic complexes in Sacramento, Placer and El Dorado Counties.

Ms. Peak is the author of a chapter and two sections of a published history (1999) of Sacramento County, *Sacramento: Gold Rush Legacy, Metropolitan Legacy*. She served as the consultant for a children's book on California, published by Capstone Press in 2003 in the Land of Liberty series.

PEAK & ASSOCIATES, INC.
RESUME

MICHAEL LAWSON **January 2021**
Archeological Specialist
3941 Park Drive, Suite 20-329
El Dorado Hills, CA 95672
(916) 939-2405

PROFESSIONAL EXPERIENCE

Mr. Lawson has compiled an excellent record of supervision of excavation and survey projects for both the public and private sectors over the past twenty-two years. He has conducted a number of surveys throughout northern and central California, as well as serving as an archeological technician and crew chief for a number of excavation projects.

EDUCATION

B.A. - Anthropology - California State University, Sacramento

Special Course: Comparative Osteology. University of Tennessee, Knoxville. Forensic Anthropology Center. January 2018.

Intensive lab and outdoor study with human example from outdoor research facility, including typical and non-metric examples, compared with fifty non-human species most commonly confused with human remains. Outdoor research facility "The Body Farm" study included survey, photography, collection and identification of faunal and human bone fragments, with a Power Point presentation discussing finds.

EXPERIENCE

- Extensive monitoring of open space, streets and project development areas for prehistoric period and historic period resources. Areas monitored include Sutter Street in Folsom; Mud Creek Archeological District in Chico; Camp Roberts, San Luis Obispo County; Avila Beach, San Luis Obispo County; Edgewood Golf Course, South Lake Tahoe; Davis Water Project, Davis; Star Bend levee section, Sutter County; Feather River levees, Sutter County; Bodega Bay, Sonoma County; San Jose BART line extension, Santa Clara County; and numerous sites for PG&E in San Francisco.
- Over twenty years of experience working in CRM, volunteer, and academic settings in California historic, proto-historic, and prehistoric archaeology.
- Expertise in pedestrian survey, excavation, feature (including burial) exposure, laboratory techniques, research. Field positions include crew chief and lead technician.

APPENDIX 2

Record Search

CENTRAL CALIFORNIA INFORMATION CENTER

California Historical Resources Information System

Department of Anthropology – California State University, Stanislaus

One University Circle, Turlock, California 95382

(209) 667-3307

Alpine, Calaveras, Mariposa, Merced, San Joaquin, Stanislaus & Tuolumne Counties

Date: 8/26/2021

Records Search File No.: 11875I
Access Agreement: #137
Project: 320 N. Airport Way, Manteca

Neal Nuenschwander
Peak & Associates, Inc.
3161 Godman Avenue
Chico, CA 95973
530-342-2800 peakinc@yahoo.com

Invoice to: Robert Gerry
Peak & Associates, Inc.
5238 Keystone Avenue
Sacramento, CA 95841
916-283-5238 peakinc@surewest.net

Dear Mr. Nuenschwander:

The Central California Information Center received your record search request for the project area referenced above, located on the Lathrop and Manteca 7.5' quadrangles in San Joaquin County. The following reflects the results of the records search for the project study area and radius:

As per data currently available at the CCaIC, the locations of resources/reports are provided in the following format: ☒ custom GIS maps ☐ GIS Data/shape files ☐ hand-drawn maps

Summary Data:

Resources within the project area:	None formally reported to the Information Center.
Resources within the 1/4-mile radius:	3: P-39-000103, 5397, 5400
Reports within the project area:	2: SJ-04786, 5840
Reports within the 1/4-mile radius:	5: SJ-004896, 5309, 6625, 9234, 9252

Resource Database Printout (list): ☒ enclosed ☐ not requested ☐ nothing listed
Resource Database Printout (details): ☐ enclosed ☒ not requested ☐ nothing listed
Resource Digital Database Records: ☐ enclosed ☒ not requested ☐ nothing listed
Report Database Printout (list): ☒ enclosed ☐ not requested ☐ nothing listed
Report Database Printout (details): ☐ enclosed ☒ not requested ☐ nothing listed
Report Digital Database Records: ☐ enclosed ☒ not requested ☐ nothing listed
Resource Record Copies: ☒ enclosed ☐ not requested ☐ nothing listed
Report Copies: ☒ enclosed ☐ not requested ☐ nothing listed
OHP Historic Properties Directory: New Excel File: Built Environment Resource Directory (BERD)
Dated 12/17/2019 ☐ enclosed ☐ not requested ☒ nothing listed

But copy enclosed in case there are some built environment resources that are not mapped in GIS or that we do not have further information for in your project/radius.

Archaeological Determinations of Eligibility:	☐ enclosed	☐ not requested	☒ nothing listed
CA Inventory of Historic Resources (1976):	☐ enclosed	☐ not requested	☒ nothing listed
Caltrans Bridge Survey:	☐ enclosed	☒ not requested	☐ nothing listed
Ethnographic Information:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Literature:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Maps:	☐ enclosed	☒ not requested	☐ nothing listed
Local Inventories:	☐ enclosed	☒ not requested	☐ nothing listed
GLO and/or Rancho Plat Maps:	☐ enclosed	☒ not requested	☐ nothing listed

Shipwreck Inventory: ☒ not available at CCIC; please go to
http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp

Soil Survey Maps: ☒ not available at CCIC; please go to
http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS).

Note: Billing will be transmitted separately via email by our Financial Services office *($315.60), payable within 60 days of receipt of the invoice.

If you wish to include payment by Credit Card, you must wait to receive the official invoice from Financial Services so that you can reference the CMP # (Invoice Number), and then contact the link below:

https://commerce.cashnet.com/ANTHROPOLOGY

Sincerely,

E. A. Greathouse

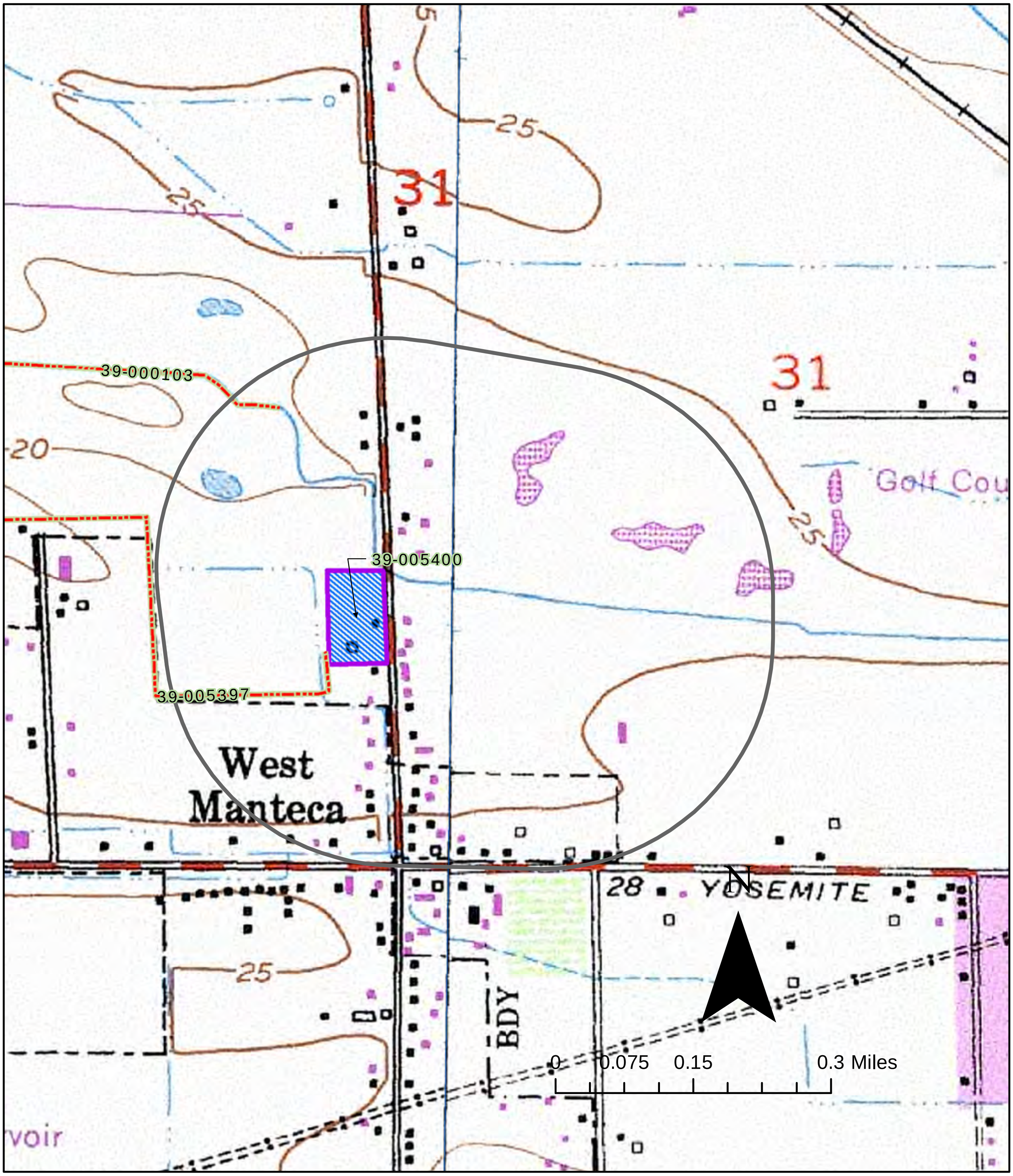
E. A. Greathouse, Coordinator
Central California Information Center
California Historical Resources Information System

* Invoice Request sent to: ARBilling@csustan.edu, CSU Stanislaus Financial Services

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-39-000103		Resource Name - Drainage Ditch, South San Joaquin Irrigation District	Structure	Historic	HP20	1993 (JRP Histsorical Consulting, JRP Historical Consulting); 2019 (Coleman et al., Solano Archaeological Services)	ME-02759, SJ-02759, SJ-04786, SJ-05309, SJ-08362, SJ-09234, ST-02759
P-39-005397	CA-SJO-000375H	Resource Name - SAS-001 Historic era irrigation segments	Structure, Site	Historic	AH06	2019 (Coleman et al., Solano Archaeological Services)	SJ-09234
P-39-005400		Resource Name - SAS-004; 495 N. Airport Way	Building	Historic	HP02; HP33	2019 (Coleman et al., Solano Archaeological Services)	SJ-09234

CCaIC 11875L 320 N. Airport Way, Manteca
Resources 1/4-mile radius 1:10,000-scale
Lathrop & Manteca USGS 7.5' Quadrangles



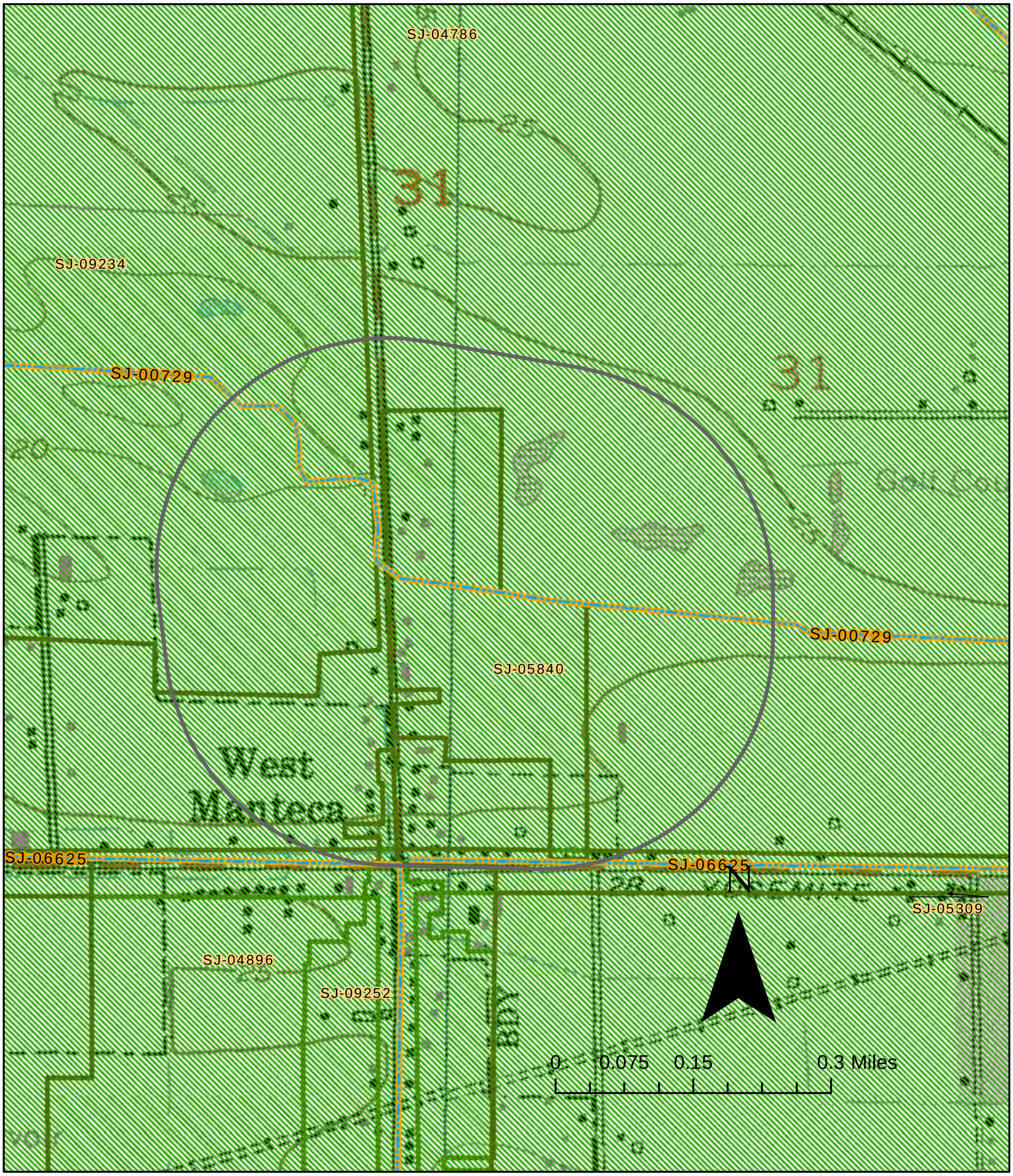
Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SJ-00729	NADB-R - 1361539	1981	Chavez, D.	Cultural Resource Evaluation for the Manteca Wastewater Project, San Joaquin County, California.	David Chavez, Consulting Archaeologist; for James M. Montgomery Consulting Engineers, Inc.	
SJ-04786	NADB-R - 1364725	2002	Windmiller, Ric and Donald Napoli	City of Manteca--General Plan Update, Background Reports: Archaeological Resources, Historical Resources, Records Search Results.	Ric Windmiller, Consulting Archaeologist (and) Donald Napoli, of Historic Preservation Planning; for Wade Associates, Sacramento, CA	39-000002, 39-000015, 39-000098, 39-000099, 39-000102, 39-000103, 39-000111, 39-000282, 39-000354, 39-000681, 39-000682, 39-000683, 39-000684, 39-004148, 39-004188, 39-004189, 39-004190, 39-004191, 39-004192
SJ-04896	NADB-R - 1364809	2003	Windmiller, R. and D. Napoli	Airport Way-Yosemite Avenue Specific Plan, Background Reports: Archaeological Resources, Historical Resources, Records Search Results.	R. Windmiller	
SJ-04896A		2003	Napoli, D.	Airport Way-Yosemite Avenue Specific Plan; Background Report on Historical Resouces	Historic Preservation Planning	
SJ-04896B		2003	Windmiller, R.	Airport Way-Yosemite Avenue Specific Plan; Appendix: Records Search Results Archaelogical and Historic Resources	Consulting Archaeologist	
SJ-05309	NADB-R - 1365195	2004	Baloian, M., R. Baloian, and W. Nettles	Cultural Resources Investigations for the South San Joaquin Irrigation District in San Joaquin County, California.	Applied Earthworks, Inc.; prepared for Russell Associates, Palo Alto, CA	39-000002, 39-000015, 39-000098, 39-000099, 39-000103, 39-000354, 39-004400, 39-004401, 39-004402, 39-004403, 39-004404, 39-004405, 39-004406, 39-004407, 39-004408, 39-004409, 39-004410, 39-004411, 39-004412, 39-004413, 39-004414, 39-004415, 39-004416, 39-004417
SJ-05840	NADB-R - 1365703	2004	Busby, C.	Letter Report: Archaeological Resources--Manteca Properties (9-Parcel Project Area).	Basin Research Associates	
SJ-06625	NADB-R - 1367290	1998	ASI Archaeology and Cultural Resource Management	Cultural Resources Survey, South County Surface Water Project, San Joaquin County, California, South San Joaquin Irrigation District	ASI Archaeology and Cultural Resource Management (prepared for Environmental Science Associates, Inc.)	39-000002, 39-000098, 39-000129, 39-000317, 39-000531, 39-000548, 50-000001
SJ-09234		2019	Coleman, J. A.	Cultural Resources Technical Memorandum: Cultural Resources Study - Exeter Industrial Development Project, City of Manteca, San Joaquin County, California	Solano Archaeological Services for BaseCamp Environmental, Inc.	39-000103, 39-005397, 39-005398, 39-005399, 39-005400, 39-005401

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SJ-09252		2018	Vallaire, K., Sanchez, R., and Falke, M.	Cultural Resources Study, Airport Way Widening Project, Manteca, San Joaquin County, California	LSA for the City of Manteca	39-005415, 39-005416, 39-005417, 39-005418, 39-005419, 39-005420, 39-005421, 39-005422, 39-005423, 39-005424, 39-005425, 39-005426, 39-005427, 39-005428, 39-005429, 39-005430, 39-005431, 39-005432, 39-005433

CCaIC 11875L 320 N. Airport Way, Manteca
Reports 1/4-mile radius 1:10,000-scale
Lathrop & Manteca USGS 7.5' Quadrangles



APPENDIX 3

DPR Site Record for 320 Airport Way

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code **Reviewer** **Date**

 ***Resource Name or #: 320 Airport Way, Manteca**

P1. Other Identifier:
***P2. Location:** ☐ **Not for Publication** **X Unrestricted** ***a. County:** San Joaquin
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Lathrop **Date:** 1952 (1994) **T** 1S; **R** 7E; NW **¼ of** SW¼ **of Sec** 31**;** M.D.B.M.
c. Address: 320 Airport Way City: Manteca Zip: 95337-8105
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation: 22 feet (est.). The resource is located along the east side of Airport Way, approximately one-quarter mile north of the intersection of Airport Way and West Yosemite Avenue.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The resource consists of a single-family residence and three outbuildings located on a roughly 14-acre parcel that is located along the east side of Airport Way near the City of Manteca. The single-family residence is single story, rectangular shaped, with a low-pitched gable roof with wide eaves. An addition has been added to the east facing façade. The residence was constructed in 1960 according to assessor's records. It is a Side-Gabled Roof subtype of the Ranch Style that was popular between 1935-1975 (McAlester 2017:596-611). The Side-Gabled Roof subtype represents about 10 percent of Ranch Style homes and was particularly popular in rural areas (McAlester 2017:598).

The single-family residence is sided with stucco and has composition asphalt shingles for roofing. Windows are modern aluminum sliders. There is an external brick chimney along the west facing façade. A small addition with a shed roof has been added to the east facing façade.

Building No. 1 is a single story, irregular shaped barn located north of the single-family residence. It has a sheet metal roof, and the sides are a combination of cinder block and vertical wood boards. Building No. 2 is a small pumphouse with sheet metal sides and roof. Building No. 3 is single story, rectangular shaped with a gable roof. The roof is covered with sheet metal and the sides are clad with vertical wood boards. The building is apparently used for equipment storage.

***P3b. Resource Attributes:** (List attributes and codes) HP2 - Single family property
***P4. Resources Present:** **X** Building ☐Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) View looking south f building No. 3 (left), residence (center). 8/31/2021. Acc. # 21-3612

***P6. Date Constructed/Age and Sources: X** Historic, residence constructed in 1960 according to assessor's records.

***P7. Owner and Address:**
Unknown

***P8. Recorded by:** (Name, affiliation, and address) Micheal Lawson, Peak & Associates, Inc., 3941 Park Drive, Suite 20-329, El Dorado Hills, CA 95762

***P9. Date Recorded:** 8/31/2021

***P10. Survey Type:** (Describe)
Complete, intensive.

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") *Cultural Resource Assessment of 320 Airport Way, San Joaquin County, California*. Peak & Associates, Inc. 2021

***Attachments:** ☐NONE X Location Map X Sketch Map X Continuation Sheet X Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Primary #
HRI#

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status Code**

***Resource Name or #** (Assigned by recorder) **320 Airport Way, Manteca**

B1. Historic Name:
B2. Common Name:
B3. Original Use: Residence
B4. Present Use: Residence
***B5. Architectural Style:** Ranch, Side-Gable Roof subtype
***B6. Construction History:** (Construction date, alterations, and date of alterations) The residence was constructed in 1960 according to county assessor's records.

***B7. Moved?** X No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:** Three outbuildings

B9a. Architect: Unknown
b. Builder: Unknown
***B10. Significance: Theme:** Residential architecture **Area:** Central California
Period of Significance: 1900 - 1971 **Property Type:** Single family residence **Applicable Criteria:** A-D
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Under CRHR criterion A, the site must "be associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage." This complex is not associated with any significant contribution.

For a property to be eligible under Criterion B of the CRHR, the features must be associated with persons important in the past. There is no evidence to suggest that this property was ever associated with a significant person in our past.

For CRHR Criterion C, the resource must embody "the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values." The residence is a Side-Gable Roof subtype of the common Ranch Style dwelling, and the outbuildings are utilitarian exhibiting no special design elements. Ranch Style homes were constructed in huge numbers across California from the period between 1935 and 1975 (McAlester 2017:596-611).

For Criterion D, there were no associated archeological deposits observed during the field inspection and recordation and it is unlikely given the relatively late construction date of 1960 that such a deposit would be present.

We conclude that this complex does not meet the threshold under criteria A - D of the CRHR and is not a historical resource.

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:**

B13. Remarks:

***B14. Evaluator:** Melinda Peak

***Date of Evaluation:** September 2021

(This space reserved for official comments.)

***Resource Name or #** (Assigned by recorder) **320 Airport Way, Manteca**

***Recorded by:** Michael Lawson ***Date:** 8/31/2021 **X** Continuation ☐ Update

A) View looking south of the north facing façade of the residence. 8/31/2021. Acc. #21-3589.

B) View looking southeast of the west facing façade of the residence. 8/31/2021. Acc. # 21-3590.

C) View looking north of the south facing façade of the residence. 8/31/2021. Acc. #21-3591.

D) View looking north of the partial east facing façade of the residence (left), south facing façade of the addition (center). 8/31/2021. Acc. # 21-3592.

E) View looking northwest of the south and east facing façades of the addition. 8/31/2021. Acc. #21-3593.

F) View looking west of the east facing façade of the addition and residence. 8/31/2021. Acc. # 21-3594.

G) View looking west of the east facing façade of Building No. 1. 8/31/2021. Acc. #21-3603.

H) View looking north of the south facing façade of Building No. 1. 8/31/2021. Acc. # 21-3602.

I) View looking west of the east facing façade of Building No. 1. 8/31/2021. Acc. #21-3604.

J) View looking south of the north facing façade of Building No. 1. 8/31/2021. Acc. # 21-3609.

K) View looking west of the east facing façade of Building No. 2. 8/31/2021. Acc. #21-3599.

L) View looking west of the east facing façade of Building No. 3. 8/31/2021. Acc. #21-3597.

M) View looking north of the south facing façade of Building No. 3. 8/31/2021. Acc. # 21-3596.

N) View looking east of the west facing façade of Building No. 3. 8/31/2021. Acc. #21-3601.

O) View looking south of the north facing façade of Building No. 3. 8/31/2021. Acc. # 21-3598.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
SKETCH MAP

Primary #
HRI#
Trinomial

Page 11 **of** 12 ***Resource Name or #** (Assigned by recorder) 320 Airport Way, Manteca

***Drawn By:** Neal Neuenschwander ***Date** 8/31/2021

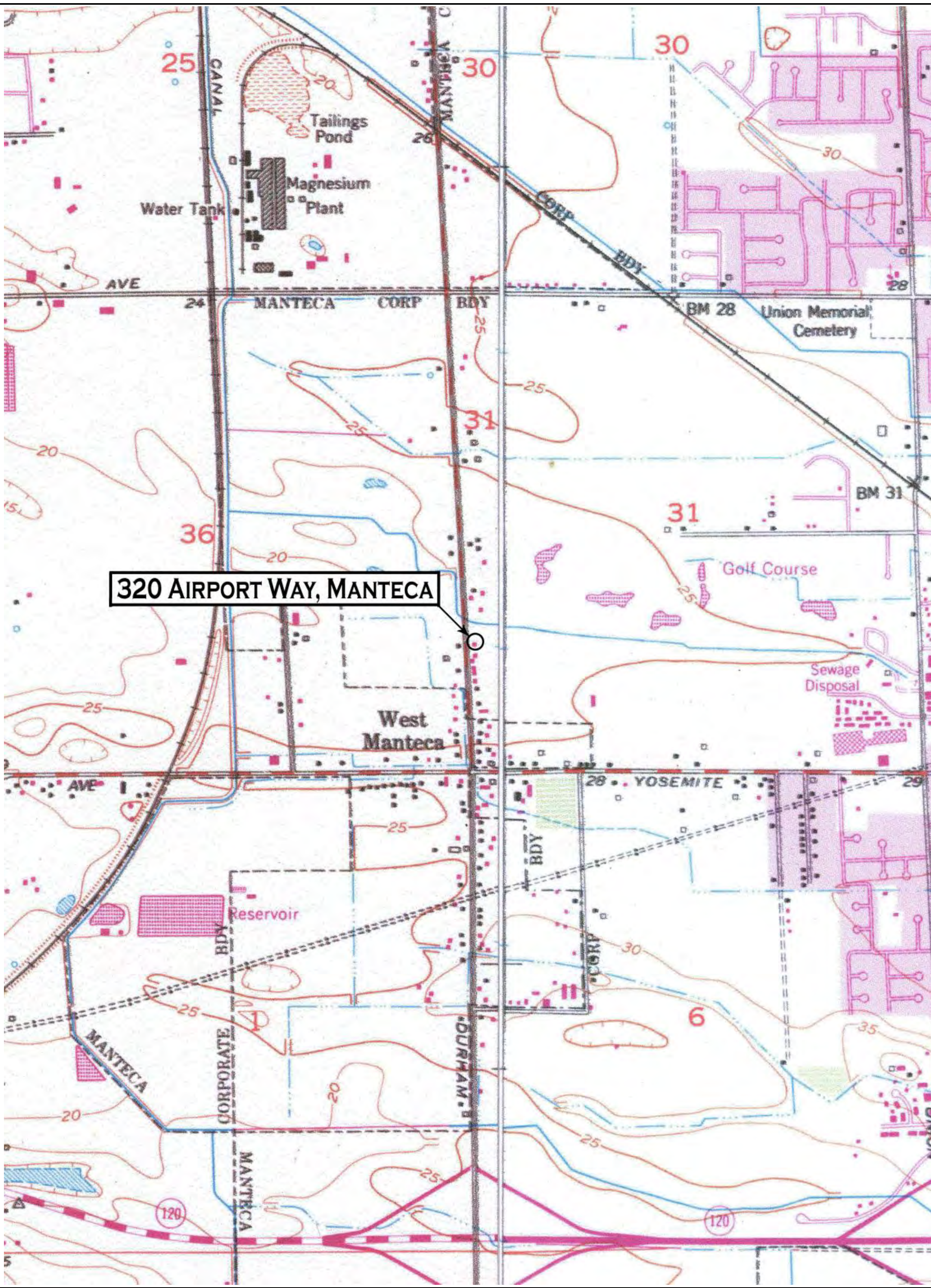
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

Page 12 **of** 12 ***Resource Name or #: 320 Airport Way, Manteca**

***Map Name:** Lathrop/Manteca **Scale:** 1:24,000 ***Date of Map:** 1952 (1994) / 1952 (1987/1994)



DPR 523J (1/95) *Required information

APPENDIX C: NOISE REPORT

Environmental Noise Assessment

320 Airport Way

City of Manteca, California

October 19, 2021

Project #210809

Prepared for:

DE NOVO PLANNING GROUP

De Novo Planning Group
1020 Suncast Lane, #106
El Dorado Hills, CA 95762

Prepared by:

Saxelby Acoustics LLC

Institute of Noise Control Engineering
Board Certified
INCE USA
Luke Saxelby
12004
January 31, 2022
Verify at inceusa.org
of the United States of America

Luke Saxelby, INCE Bd. Cert.
Principal Consultant
Board Certified, Institute of Noise Control Engineering (INCE)

(916) 760-8821
www.SaxNoise.com | Luke@SaxNoise.com
915 Highland Pointe Drive, Suite 250
Roseville, CA 95678

Table of Contents

Appendices

List of Figures

List of Tables

INTRODUCTION

The 320 Airport Way Residential project consists of the development of a 123-lot residential subdivision. The project is located north of Yosemite Avenue along Airport Way in the City of Manteca, California.

Figure 1 shows the project site plan. **Figure 2** shows an aerial photo of the project site.

ENVIRONMENTAL SETTING

BACKGROUND INFORMATION ON NOISE

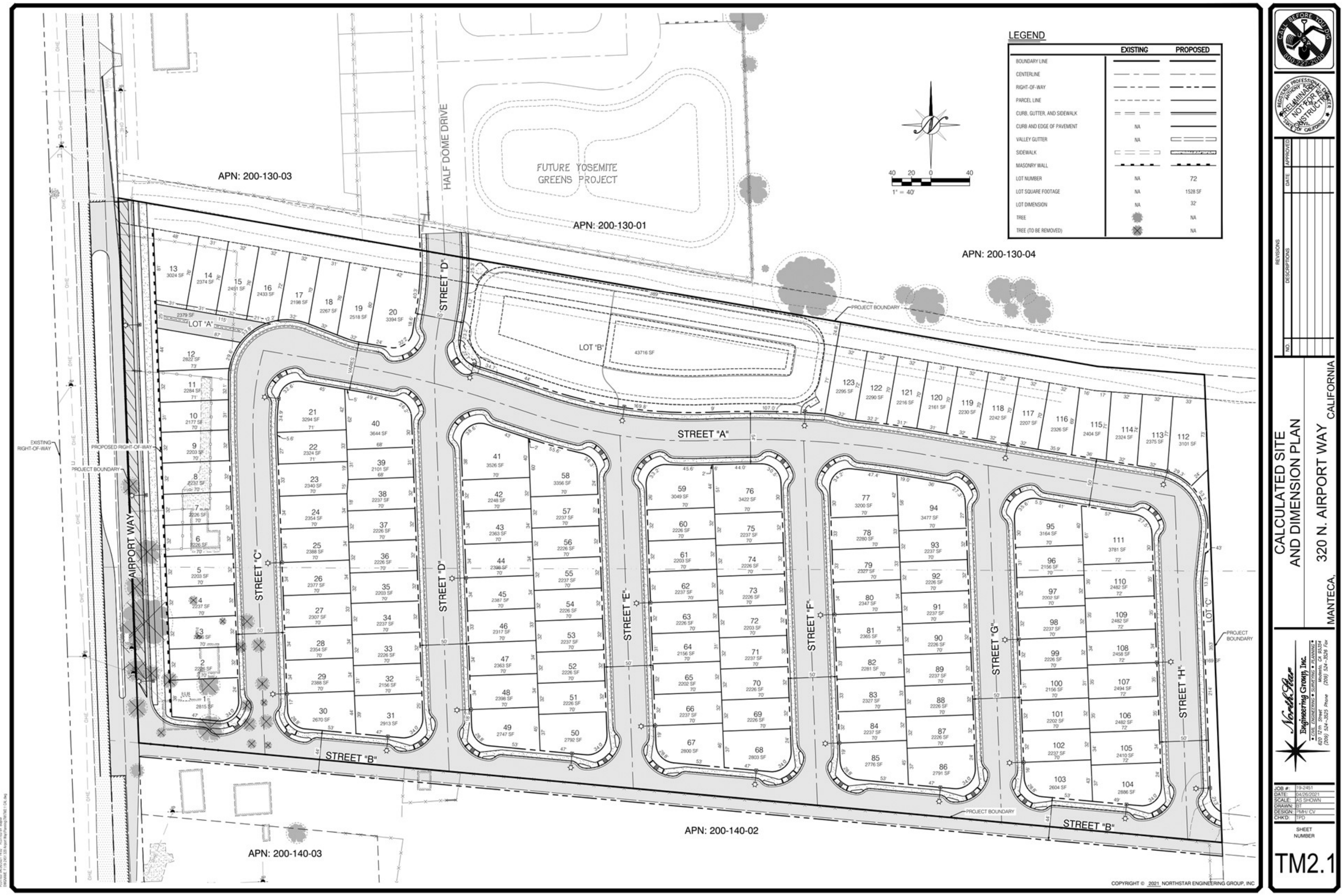
Fundamentals of Acoustics

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment.



320 Airport Way

City of Manteca, California

Figure 1

Project Site Plan

SAXELBY ACOUSTICS

Acoustics · Noise · Vibration

320 Airport Way

City of Manteca, California

Figure 2

Noise Measurement Sites

Legend

Project Site

Noise Measurement - Long Term

0 ft 100 ft 250 ft 400 ft

Projection: UTM Zone 10 / WGS84 / meters
Rev. Date: 09/02/2021

SAXELBY ACOUSTICS
Acoustics · Noise · Vibration

The decibel scale is logarithmic, not linear. In other words, two sound levels 10-dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10-dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound, and twice as loud as a 60 dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The day/night average level (DNL or L_{dn}) is based upon the average noise level over a 24-hour day, with a +10-decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Table 1 lists several examples of the noise levels associated with common situations. **Appendix A** provides a summary of acoustical terms used in this report.

TABLE 1: TYPICAL NOISE LEVELS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft.)	--100--	
Gas Lawn Mower at 1 m (3 ft.)	--90--	
Diesel Truck at 15 m (50 ft.), at 80 km/hr. (50 mph)	--80--	Food Blender at 1 m (3 ft.) Garbage Disposal at 1 m (3 ft.)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft.)	--70--	Vacuum Cleaner at 3 m (10 ft.)
Commercial Area Heavy Traffic at 90 m (300 ft.)	--60--	Normal Speech at 1 m (3 ft.)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

Source: Caltrans, Technical Noise Supplement, Traffic Noise Analysis Protocol. September, 2013.

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6-dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

REGULATORY CONTEXT

FEDERAL

There are no federal regulations related to noise that apply to the Proposed Project.

STATE

There are no state regulations related to noise that apply to the Proposed Project.

LOCAL

City of Manteca General Plan

Exterior and interior noise standards for residential land uses are established within the City of Manteca General Plan Noise Element. Policies contained in the Noise Element applicable to the proposed project include:

The City of Manteca General Plan – Existing (2003) General Plan

The City of Manteca General Plan Noise Element contains goals, policies, and implementation measures for assessing noise impacts within the City. Listed below are the noise goals, policies, and implementation measures that are applicable to the proposed Project (City of Manteca as amended through 2016):

GOALS: NOISE

- N-1. Protect the residents of Manteca from the harmful and annoying effects of exposure to excessive noise.
- N-3. Ensure that the downtown core noise levels remain acceptable and compatible with commercial and higher density residential land uses.
- N-4. Protect public health and welfare by eliminating existing noise problems where feasible, by establishing standards for acceptable indoor and outdoor noise, and by preventing significant increases in noise levels.
- N-5. Incorporate noise considerations into land use planning decisions, and guide the location and design of transportation facilities to minimize the effects of noise on adjacent land uses.

POLICIES: NOISE

- N-P-2. New development of residential or other noise-sensitive land uses will not be permitted in noise-impacted areas unless effective mitigation measures are incorporated into the project design to satisfy the performance standards in Table 9-1 [**Table 2**].

TABLE 2: MAXIMUM ALLOWABLE NOISE EXPOSURE MOBILE NOISE SOURCES

Land Use[4]	Outdoor Activity Areas[1]	Interior Spaces	
		Ldn/CNEL, dB	Leq/CNEL, dB[3]
Residential	60[2]	45	--
Transient Lodging	60[2]	45	--
Hospitals, Nursing Homes	60[2]	45	--
Theatres, Auditoriums, Music Halls	--	--	35
Churches, Music Halls	60[2]	--	40
Office Buildings	65	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

Notes: [1] Outdoor activity areas for residential development are considered to be backyard patios or decks of single family dwellings, and the common areas where people generally congregate for multi-family developments. Outdoor activity areas for non-residential developments are considered to be those common areas where people generally congregate, including pedestrian plazas, seating areas, and outside lunch facilities. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
[2] In areas where it is not possible to reduce exterior noise levels to 60 dB L_{dn} or below using a practical application of the best noise-reduction technology, an exterior noise level of up to 65 L_{dn} will be allowed.
[3] Determined for a typical worst-case hour during periods of use.
[4] Where a proposed use is not specifically listed on the table, the use shall comply with the noise exposure standards for the nearest similar use as determined by the City.
Source: City of Manteca General Plan, Noise Element, Table 9-1.

- N-P-3. The City may permit the development of new noise-sensitive uses only where the noise level due to fixed (non-transportation) noise sources satisfies the noise level standards of Table 9-2 [Table 3.10-9]. Noise mitigation may be required to meet Table 9-2 [**Table 3**] performance standards.

TABLE 3: PERFORMANCE STANDARDS FOR STATIONARY NOISE SOURCES OR PROJECTS AFFECTED BY STATIONARY NOISE SOURCES [1,2]

Noise Level Descriptor	Daytime (7 AM – 10 PM)	Nighttime (10 PM – 7 AM)
Hourly L_{eq}, dB	50	45
Maximum Level, dB	70	65

Notes: [1] Each of the noise levels specified above should be lowered by five (5) dB for simple noise tones, noises consisting primarily of speech or music, or recurring impulsive noises. Such noises are generally considered by residents to be particularly annoying and are a primary source of noise complaints.
[2] No standards have been included for interior noise levels. Standard construction practices should, with the exterior noise levels identified, result in acceptable interior noise levels.
Source: City of Manteca General Plan, Noise Element, Table 9-2.

- N-P-5. In accord with the Table 9-2 [**Table 3**] standards, the City shall regulate construction-related noise impacts on adjacent uses.

IMPLEMENTATION MEASURES: NOISE

- N-I-1. New development in residential areas with an actual or projected exterior noise level of greater than 60 dB L_{dn} will be conditioned to use mitigation measures to reduce exterior noise levels to less than or equal to 60 dB L_{dn}.
- N-I-3. In making a determination of impact under the California Environmental Quality Act (CEQA), a substantial increase will occur if ambient noise levels are increased by 10 dB or more. An increase from 5-10 dB may be substantial. Factors to be considered in determining the significance of increases from 5-10 dB include:
    - the resulting noise levels
    - the duration and frequency of the noise
    - the number of people affected
    - the land use designation of the affected receptor sites
    - public reactions or controversy as demonstrated at workshops or hearings, or by correspondence
    - prior CEQA determinations by other agencies specific to the project
- N-I-4. Control noise at the source through use of insulation, berms, building design and orientation, buffer space, staggered operating hours and other techniques. Use noise barriers to attenuate noise to acceptable levels.

The City of Manteca General Plan – Proposed General Plan Update

It is expected that the City's General Plan update may be adopted prior to the approval of the 320 Airport Way project. Therefore, the goals and policies of the proposed General Plan are also considered in this document. The City of Manteca General Plan Update noise goals, policies, and implementation measures are included below:

GOALS

Goal S-5: Protect the quality of life by protecting the community from harmful and excessive noise.

POLICIES

S-5.1 Incorporate noise considerations into land use, transportation, and infrastructure planning decisions, and guide the location and design of noise-producing uses to minimize the effects of noise on adjacent noise-sensitive land uses, including residential uses and schools.

S-5.2 Ensure that Downtown noise levels remain acceptable and compatible with a pedestrian-oriented environment and higher density residential land uses.

S-5.3 Areas within Manteca exposed to existing or projected exterior noise levels from mobile noise sources exceeding the performance standards in Table S-1 (Table 4) shall be designated as noise-impacted areas.

S-5.4 Require residential and other noise-sensitive development projects to satisfy the noise level criteria in Tables S-1 and S-2.

S-5.5 Require new stationary noise sources proposed adjacent to noise sensitive uses to be mitigated so as to not exceed the noise level performance standards in Table S-2 (Table 5), or a substantial increase in noise levels established through a detailed ambient noise survey.

S-5.6 Regulate construction-related noise to reduce impacts on adjacent uses to the criteria identified in Table S-2 (Table 5) or, if the criteria in Table S-2 (Table 5) cannot be met, to the maximum level feasible using best management practices and complying with the MMC Chapter 9.52.

S-5.7 Where the development of residential or other noise-sensitive land use is proposed for a noise-impacted area or where the development of a stationary noise source is proposed in the vicinity of noise-sensitive uses, an acoustical analysis is required as part of the environmental review process so that noise mitigation may be considered in the project design. The acoustical analysis shall:

- Be the responsibility of the applicant.
- Be prepared by a qualified acoustical consultant experienced in the fields of environmental noise assessment and architectural acoustics.
- Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions and the predominant noise sources.
- Estimate existing and projected (20 years) noise levels in terms of the standards of Table S-1 (Table 4) or Table S-2 (Table 5), and compare those levels to the adopted policies of the Noise Element.
- Recommend appropriate mitigation measures to achieve compliance with the adopted policies and standards of the Noise Element.
- Estimate noise exposure after the prescribed mitigation measures have been implemented.
- If necessary, describe a post-project assessment program to monitor the effectiveness of the proposed mitigation measures.

S-5.8 Apply noise level criteria applied to land uses other than residential or other noise-sensitive uses consistent with noise performance levels of Table S-1 (Table 4) and Table S-2 (Table 5).

S-5.9 Enforce the Sound Transmission Control Standards of the California Building Code concerning the construction of new multiple occupancy dwellings such as hotels, apartments, and condominiums.

S-5.10 Ensure that new equipment and vehicles purchased by the City comply with noise level performance standards consistent with the best available noise reduction technology.

S-5.11 Require the Manteca Police Department to actively enforce requirements of the California Vehicle Code relating to vehicle mufflers and modified exhaust systems.

S-5.12 For new residential development backing on to a freeway or railroad right-of-way, the developer shall be required to provide appropriate mitigation measures to satisfy the performance standards in Table S-1 (Table 4).

S-5.13 It is recognized that the City and surrounding areas are considered to be urban in nature and rely upon both the industrial and agricultural economy of the area. Therefore, it is recognized that noise sources of existing uses may exceed generally accepted standards.

S-5.14 Carefully review and give potentially affected residents an opportunity to fully review any proposals for the establishment of helipads or heliports.

S-5.15 Recognizing that existing noise-sensitive uses may be exposed to increase noise levels due to circulation improvement projects associated with development under the General Plan and that it may not be feasible to reduce increased traffic noise levels to the criteria identified in Table S-1 (Table 4), the following criteria may be used to determine the significance of noise impacts associated with circulation improvement projects:

- Where existing traffic noise levels are less than 60 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +5 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant; and
- Where existing traffic noise levels range between 60 and 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +3 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant; and
- Where existing traffic noise levels are greater than 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a + 1.5 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant.

S-5.16 Work with the Federal Railroad Administration and passenger and freight rail operators to reduce exposure to rail and train noise, including establishing train horn "quiet zones" consistent with the federal regulations.

IMPLEMENTATION

S-5a *Require an acoustical analysis that complies with the requirements of S-5.7 where:*

- *Noise sensitive land uses are proposed in areas exposed to existing or projected noise levels exceeding the levels specified in Table S-1 (Table 4) or S-2.*
- *Proposed transportation projects are likely to produce noise levels exceeding the levels specified in Table S-1 (Table 4) or S-2 at existing or planned noise sensitive uses.*

S-5b *Assist in enforcing compliance with noise emissions standards for all types of vehicles,* *established by the California Vehicle Code and by federal regulations, through coordination with the Manteca Police Department and the California Highway Patrol.*

S-5c *Update the City's Noise Ordinance (Chapter 9.52) to reflect the noise standards established in this Noise Element and proactively enforce the City's Noise Ordinance, including requiring the following measures for construction:*

- *Restrict construction activities to the hours of 7:00 a.m. to 7:00 p.m. on Monday through Friday, and 8:00 a.m. to 6:00 p.m. on Saturdays. No construction shall be permitted outside of these hours or on Sundays or federal holidays, without a specific exemption issued by the City.*
- *A Construction Noise Management Plan shall be submitted by the applicant for construction projects, when determined necessary by the City. The Construction Noise Management Plan shall include proper posting of construction schedules, appointment of a noise disturbance coordinator, and methods for assisting in noise reduction measures.*
- *Noise reduction measures may include, but are not limited to, the following:*
  a. *Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds) wherever feasible.*
  b. *Except as provided herein, impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used. This muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used, if such jackets are commercially available. this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures.*
  c. *Temporary power poles shall be used instead of generators where feasible.*
  d. *Stationary noise sources shall be located as far from adjacent properties as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the City of provide equivalent noise reduction.*
  e. *The noisiest phases of construction shall be limited to less than 10 days at a time. Exceptions may be allowed if the City determines an extension is necessary and all available noise reduction controls are implemented.*
  f. *Delivery of materials shall observe the hours of operation described above.*
  g. *Truck traffic should avoid residential areas to the extent possible.*

S-5d *In making a determination of impact under the California Environmental Quality Act (CEQA), a* *substantial increase will occur if ambient noise levels are have a substantial increase. Generally, a 3 dB increase in noise levels is barely perceptible, and a 5 dB increase in noise levels is clearly perceptible. Therefore, increases in noise levels shall be considered to be substantial when the following occurs:*

- *When existing noise levels are less than 60 dB, a 5 dB increase in noise will be considered substantial;*
- *When existing noise levels are between 60 dB and 65 dB, a 3 dB increase in noise will be considered substantial;*
- *When existing noise levels exceed 65 dB, a 1.5 dB increase in noise will be considered substantial.*

Additional or alternative criteria can be used for determining a substantial increase in noise levels. For instance, if the overall increase in noise levels occurs where no noise-sensitive uses are located, then the City may use their discretion in determining if there is any impact at all. In such a case, the following alternative factors may be used for determining a substantial increase in noise levels:

- *the resulting noise levels;*
- *the duration and frequency of the noise;*
- *the number of people affected;*
- *conforming or non-conforming land uses;*
- *the land use designation of the affected receptor sites;*
- *public reactions or controversy as demonstrated at workshops or hearings, or by correspondence; and*
- *prior CEQA determinations by other agencies specific to the project.*

S-5e *Control noise at the source through use of insulation, berms, building design and orientation, buffer space, staggered operating hours, and similar techniques. Where such techniques would not meet acceptable levels, use noise barriers to attenuate noise associated with new noise sources to acceptable levels.*

S-5f *Require that all noise-attenuating features are designed to be attractive and to minimize maintenance.*

S-5g *Evaluate new transportation projects, such as truck routes, rail or public transit routes, and transit stations, using the standards contained in Table S-1 (Table 4). However, noise from these projects may be allowed to exceed the standards contained in Table S-1 (Table 4), if the City Council finds that there are special overriding circumstances.*

S-5h *Work with the Federal Rail Authority and passenger and freight rail service providers to establish a Quiet Zone at at-grade crossings in the City. Where new development would be* *affected by the train and rail noise, require project applicants to fund a fair-share of: a) studies associated with the application for a Quiet Zone, and b) alternative safety measures associated with the Quiet Zone (including, but not limited to signage, gates, lights, etc.).*

S-5i *Work in cooperation with Caltrans, the Union Pacific Railroad, San Joaquin Regional Rail Commission, and other agencies where appropriate to maintain noise level standards for both new and existing projects in compliance with Table S-1 (Table 4).*

S-5j *The City shall require new residential projects located adjacent to major freeways, truck routes, hard rail lines, or light rail lines to follow the FTA screening distance criteria to ensure that groundborne vibrations to do not exceed acceptable levels.*

TABLE 4: MAXIMUM ALLOWABLE NOISE EXPOSURE FROM MOBILE NOISE SOURCES

Land Use[1]	Outdoor Activity Areas[2,3]	Interior Spaces	
		Ldn/ CNEL, dBA	Leq, dBA[4]
Residential	60	45	-
Motels/Hotels	65	45	-
Mixed-Use	65	45	
Hospitals, Nursing Homes	60	45	-
Theaters, Auditoriums	-	-	35
Churches	60	-	40
Office Buildings	65	-	45
Schools, Libraries, Museums	70	-	45
Playgrounds, Neighborhood Parks	70	-	-
Industrial	75	-	45
Golf Courses, Water Recreation	70	-	-

[1]Where a proposed use is not specifically listed, the use shall comply with the standards for the most similar use as determined by the City.

[2]Outdoor activity areas for residential development are considered to be the back yard patios or decks of single family units and the common areas where people generally congregate for multi-family developments. Where common outdoor activity areas for multi-family developments comply with the outdoor noise level standard, the standard will not be applied at patios or decks of individual units provided noise-reducing measures are incorporated (e.g., orientation of patio/deck, screening of patio with masonry or other noise-attenuating material). Outdoor activity areas for non-residential developments are the common areas where people generally congregate, including pedestrian plazas, seating areas, and outside lunch facilities; not all residential developments include outdoor activity areas.

[3]In areas where it is not possible to reduce exterior noise levels to achieve the outdoor activity area standard w using a practical application of the best noise-reduction technology, an increase of up to 5 Ldn over the standard will be allowed provided that available exterior noise reduction measures have been implemented and interior noise levels are in compliance with this table

[4]Determined for a typical worst-case hour during periods of use.

TABLE 5: PERFORMANCE STANDARDS FOR STATIONARY NOISE SOURCES

Noise Level Descriptor	Daytime	Nighttime
	7 am to 10 pm	10 pm to 7 am
Hourly Leq, dBA	55	45

[1]Each of the noise levels specified above should be lowered by 5 dB for simple noise tones, noises consisting primarily of speech or music, or recurring impulsive noises. Such noises are generally considered to be particularly annoying and are a primary source of noise complaints.

[2]No standards have been included for interior noise levels. Standard construction practices should, with the exterior noise levels identified, result in acceptable interior noise levels.

[3]Stationary noise sources which are typically of concern include, but are not limited to, the following:

HVAC Systems	*Cooling Towers/Evaporative Condensers*
Pump Stations	*Lift Stations*
Emergency Generators	*Boilers*
Steam Valves	*Steam Turbines*
Generators	*Fans*
Air Compressors	*Heavy Equipment*
Conveyor Systems	*Transformers*
Pile Drivers	*Grinders*
Drill Rigs	*Gas or Diesel Motors*
Welders	*Cutting Equipment*
Outdoor Speakers	*Blowers*

[4]The types of uses which may typically produce the noise sources described above include but are not limited to: industrial facilities, pump stations, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.

City of Manteca Municipal Code Noise Ordinance

Section 9.52.030 of the City of Manteca Municipal Code prohibits excessive or annoying noise or vibration to residential and commercial properties in the City. The following general rules are outline in the ordinance:

9.52.030 PROHIBITED NOISES—GENERAL STANDARD

No person shall make, or cause to suffer, or permit to be made upon any public property, public right-of-way or private property, any unnecessary and unreasonable noises, sounds or vibrations which are physically annoying to reasonable persons of ordinary sensitivity or which are so harsh or so prolonged or unnatural or unusual in their use, time or place as to cause or contribute to the unnecessary and unreasonable discomfort of any persons within the neighborhood from which said noises emanate or which interfere with the peace and comfort of residents or their guests, or the operators or customers in places of business in the vicinity, or which may detrimentally or adversely affect such residences or places of business. (Ord. 1374 § 1(part), 2007)

17.58.050 D. Exempt Activities

8. Construction activities when conducted as part of an approved Building Permit, except as prohibited in Subsection 17.58.050(E)(1) (Prohibited Activities) below.

17.58.050 E. Prohibited Activities

1. Construction Noise. Operating or causing the operation of tools or equipment on private property used in alteration, construction, demolition, drilling, or repair work daily between the hours of 7:00 p.m. and 7:00 a.m., so that the sound creates a noise disturbance across a residential property line, except for emergency work of public service utilities.

EXISTING AND FUTURE NOISE AND VIBRATION ENVIRONMENTS

Existing Noise Receptors

Some land uses are considered more sensitive to noise than others. Land uses often associated with sensitive receptors generally include residences, schools, libraries, hospitals, and passive recreational areas. Sensitive noise receptors may also include threatened or endangered noise sensitive biological species, although many jurisdictions have not adopted noise standards for wildlife areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise.

Sensitivity is a function of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities involved. In the vicinity of the project site, sensitive land uses include existing single-family residential uses located north, west, and south of the project site.

Existing General Ambient Noise Levels

The existing noise environment in the project area is primarily defined by traffic noise from Airport Way located along the west side of the project site.

To quantify the existing ambient noise environment in the project vicinity, Saxelby Acoustics conducted a continuous (24-hr.) noise level measurement at two locations on the project site. Noise measurement locations are shown on **Figure 2**. A summary of the noise level measurement survey results is provided in **Table 4**. **Appendix B** contains the complete results of the noise monitoring.

The sound level meters were programmed to record the maximum, median, and average noise levels at each site during the survey. The maximum value, denoted L_{max}, represents the highest noise level measured. The average value, denoted L_{eq}, represents the energy average of all of the noise received by the sound level meter microphone during the monitoring period. The median value, denoted L_{50}, represents the sound level exceeded 50 percent of the time during the monitoring period.

Larson Davis Laboratories (LDL) model 820 precision integrating sound level meters were used for the ambient noise level measurement survey. The meters were calibrated before and after use with a B&K Model 4230 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

TABLE 6: SUMMARY OF EXISTING BACKGROUND NOISE MEASUREMENT DATA

Site	Date	L_{dn}	Daytime L_{eq}	Daytime L_{50}	Daytime L_{max}	Nighttime L_{eq}	Nighttime L_{50}	Nighttime L_{max}
LT-1	4/29/2021	74	72	70	88	67	58	86
LT-2	4/29/2021	57	51	49	65	52	50	67

Notes:

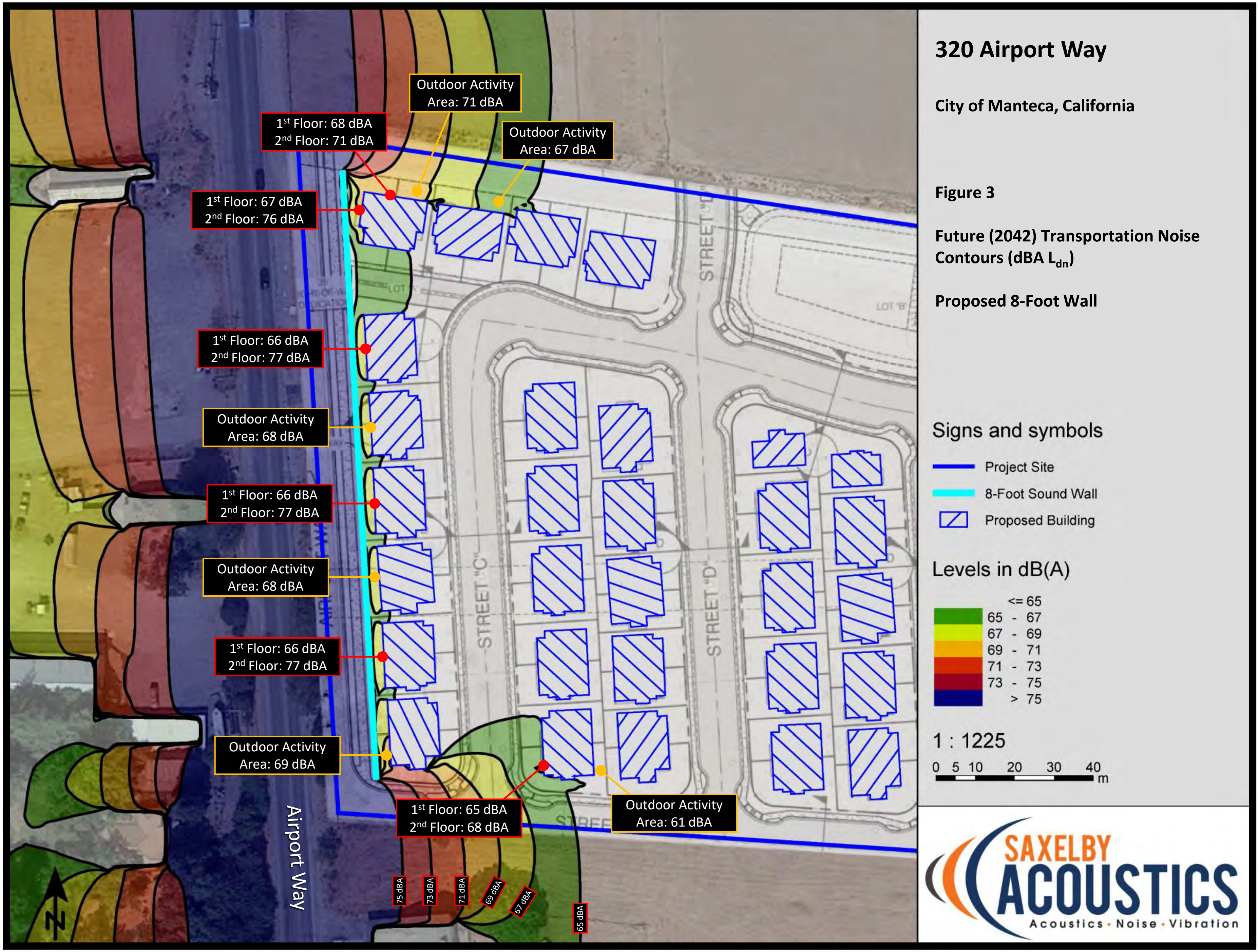
- All values shown in dBA
- Daytime hours: 7:00 a.m. to 10:00 p.m.
- Nighttime Hours: 10:00 p.m. to 7:00 a.m.
- Source: Saxelby Acoustics 2021

EVALUATION OF TRANSPORTATION NOISE ON PROJECT SITE

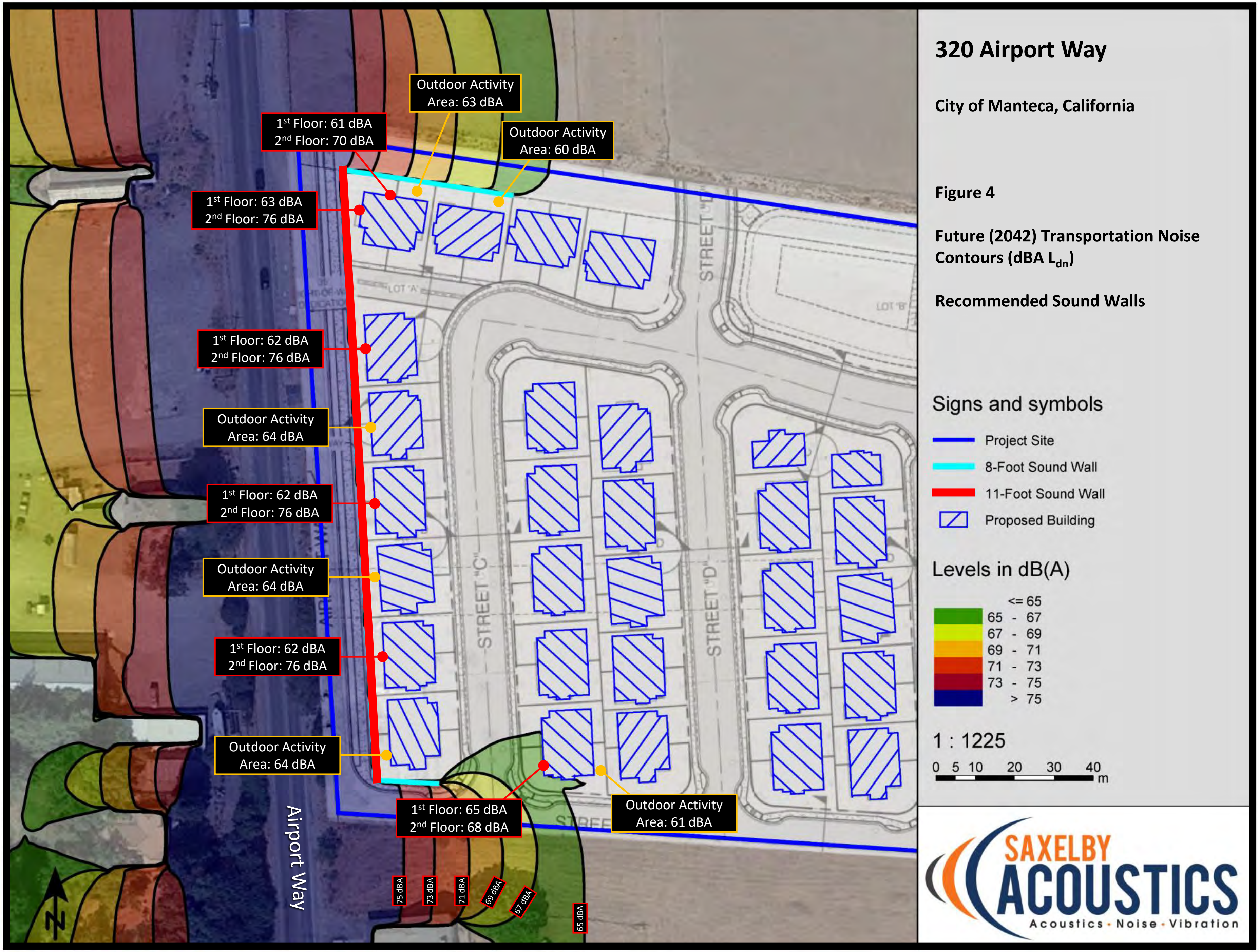
Exterior Noise

Saxelby Acoustics used the SoundPLAN noise model to calculate traffic noise levels at the proposed residential uses due to traffic on Airport Way. Inputs to the SoundPLAN noise model include topography, existing structures, roadways, proposed buildings, and the proposed 8-foot sound wall. It was determined that existing noise levels would increase by +4.7 dBA based upon projected increases in auto and truck traffic on Airport Way (Fehr & Peers 2020). The results of this analysis are shown graphically on **Figure 3**.

As illustrated on **Figure 3**, noise levels at the outdoor activity areas of the proposed residential uses exceed the City of Manteca 60 dBA L_{dn} standard by up to 11 dBA. This figure assumes that the proposed wall would be 8 feet in height. The City of Manteca allows the exterior noise level standard to be raised to 65 dBA L_{dn} where it is not possible to reduce noise levels to below 60 dBA L_{dn} using a practical application of best noise-reduction technology. Saxelby Acoustics analyzed various sound wall heights and locations necessary to reduce noise levels on the project site. It was determined that an 11-foot-tall sound wall is required along the western boundary of the proposed residential uses with 8-foot-tall sections extending partially along the northern and southern boundaries. **Figure 4** illustrates the required locations of these sound walls.



320 Airport Way
City of Manteca, California
Figure 3
Future (2042) Transportation Noise Contours (dBA L_{dn})
Proposed 8-Foot Wall
Signs and symbols
Project Site
8-Foot Sound Wall
Proposed Building
Levels in dB(A)
<= 65
65 - 67
67 - 69
69 - 71
71 - 73
73 - 75
> 75
1 : 1225
0 5 10 20 30 40 m
SAXELBY ACOUSTICS
Acoustics • Noise • Vibration
Outdoor Activity Area: 71 dBA
1st Floor: 68 dBA 2nd Floor: 71 dBA
Outdoor Activity Area: 67 dBA
1st Floor: 67 dBA 2nd Floor: 76 dBA
1st Floor: 66 dBA 2nd Floor: 77 dBA
Outdoor Activity Area: 68 dBA
1st Floor: 66 dBA 2nd Floor: 77 dBA
Outdoor Activity Area: 68 dBA
1st Floor: 66 dBA 2nd Floor: 77 dBA
Outdoor Activity Area: 69 dBA
1st Floor: 65 dBA 2nd Floor: 68 dBA
Outdoor Activity Area: 61 dBA
STREET "C"
STREET "D"
LOT "B"
Airport Way
75 dBA
73 dBA
71 dBA
69 dBA
67 dBA
65 dBA



320 Airport Way
City of Manteca, California
Figure 4
Future (2042) Transportation Noise Contours (dBA L_{dn})
Recommended Sound Walls
Signs and symbols
Project Site
8-Foot Sound Wall
11-Foot Sound Wall
Proposed Building
Levels in dB(A)
<= 65
65 - 67
67 - 69
69 - 71
71 - 73
73 - 75
> 75
1 : 1225
0 5 10 20 30 40 m
SAXELBY ACOUSTICS
Acoustics • Noise • Vibration
Outdoor Activity Area: 63 dBA
1st Floor: 61 dBA 2nd Floor: 70 dBA
Outdoor Activity Area: 60 dBA
1st Floor: 63 dBA 2nd Floor: 76 dBA
1st Floor: 62 dBA 2nd Floor: 76 dBA
Outdoor Activity Area: 64 dBA
1st Floor: 62 dBA 2nd Floor: 76 dBA
Outdoor Activity Area: 64 dBA
1st Floor: 62 dBA 2nd Floor: 76 dBA
Outdoor Activity Area: 64 dBA
1st Floor: 65 dBA 2nd Floor: 68 dBA
Outdoor Activity Area: 61 dBA
STREET "C"
STREET "D"
LOT 'A'
LOT 'B'
Airport Way
75 dBA
73 dBA
71 dBA
69 dBA
67 dBA
65 dBA

Interior Noise

Modern building construction methods typically yield an exterior-to-interior noise level reduction of 25 dBA. Therefore, where exterior noise levels are 70 dBA L_{dn}, or less, no additional interior noise control measures are typically required. For this project, exterior noise levels are predicted to be less than 65 dBA L_{dn} at first floor locations and up to 76 dBA L_{dn} at second floor locations. This would result in interior noise levels of less than 40 dBA L_{dn} at first floor receivers and 51 dBA at second floor receivers based on typical building construction. This exceeds with the City of Manteca General Plan Policy **12-P-6** which requires incorporation of mitigation measures where transportation noise levels exceed 65 dBA L_{dn} to ensure that interior noise levels do not exceed 45 dB L_{dn}.

Analysis of Interior Noise Control Measures

In order to calculate interior noise levels for the actual project construction, it is necessary to determine the noise reduction provided by the residential building facades. This may be calculated by using a measured A-weighted noise frequency spectrum for arterial road traffic. The composite transmission loss and resulting noise level in the receiving room is first determined. After correcting for room absorption, the overall noise level in the room is calculated.

Based upon the exterior transportation noise levels along Airport Way of 76 dBA L_{dn}, an exterior-to-interior noise level reduction of 31 dBA would be required to meet the City of Manteca standards. Saxelby Acoustics determined the necessary noise control measures to achieve this noise level reduction. However, this level is an estimate and must be verified once floor plans become available. **Appendix C** shows an estimate of the interior noise control measures. The noise control measures are summarized below:

- Building facades shall include use of stucco with exterior sheathing and a resilient channel for hanging interior gypsum board;
- STC 38 minimum rated glazing shall be used;
- Carpet on pad must be used as flooring in bedrooms;
- Interior gypsum wallboards and gypsum ceiling shall be 5/8";
- Saxelby Acoustics recommends that mechanical ventilation penetrations for exhaust fans not face toward Airport Way. Where feasible, these vents should be routed towards the opposite side of the building to minimize sound intrusion to sensitive areas of the buildings.
- Where vents must face toward Airport Way, it is recommended that the duct work be increased in length and make as many "S" turns as feasible prior to exiting the dwelling. This separates the openings between the noise source and the living space with a long circuitous route. Each time the sound turns a corner, it is reduced slightly. Flexible duct work is preferred ducting for this noise mitigation. Where the vent exits the building, a spring-loaded flap with a gasket should be installed to reduce sound entering the duct work when the vent is not in use.
- Mechanical ventilation shall be provided to allow occupants to keep doors and windows closed for acoustic isolation.

- In lieu of these measures, an interior noise control report may be prepared by a qualified acoustic engineer demonstrating that the proposed building construction would achieve the interior noise reduction requirement of 31 dBA.

CONCLUSION

The proposed project is predicted to meet the City of Manteca noise level standards assuming the following requirements are incorporated into design for the new residential uses:

- An 11-foot sound wall shall be constructed along the western boundary of the project site and 8-foot sound walls shall be constructed along the northern and southern project boundaries as shown on **Figure 4.** Sound walls should consist of concrete masonry type construction and may include earthen berms to achieve the full wall height relative to pad elevations;
- Building facades shall include use of stucco with exterior sheathing and a resilient channel for hanging interior gypsum board;
- STC 38 minimum rated glazing shall be used;
- Carpet on pad must be used as flooring in bedrooms;
- Interior gypsum wallboards and gypsum ceiling shall be 5/8";
- Saxelby Acoustics recommends that mechanical ventilation penetrations for exhaust fans not face toward Airport Way. Where feasible, these vents should be routed towards the opposite side of the building to minimize sound intrusion to sensitive areas of the buildings.
- Where vents must face toward Airport Way, it is recommended that the duct work be increased in length and make as many "S" turns as feasible prior to exiting the dwelling. This separates the openings between the noise source and the living space with a long circuitous route. Each time the sound turns a corner, it is reduced slightly. Flexible duct work is preferred ducting for this noise mitigation. Where the vent exits the building, a spring-loaded flap with a gasket should be installed to reduce sound entering the duct work when the vent is not in use.
- Mechanical ventilation shall be provided to allow occupants to keep doors and windows closed for acoustic isolation.
- In lieu of these measures, an interior noise control report may be prepared by a qualified acoustic engineer demonstrating that the proposed building construction would achieve the interior noise reduction requirement of 31 dBA.

It should be noted that interior noise control measures are based upon an estimate of the future residence layouts. These assumptions should be verified once floor plans become available for an accurate assessment of interior noise control measures.

REFERENCES

American National Standards Institute. (1998). *[Standard] ANSI S1.43-1997 (R2007): Specifications for integrating-averaging sound level meters*. New York: Acoustical Society of America.

American Standard Testing Methods, *Standard Guide for Measurement of Outdoor A-Weighted Sound Levels, American Standard Testing Methods (ASTM) E1014-08*, 2008.

ASTM E1014-12. *Standard Guide for Measurement of Outdoor A-Weighted Sound Levels*. ASTM International. West Conshohocken, PA. 2012.

ASTM E1780-12. *Standard Guide for Measuring Outdoor Sound Received from a Nearby Fixed Source.* ASTM International. West Conshohocken, PA. 2012.

Barry, T M. (1978). *FHWA highway traffic noise prediction model* (FHWA-RD-77-108). Washington, DC: U.S. Department of transportation, Federal highway administration, Office of research, Office of environmental policy.

California Department of Transportation (Caltrans), *Technical Noise Supplement, Traffic Noise Analysis Protocol*, September 2013.

California Department of Transportation (Caltrans), *Traffic Noise Analysis Protocol*, May 2011.

Egan, M. D. (1988). Architectural acoustics. United States of America: McGraw-Hill Book Company.

Federal Highway Administration. *FHWA Roadway Construction Noise Model User's Guide.* FHWA-HEP-05-054 DOT-VNTSC-FHWA-05-01. January 2006.

Hanson, Carl E. (Carl Elmer). (2006). *Transit noise and vibration impact assessment*. Washington, DC: U.S. Department of Transportation, Federal Transit Administration, Office of Planning and Environment.

International Electrotechnical Commission. Technical committee 29: Electroacoustics. International Organization of Legal Metrology. (2013). *Electroacoustics: Sound level meters*.

International Organization for Standardization. (1996). *Acoustic - ISO 9613-2: Attenuation of sound during propagation outdoors. Part 2: General methods of calculation*. Ginevra: I.S.O.

Kimley-Horn. *Acoustic Study Traffic Data*. October 1, 2020.

Miller, L. N., Bolt, Beranek, & and Newman, Inc. (1981). *Noise control for buildings and manufacturing plants*. Cambridge, MA: Bolt, Beranek and Newman, Inc.

SoundPLAN. SoundPLAN GmbH. Backnang, Germany. http://www.soundplan.eu/english/

Appendix A: Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
ASTC	Apparent Sound Transmission Class. Similar to STC but includes sound from flanking paths and correct for room reverberation. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by +5 dBA and nighttime hours weighted by +10 dBA.
DNL	See definition of Ldn.
IIC	Impact Insulation Class. An integer-number rating of how well a building floor attenuates impact sounds, such as footsteps. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz (Hz).
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one-hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
NIC	Noise Isolation Class. A rating of the noise reduction between two spaces. Similar to STC but includes sound from flanking paths and no correction for room reverberation.
NNIC	Normalized Noise Isolation Class. Similar to NIC but includes a correction for room reverberation.
Noise	Unwanted sound.
NRC	Noise Reduction Coefficient. NRC is a single-number rating of the sound-absorption of a material equal to the arithmetic mean of the sound-absorption coefficients in the 250, 500, 1000, and 2,000 Hz octave frequency bands rounded to the nearest multiple of 0.05. It is a representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.
RT60	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 Sabin.
SEL	Sound Exposure Level. SEL is a rating, in decibels, of a discrete event, such as an aircraft flyover or train pass by, that compresses the total sound energy into a one-second event.
SPC	Speech Privacy Class. SPC is a method of rating speech privacy in buildings. It is designed to measure the degree of speech privacy provided by a closed room, indicating the degree to which conversations occurring within are kept private from listeners outside the room.
STC	Sound Transmission Class. STC is an integer rating of how well a building partition attenuates airborne sound. It is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations. The STC rating is typically used to rate the sound transmission of a specific building element when tested in laboratory conditions where flanking paths around the assembly don't exist. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

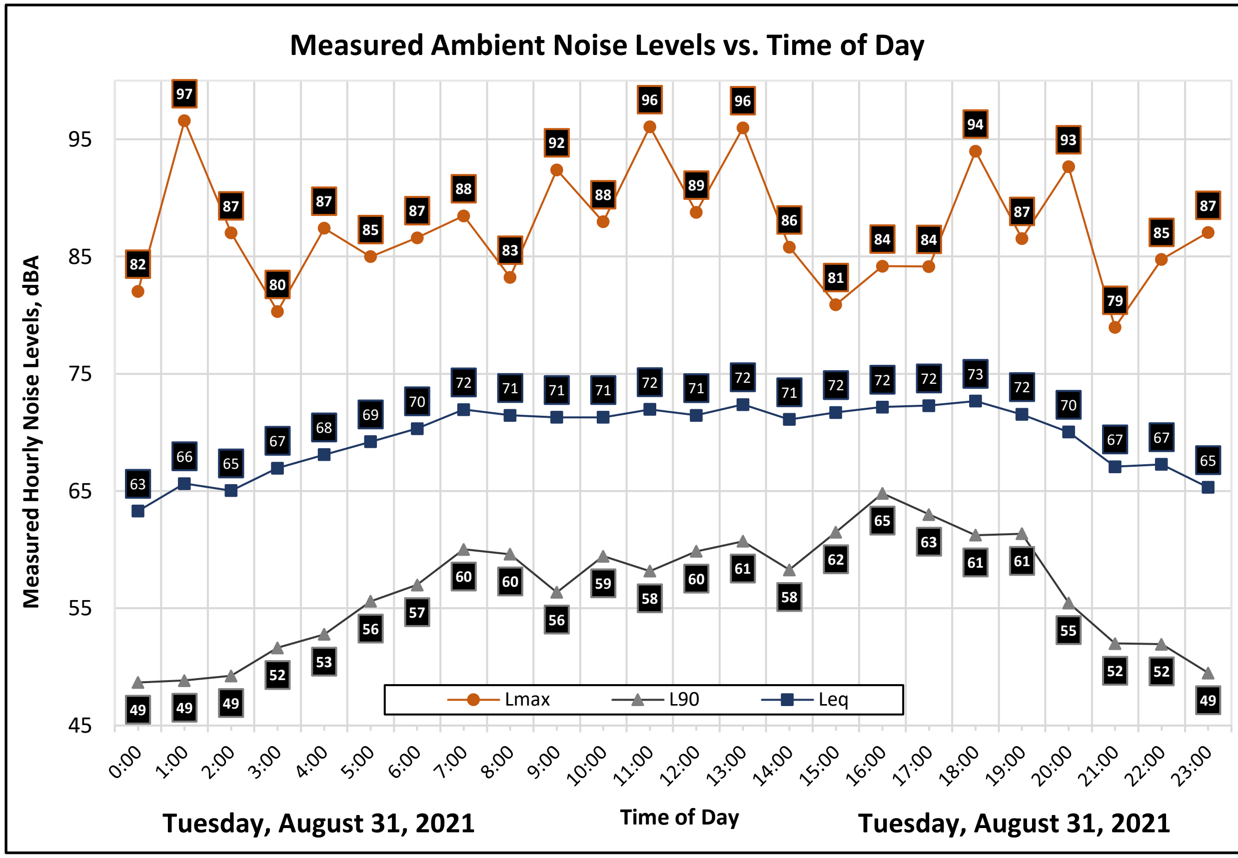
SAXELBY ACOUSTICS
Acoustics · Noise · Vibration

Appendix B: Continuous Ambient Noise Measurement Results

Appendix B1: Continuous Noise Monitoring Results

Site: LT-1
Project: 320 Airport Way
Location: Northwest
Coordinates: 37.8019427°, -121.2522623°
Meter: LDL 820-2
Calibrator: CAL200

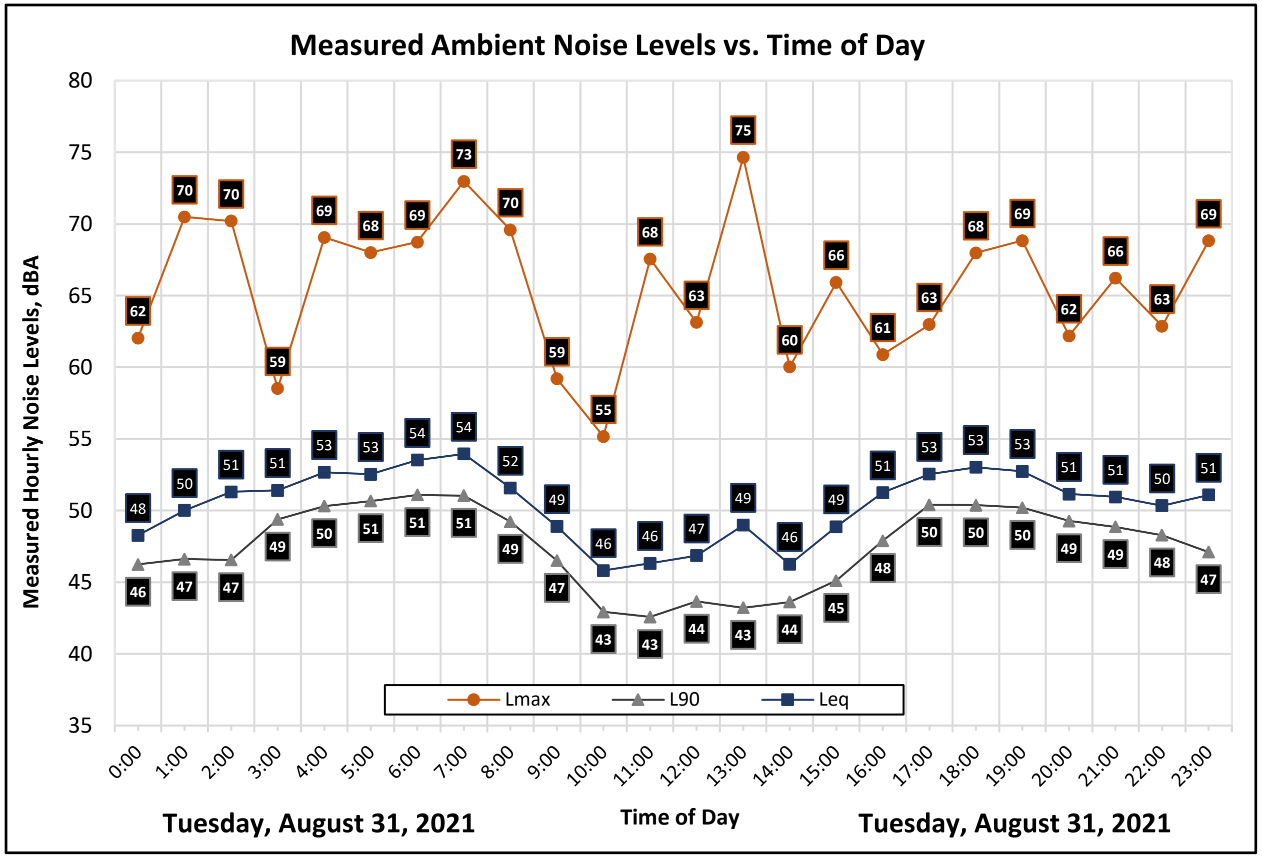
Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Tuesday, August 31, 2021	0:00	63	82	52	49
Tuesday, August 31, 2021	1:00	66	97	51	49
Tuesday, August 31, 2021	2:00	65	87	54	49
Tuesday, August 31, 2021	3:00	67	80	58	52
Tuesday, August 31, 2021	4:00	68	87	62	53
Tuesday, August 31, 2021	5:00	69	85	65	56
Tuesday, August 31, 2021	6:00	70	87	67	57
Tuesday, August 31, 2021	7:00	72	88	71	60
Tuesday, August 31, 2021	8:00	71	83	70	60
Tuesday, August 31, 2021	9:00	71	92	69	56
Tuesday, August 31, 2021	10:00	71	88	70	59
Tuesday, August 31, 2021	11:00	72	96	70	58
Tuesday, August 31, 2021	12:00	71	89	70	60
Tuesday, August 31, 2021	13:00	72	96	70	61
Tuesday, August 31, 2021	14:00	71	86	70	58
Tuesday, August 31, 2021	15:00	72	81	71	62
Tuesday, August 31, 2021	16:00	72	84	72	65
Tuesday, August 31, 2021	17:00	72	84	72	63
Tuesday, August 31, 2021	18:00	73	94	71	61
Tuesday, August 31, 2021	19:00	72	87	71	61
Tuesday, August 31, 2021	20:00	70	93	67	55
Tuesday, August 31, 2021	21:00	67	79	61	52
Tuesday, August 31, 2021	22:00	67	85	60	52
Tuesday, August 31, 2021	23:00	65	87	55	49
	Statistics	Leq	Lmax	L50	L90
	Day Average	72	88	70	59
	Night Average	67	86	58	52
	Day Low	67	79	61	52
	Day High	73	96	72	65
	Night Low	63	80	51	49
	Night High	70	97	67	57
	Ldn	74	Day %		83
	CNEL	75	Night %		17



Appendix B1: Continuous Noise Monitoring Results

Site: LT-2
Project: 320 Airport Way
Meter: LDL 820-3
Location: Southeast
Calibrator: CAL200
Coordinates: 37.8002867°, -121.2488518°

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Tuesday, August 31, 2021	0:00	48	62	48	46
Tuesday, August 31, 2021	1:00	50	70	48	47
Tuesday, August 31, 2021	2:00	51	70	49	47
Tuesday, August 31, 2021	3:00	51	59	51	49
Tuesday, August 31, 2021	4:00	53	69	52	50
Tuesday, August 31, 2021	5:00	53	68	52	51
Tuesday, August 31, 2021	6:00	54	69	53	51
Tuesday, August 31, 2021	7:00	54	73	52	51
Tuesday, August 31, 2021	8:00	52	70	51	49
Tuesday, August 31, 2021	9:00	49	59	48	47
Tuesday, August 31, 2021	10:00	46	55	45	43
Tuesday, August 31, 2021	11:00	46	68	44	43
Tuesday, August 31, 2021	12:00	47	63	46	44
Tuesday, August 31, 2021	13:00	49	75	45	43
Tuesday, August 31, 2021	14:00	46	60	45	44
Tuesday, August 31, 2021	15:00	49	66	48	45
Tuesday, August 31, 2021	16:00	51	61	51	48
Tuesday, August 31, 2021	17:00	53	63	52	50
Tuesday, August 31, 2021	18:00	53	68	52	50
Tuesday, August 31, 2021	19:00	53	69	52	50
Tuesday, August 31, 2021	20:00	51	62	51	49
Tuesday, August 31, 2021	21:00	51	66	50	49
Tuesday, August 31, 2021	22:00	50	63	50	48
Tuesday, August 31, 2021	23:00	51	69	49	47
	Statistics	Leq	Lmax	L50	L90
	Day Average	51	65	49	47
	Night Average	52	67	50	48
	Day Low	46	55	44	43
	Day High	54	75	52	51
	Night Low	48	59	48	46
	Night High	54	70	53	51
	Ldn	57	Day %		60
	CNEL	58	Night %		40



Appendix C: Exterior to Interior Noise Reduction Calculations

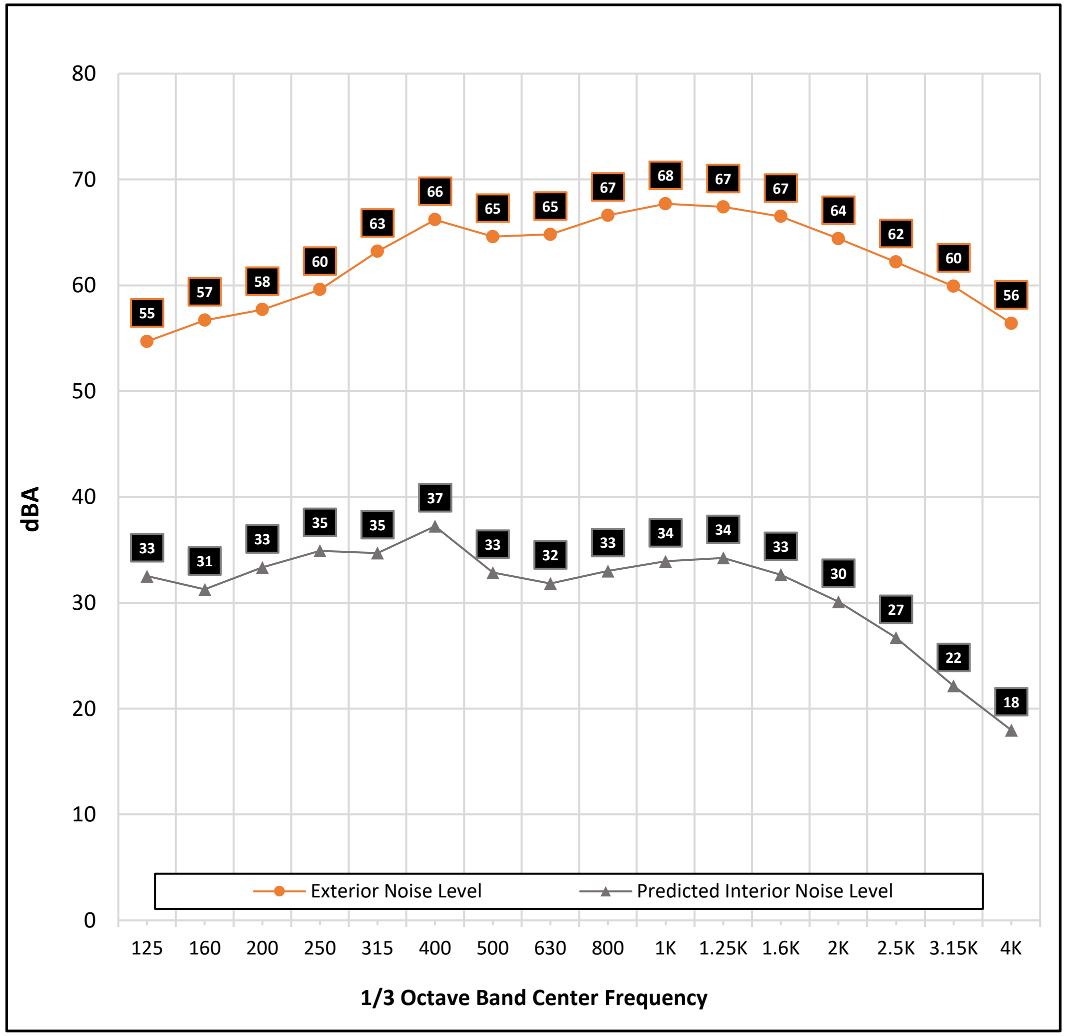
Appendix C1 : Interior Noise Calculation Sheet

Project: 320 Airport Way
Room Description: Bedroom

Inputs

Parallel Exterior level, dBA:	76.0	**Ldn**
Correction Factor, dBA:	5	
Noise Source:	Arterial Traffic	
Room Perimeter, ft:	40	
Room Area, ft:	100	
Room Height, ft:	9	
Transmitting Panel Length, ft:	24	
Window Area, ft:	36	
Ceiling Finish:	**Gyp Board**	
Ceiling, sf:	100	
Wall Finish 1:	**Gyp Board**	
Wall Finish 1, sf:	324	
Wall Finish 2:	**Glass**	
Wall Finish 2, sf:	36	
Floor:	**Linoleum, rubber, or asphalt tile on concrete**	
Floor, sf:	100	
Misc. Finish:	**Soft Furnishings**	
Misc. Finish, sf:	25	
Transmitting Element 1:	**Wall - 1-Coat Stucco, RC 5/8" gyp INSUL**	
Element 1, sf:	180	
Transmitting Element 2:	**Window - Quiet Home STC 38**	
Element 2, sf:	36	
Transmitting Element 3:		
Element 3, sf:		
Transmitting Element 4:		
Element 4, sf:		

Predicted Interior Noise Level, dBA: 45
Noise Reduction, dBA: -31



SAXELBY ACOUSTICS
Acoustics · Noise · Vibration

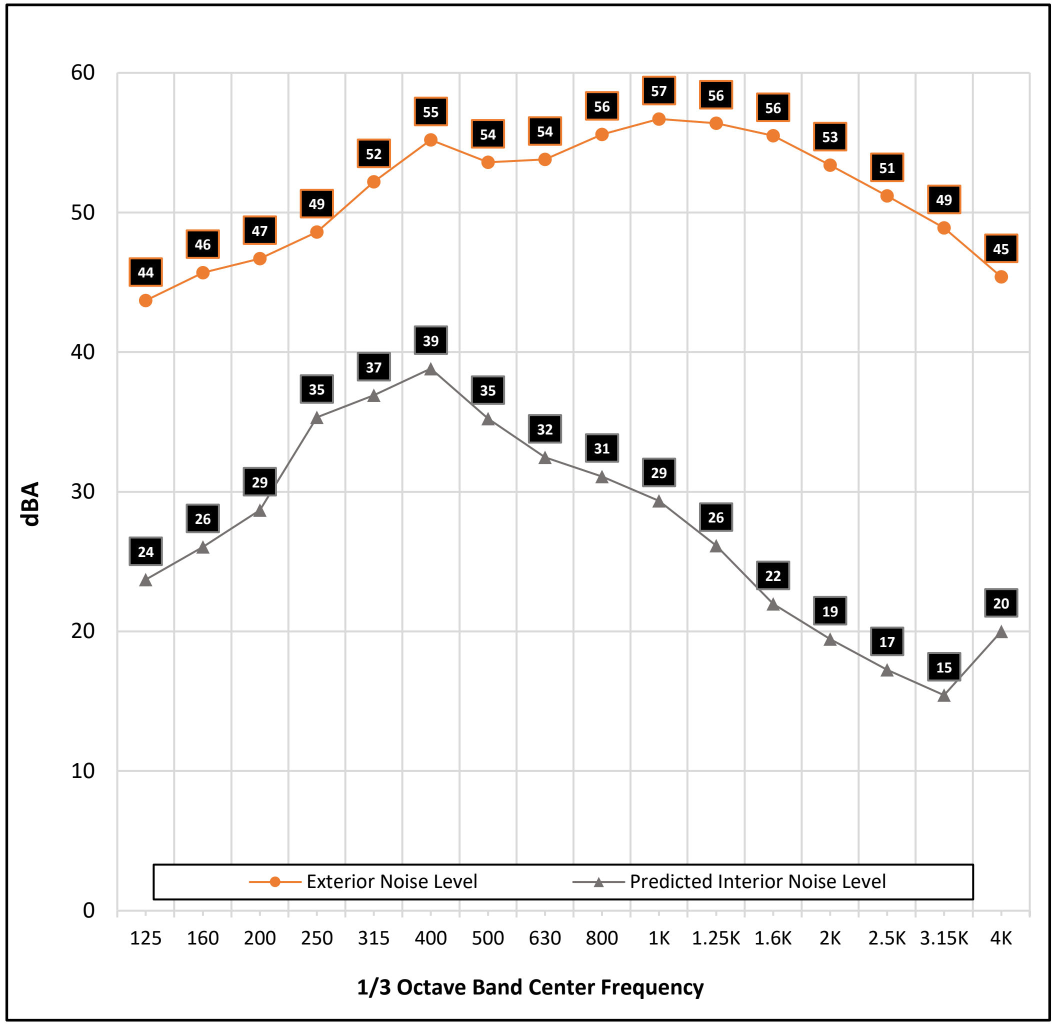
Appendix C2 : Interior Noise Calculation Sheet

Project: 320 Airport Way
Room Description: Living Room

Inputs

Parallel Exterior level, dBA:	65.0 **Ldn**
Correction Factor, dBA:	5
Noise Source:	Arterial Traffic
Room Perimeter, ft:	64
Room Area, ft:	240
Room Height, ft:	9
Transmitting Panel Length, ft:	20
Window Area, ft:	100
Ceiling Finish:	Gyp Board
Ceiling, sf:	240
Wall Finish 1:	Gyp Board
Wall Finish 1, sf:	476
Wall Finish 2:	Glass
Wall Finish 2, sf:	100
Floor:	Marble or glazed tile
Floor, sf:	240
Misc. Finish:	Soft Furnishings
Misc. Finish, sf:	25
Transmitting Element 1:	Wall - 1-Coat Stucco, 5/8" gyp INSUL
Element 1, sf:	80
Transmitting Element 2:	Window - Millgard 910 1/8*1/8 STC 30
Element 2, sf:	100
Transmitting Element 3:	
Element 3, sf:	
Transmitting Element 4:	
Element 4, sf:	

Predicted Interior Noise Level, dBA: 44
Noise Reduction, dBA: -21



SAXELBY ACOUSTICS
Acoustics · Noise · Vibration

APPENDIX D: TRANSPORTATION IMPACT ANALYSIS REPORT

320 AIRPORT WAY TRANSPORTATION IMPACT ANALYSIS

MANTECA, CA

November 19, 2021

320 Airport Way Transportation Impact Analysis

Manteca, CA

Prepared for:
De Novo Planning Group
1020 Suncast Lane, Suite 106
El Dorado Hills, CA 95762

Prepared by:
Kittelson & Associates, Inc.
155 Grand Avenue, Suite 505
Oakland, CA 94612
510.839.1742

Project Manager:
Zifeng (Lilian) Wu, PhD

Project Principal:
Mike Aronson. P.E.

Project Analyst:
Sophia Semensky

Project Number 26746

November 19, 2021

CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

Section 1
Introduction and Summary

INTRODUCTION AND SUMMARY

This report presents the findings of the transportation impact analysis (TIA) conducted for the 320 Airport Way residential development, located at 320 Airport Way in Manteca, California.

INTRODUCTION

PROJECT DESCRIPTION

The 320 Airport Way development ("project") would develop primarily vacant land located along the east side of Airport Way between Crom Avenue and Yosemite Avenue (Figure 1). The project would develop 123 residential units, primarily attached duplexes, on 12.8 net acres. Access would be provided via a new east-west street intersecting Airport Way (Figure 2).

SURROUNDING LAND USES

The west side of Airport Way is largely undeveloped in the site vicinity, with some businesses located at Yosemite Avenue. On the east side of Airport Way, there are residential developments north of Crom Street.

SCOPE OF TRANSPORTATION IMPACT ANALYSIS

The transportation impact analysis includes two levels of evaluation:

- California Environmental Quality Act (CEQA) transportation analysis
- Local transportation analysis

CEQA Transportation Analysis

The CEQA transportation analysis includes four transportation impact areas:

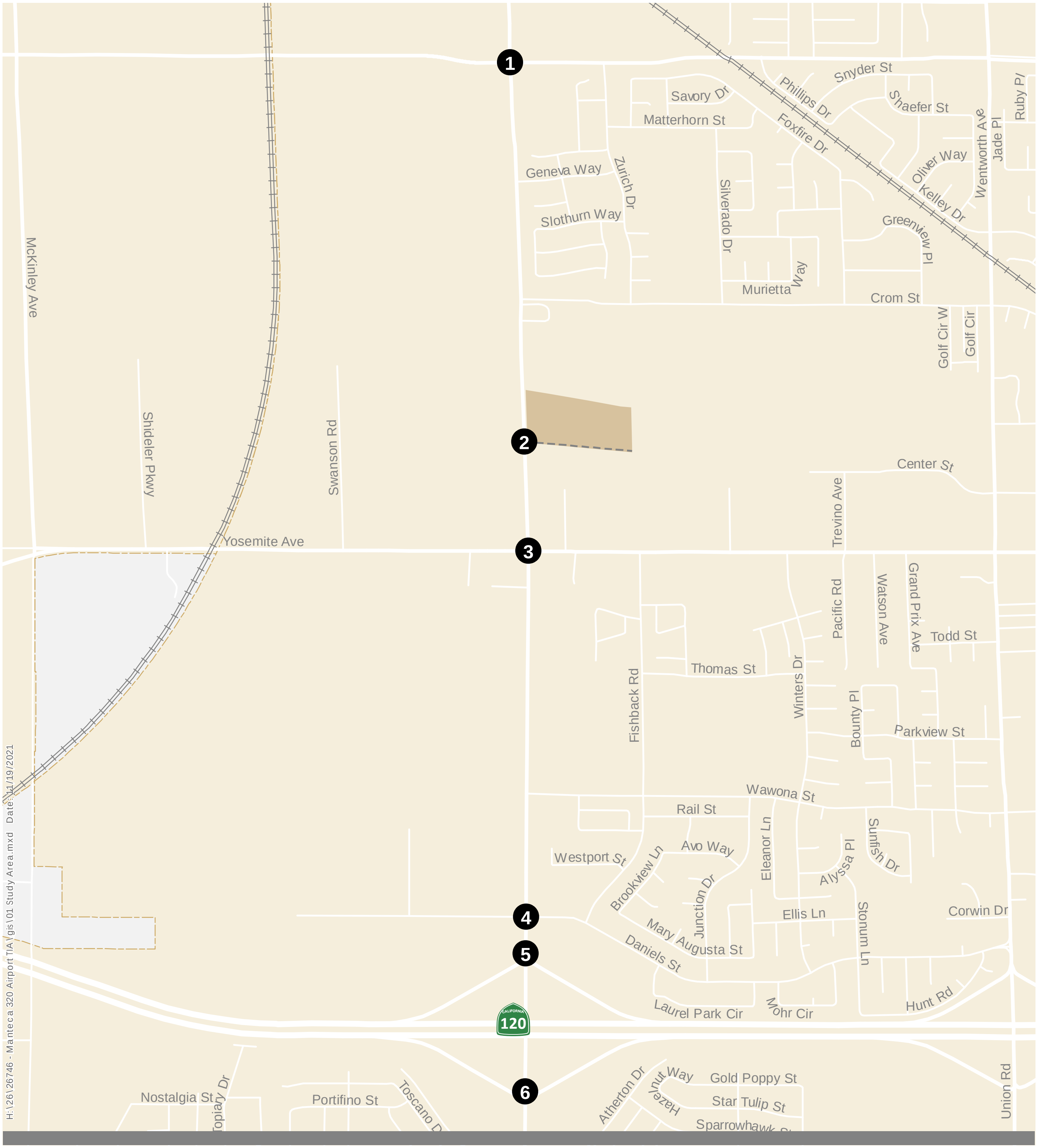
a. Conflicts with circulation system programs
b. Vehicle-miles of travel (VMT)
c. Hazards
d. Emergency access

These are the transportation impact areas that may be considered in environmental documentation for the project. Other transportation issues would not be part of the environmental evaluation under CEQA but may be considered as part of a local transportation analysis.

Local Transportation Analysis

The local transportation analysis evaluates the project's effects on the transportation system relative to City of Manteca policies and standards. The transportation issues considered in the local transportation analysis include:

- Traffic operations at study intersections
- Site access and circulation
- Parking



Study Intersections

Planned Roads

Site

CityLimits

0 2,000 Feet

Figure 1

KITTELSON & ASSOCIATES

Study Area and Project Site
Manteca, California

Figure 2: 320 Airport Way Site Plan

Traffic operations were evaluated at six study intersections, as shown in Figure x, for four scenarios:

- Existing conditions without project
- Existing Plus Project
- Cumulative (2040) conditions without project
- Cumulative Plus Project

The cumulative 2040 conditions consider land use development consistent with the Manteca General Plan and committed transportation improvements.

SUMMARY

CEQA TRANSPORTATION ANALYSIS

- The 320 Airport Way project would not have any signficant impacts on the transportation ssytem in terms of conflicts with plans, VMT, hazards or emergency access.
- The VMT per household for the project would be 41.6 percent lower than the existing baseline VMT per household in Manteca, lower than the 15 percent threshold recommended by the State of California.

LOCAL TRANSPORTATION ANALYSIS

Intersection Operations

- All study intersections currently operate at level of service D or better, consistent with General Plan policies.
- With traffic added by the 320 Airport Way project, all study intersections would continue to operate at level of service D or better, consistent with General Plan policies.
- With 2040 cumulative growth and committed street improvements, all study intersections would have trafic volumes that would exceed capacity, resulting in LOS F operations.
- Traffic added by the 320 Airport Way project to cumulative traffic volumes would increase average delays at the intersections, typically by 1 to 4 pecent, except at the intersection of Airport Way and Louise Avenue where average delays would increase by 14 percnet during the AM peak hour.
- Improvements such as additional turn lanes are recommended to provide future cumulative intersection operations that meet the LOS D policy from the General Plan.

Site Access and Circulation

- In the near term, the stop-sign controlled intersection for the project access road at Airport Way would provide all movements with LOS D or better operations.
- With projected 2040 cumulative growth, there would be significant delays at the stop sign on the project access road at Airport Way. However, traffic volumes would not meet the minimum warrants for installlation of a traffic signal. Recommendations include prohibiting left turns from the project access road and/or developing a local connection to Crom Street.
- The proposed site plan would provide good pedestrian circulation and access for all vehicle types.
- The project would meet or exceed city parking requirements.

Section 2
Existing Conditions

EXISTING CONDITIONS

A description of the existing roadway, transit, bicycle, and pedestrian components of the transportation system within the study area follows.

DATA COLLECTION

Intersection turn movement counts were collected on Tuesday, September 14, 2021 during the AM (7:00-9:00 AM) and PM (4:00-6:00PM) peak periods at five of the six intersections (excluding the project access Intersection 2 which does not yet exist).

Kittelson also compiled information on existing traffic controls, transit service, bicycle and pedestrian facilities and planned transportation improvements.

ROAD NETWORK

The roadway system in the study area consists of arterial roadways and regional freeways that serve local and regional traffic demand.

FREEWAYS

State Route (SR) 120 is a freeway/highway providing a connection between Intersate 5 (I-5) and SR 99 through Manteca. SR 120 continues as a non-freeway highway east of SR 99 connecting to Escalon, Oakdale and Yosemite National Park. Between the I-5 interchange and the SR 99 interchange, SR 120 is a freeway with two 12-foot general purpose lanes in each direction. East of SR 99, SR 120 is a conventional highway with one general purpose lane in each direction, with some sections providing two general purpose lanes in each direction or a center median/turn lane. Access to and from SR 120 is provided via an interchange at Airport Way. The posted speed limit on the freeway portion of SR 120 is 65 miles per hour (mph); the posted speed limit on the highway portion east of SR 99 is 45 mph.

LOCAL STREETS

Airport Way is classified as an arterial by the City of Manteca. It provides connectivity from Stockton to the north to rural San Joaquin County to the south. It is primarily a two-lane road within the city. Outside Manteca, the facility operates as a two-lane rural highway, passing primarily through rural residential and agricultural uses. North of SR 120, Airport Way carries approximately 17,300 vehicles per day. The curb-to-curb width is generally about 30-feet, with two 12-foot lanes and two 3-foot shoulders. Street parking is not present. The posted speed limit is 45 mph.

Louise Avenue is classified as an arterial by the City of Manteca. It provides connectivity from Lathrop to the west to rural San Joaquin County to the east. East of Airport Way, Louise Avenue is a four-lane street with a center turn lane/median island. The curb-to-curb width is generally about 62-feet, with four 10-foot lanes, one 12-foot median, and two 5-foot bike lanes. West of Airport Way, Louise Avenue is a four-lane street with a center turn lane/median. The curb-to-curb width is about 38-feet, with two 13-foot lanes and two 6-foot shoulders. Street parking is not present. The posted speed limit is 40 mph.

Daniels Avenue is classified as a collector by the City of Manteca. It provides connectivity from west Manteca (McKinley Avenue) to Union Road. East of Airport Way, Louise Avenue is a two-lane street with a center turn lane. The curb-to-curb width is generally about 52-feet, with two 12-foot lanes, one 13-foot median, one 5-foot bike lane, and one 10-foot parking lane/bike lane. The cross section then transitions to a two-lane street with parking on both sides. West of Airport Way, Louise Avenue is a two-lane street with a curb-to-curb of about 66-feet, including four 13-foot lanes and one 14-foot center turn lane/median. The posted speed limit is 35 mph.

TRANSIT SERVICES

The transit system in the study area consists of local bus and regional rail service. Local bus service is provided by Manteca Transit, the San Joaquin Regional Transit District and the Modesto Area Express. Regional rail service is provided by the Altamont Commuter Express. The transit facilities in the study area are discussed below

MANTECA TRANSIT

Manteca Transit provides bus service in the study area. Manteca Transit bus routes and local bus stops are shown on Figure 3 and listed in Table 1.

Table 1: Existing Manteca Transit Weekday Service

Route	Loop Direction	Key Destinations	Peak/Off-Peak Frequency (minutes)
1	Counterclockwise	▪ Manteca Transit Center ▪ Daniels Street at Stadium Center ▪ Spreckles Shopping Area	15/15-20
2	Clockwise	▪ Manteca Transit Center ▪ Mission Ridge Shopping Center ▪ Promenade Shops at Orchard Valley	20/20
3	Counterclockwise	▪ Manteca Transit Center ▪ McParland School ▪ Louise Avenue ▪ Manteca Golf Course	60/60
4	Clockwise	▪ Manteca Transit Center ▪ McParland School ▪ Woodward Avenue ▪ Manteca Golf Course	(n/a)/60

Source: Manteca Transit Ride Guide

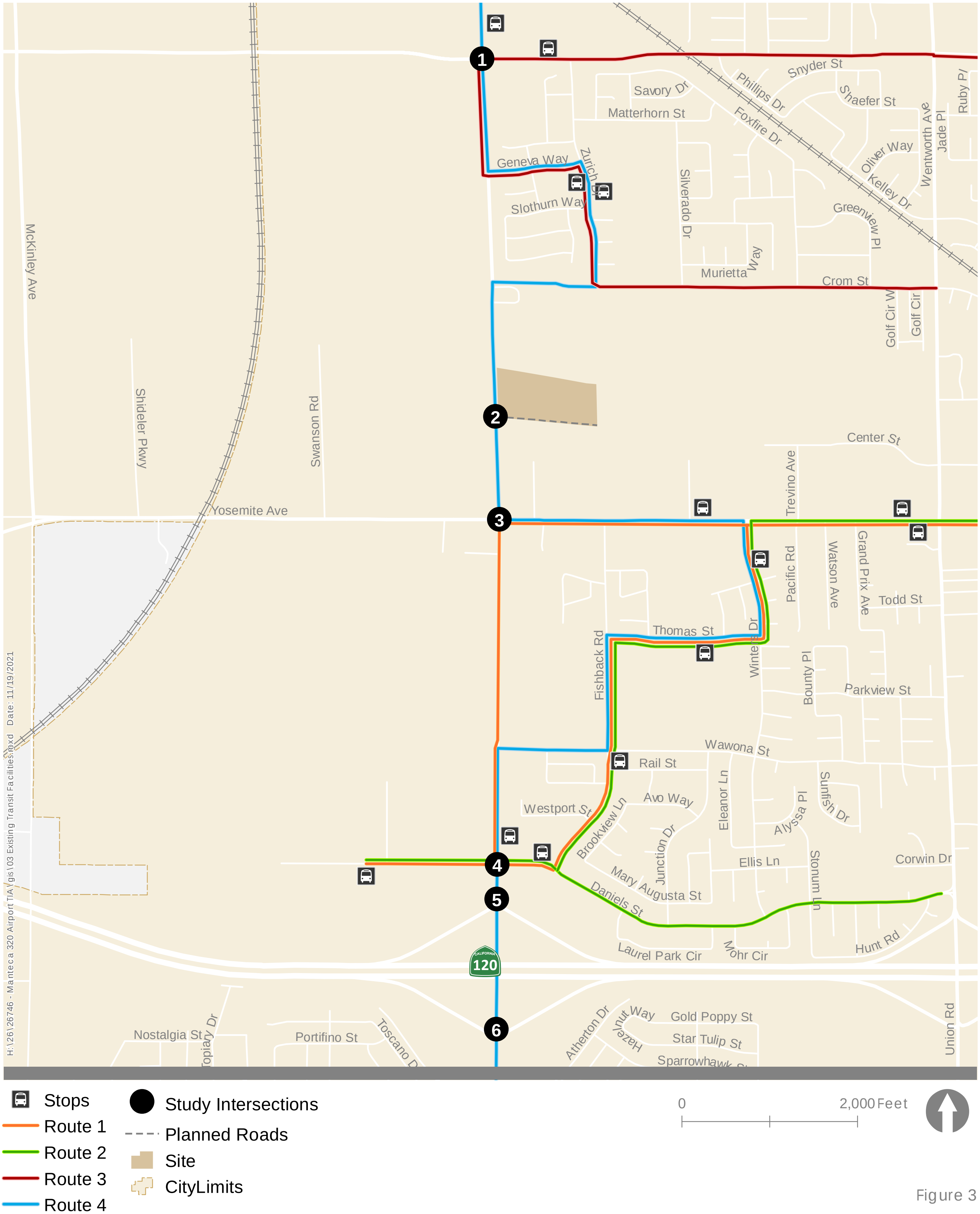


Figure 3

Existing Transit Facilities
Manteca, California

KITTELSON & ASSOCIATES

Generally, curbside transit stops in the study area are identified with posted signs and do not include passenger amenities such as a shelter, seating, landscaping, bicycle parking, or pedestrian-scale lighting. However, there are a limited number of bus stops along Yosemite Avenue (at Union Road) and Daniels Street (at Stadium Center) that provide benches and covered shelters.

In addition, the 320 Airport Way project is in the service area of the Dial-A-Ride program.

MODESTO AREA EXPRESS (MAX)

The Modesto Area Express (MAX) offers express commuter Service to the Manteca/Lathrop ACE train station from the Modesto Transit Center.

SAN JOAQUIN REGIONAL TRANSIT DISTRICT (RTD)

The San Joaquin Regional Transit District (RTD) provides service between Modesto and Stockton through Manteca via Route 91.

ALTAMONT CORRIDOR EXPRESS (ACE)

The Altamont Corridor Express (ACE) provides service from Stockton to San Jose (in the morning) and from San Jose to Stockton (in the afternoon). The Manteca Transit Center serves as the Lathrop/Manteca stop.

MANTECA TRANSIT CENTER

The Manteca Transit Center provides service to all four bus routes and the San Joaquin RTD Route 91. The ACE Lathrop/Manteca Station provides connection to Altamont Corridor Express (ACE), Modesto Area Express (MAX), and RTD Route 91. The Manteca Transit Shuttle runs between the Manteca Transit Center and the ACE Lathrop/Manteca station five times per day. The Park & Ride Lot provides access to RTD Route 91.

BICYCLE FACILITIES

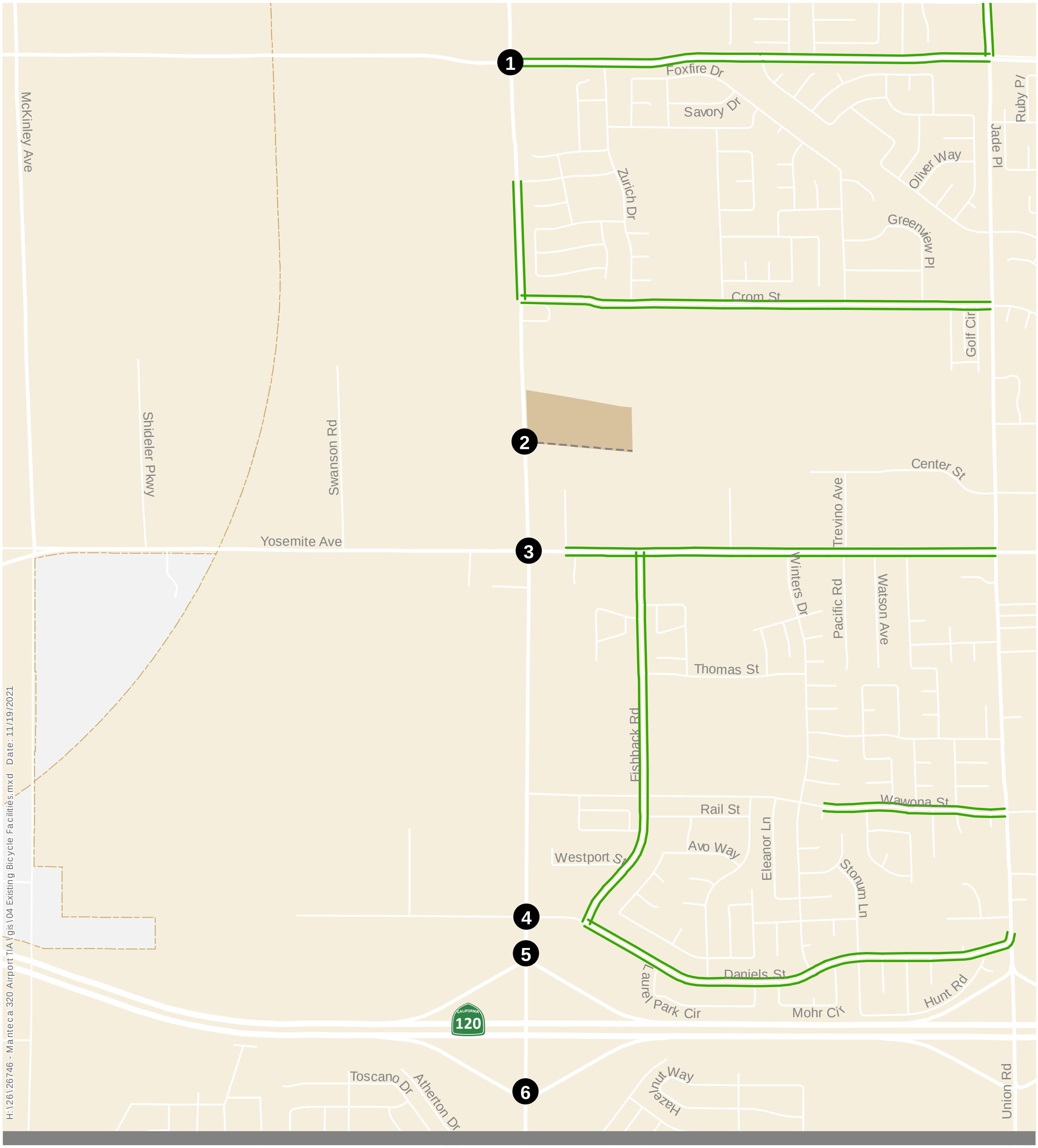
Figure 4 displays the existing designated bicycle facilities in the study area.

Bicycle facilities are categorized into four types, as described below:

- Class I Bikeway (Bike Path). Also known as a shared path or multi-use path, a bike path is a paved right-of-way for bicycle travel that is completely separate from any street or highway.
- Class II Bikeway (Bike Lane). A striped and stenciled lane for one-way bicycle travel on a street or highway. This facility could include a buffered space between the bike lane and vehicle lane and the bike lane could be adjacent to on-street parking.
- Class III Bikeway (Bike Route). A signed route along a street where the bicyclist shares the right-of-way with motor vehicles. This facility can also be designated using a shared-lane marking (sharrow).
- Class IV Bikeway (Separated Bike Lane). A bikeway for the exclusive use of bicycles including a separation required between the separated bikeway and the through vehicular traffic. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

As shown in Figure 4, the existing bicycle facilities near the project site include:

- Class II bicycle lanes on Fishbank Road between Daniels Street and Wawona Street.
- Class II bicycle lanes on Wawona Street east of Sunfish Drive.
- Class II bicycle lanes on Daniels Street east of Fishbank Road.
- Class II bicycle lanes on Airport Way between Geneva Way and Crom Street.
- Class II bicycle lanes Crom Street, west of Airport Way.
- Class II bicycle lanes on Yosemite Avenue, east of Dominic Drive.
- Class II bicycle lanes on Louise Street east of Airport Way.
- Class II bicycle lanes on Union Road north of Louise Street.



Study Intersections
Class II Bicycle Lanes
Planned Roads
Site
CityLimits

0 2,000 Feet

KITTELSON & ASSOCIATES

Figure 4

Existing Bicycle Facilities
Manteca, California

PEDESTRIAN FACILITIES

The study area offers several types of facilities and amenities that support walking (Figure 5). The availability and quality of pedestrian facilities can be analyzed using seven key factors as shown in Table 2.

Table 2: Pedestrian Facility Conditions

Factor	Description	Assessment
Sidewalk Availability	Sidewalk availability is core to supporting walkability and safety separating pedestrians from vehicles and other modes. In addition, it is important that sidewalks are present on both sides of the roadway and are available along the entire segment rather than end midblock.	Sidewalks are provided on most of Union Road and parts of Louise Avenue, Winters Drive, Crom Street, and Yosemite Avenue. However, a significant number of sidewalk coverage gaps exist on major arterial roads, including Yosemite Avenue (west of Winters Drive), Airport Way, and Louise Avenue west of Airport Way.
Sidewalk Conditions	Cracked, broken, or otherwise damaged sidewalks can pose a safety hazard and discourage walking.	Sidewalks are generally in good condition, free of cracks or uplifts.
Crosswalk Availability	Marked crosswalks can safely accommodate pedestrians that need to cross streets. A lack of marked crosswalks could hinder walkability since pedestrians need to travel greater distances to reach a safe marked crossing point. Drivers may also be less likely to yield to intersections at unmarked crossings.	Crosswalks, including continental crosswalks, are consistently provided at major intersections along roads such as Yosemite Avenue. At minor street intersections along arterial roadways, crosswalks across the major road may be lacking.
Shading	Shading, whether natural or artificial, can encourage walking in areas such as California, particularly Hayward, which are relatively warm with limited rainfall, especially in the summer.	Pedestrian shading is generally lacking in the study area due to minimal tree landscaping along arterials such as Yosemite Avenue and Airport Way. Residential and local streets offer more shading in the form of street trees and landscaping.
Flat Grade	Steep hills and ravines can discourage walking, especially for pedestrians with limited mobility.	Major streets in the study area are relatively flat, though some rolling hills are present on Louise Avenue, Airport Way, and Yosemite Avenue.

Factor	Description	Assessment
 Buffer	Buffers which provide separation between pedestrians and moving vehicles can help improve the walking experience, and can include landscaping, parked vehicles, and bulbouts, which serve to both reduce pedestrian crossing distances at intersections and as a traffic calming measure.	Along arterials, there is a lack of buffers, with the sidewalk coming out directly to the edge of the road or bicycle lane. Within residential neighborhoods in the study area, buffers in the form of street landscaping and parked cars are also present.
 Amenities	In addition to physical facilities that accommodate walking, useful or interesting amenities along sidewalks create a more interesting walking environment and increase pedestrian comfort. Amenities can include sidewalk-adjacent retail and restaurants, landscaping, and street furniture.	Pedestrian amenities primarily consist of street landscaping in residential neighborhoods.

EXISTING TRAFFIC OPERATIONS

This section provides information on the existing operating conditions for study intersections in the vicinity of the project site.

LEVEL OF SERVICE METHODOLOGY

Methodologies outlined in the Transportation Research Board's *Highway Capacity Manual* (HCM) are used to evaluate level of service for intersections.

Level of Service

Level of service (LOS) describes the operating conditions experienced by persons on a transportation system. For motorized vehicles, level of service is a qualitative measure of the effects of a number of factors, including speed and travel time, traffic interruptions, freedom to maneuver, driving comfort, and convenience. Levels of service are designated LOS "A" through "F," from best to worst, which cover the entire range of traffic operations that might occur. Levels of service A through E generally represent traffic volumes at less than roadway capacity, while LOS F represents conditions where traffic demands exceed capacity and the flow of traffic breaks down, resulting in stop-and-go conditions and long queues of vehicles.

The City of Manteca General Plan Policy C-1.2 states that to the extent feasible, strive for a vehicular LOS of D or better during weekday AM and PM peak hours at all streets and intersections, except in the Downtown area.

Intersection LOS was analyzed using methodologies described in the 6th Edition of the *Highway Capacity Manual* (HCM 6), as implemented in the analysis software program Vistro.

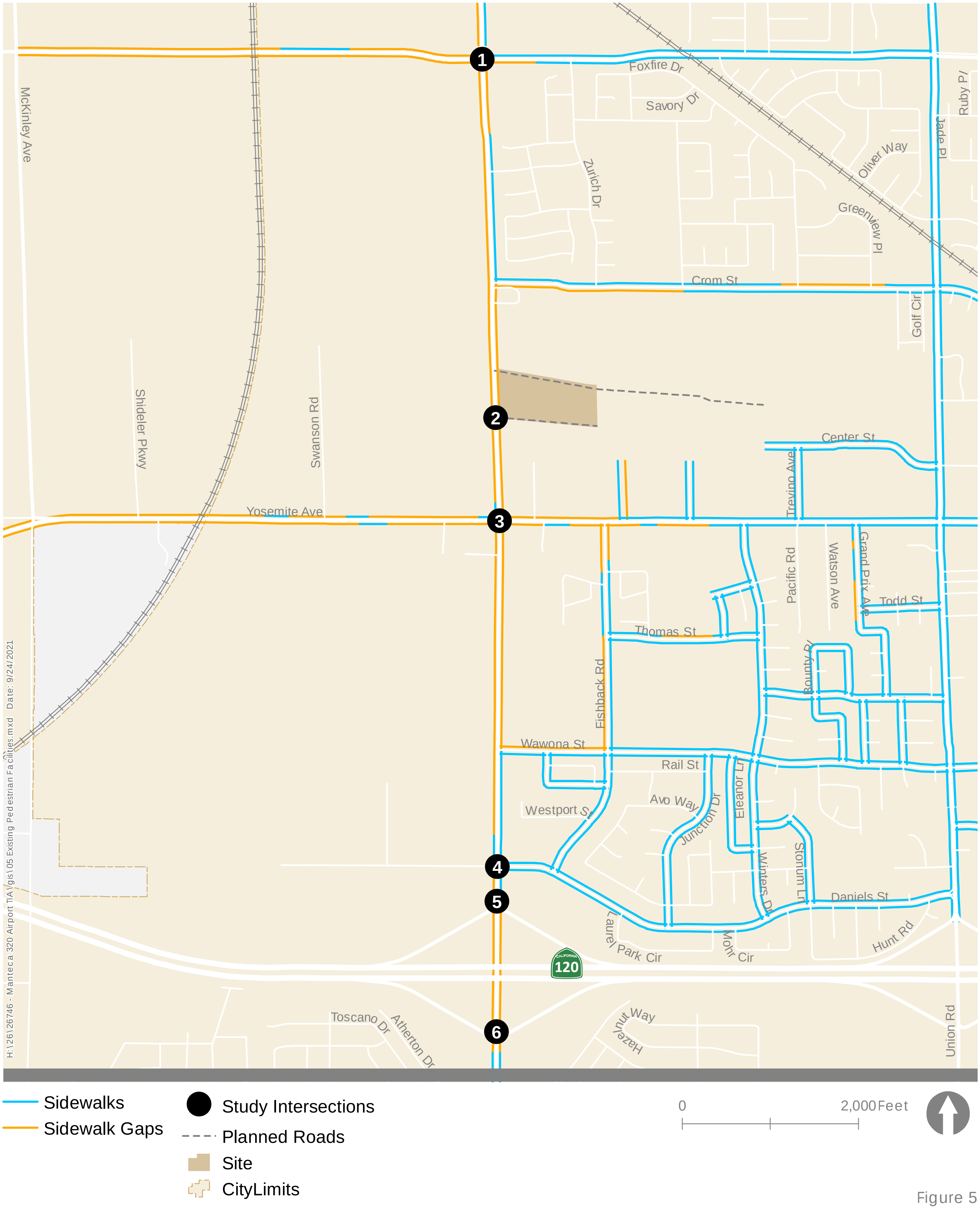


Figure 5

KITTELSON & ASSOCIATES

Existing Pedestrian Facilities
Manteca, California

Signalized Intersections

At signalized intersections, the level of service is determined by the weighted average delay for all vehicles entering the intersection and the calculated average total delay per vehicle and level of service for the intersection as a whole. Table 3 presents the average delay criteria used to determine the level of service at signalized intersections.

Table 3: Level of Service Definition for Signalized Intersections

Level of Service (LOS)	Average Delay (seconds/vehicle)	Description
A	≤ 10	Very Low Delay: This level of service occurs when progression is extremely favorable, and most vehicles arrive during a green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	> 10 and ≤ 20	Minimal Delays: This level of service generally occurs with good progression, short cycle lengths, or both. More vehicles stop than at LOS A, causing higher levels of average delay.
C	> 20 and ≤ 35	Acceptable Delay: Delay increases due to fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level of service. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.
D	> 35 and ≤ 55	Approaching Unstable Operation/Significant Delays: The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume / capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55 and ≤ 80	Unstable Operation/Substantial Delays: These high delay values generally indicate poor progression, long cycle lengths, and high volume / capacity ratios. Individual cycle failures are frequent occurrences.
F	> 80	Excessive Delays: This level, considered unacceptable to most drivers, often occurs with oversaturation (that is, when arrival traffic volumes exceed the capacity of the intersection). It may also occur at high volume / capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Source: *Highway Capacity Manual 6th Edition* (HCM 6)

Unsignalized Intersections

For all-way stop control intersections, the HCM procedures calculate an average control delay per vehicle for each approach and the intersection as a whole, and assign a LOS designation based upon the average intersection delay.

For unsignalized one or two-way stop-controlled intersections, the methodology calculates an average total delay per vehicle for each minor street movement and for the major street left-turn movements based on the availability of adequate gaps in through traffic on the main street. A level of service designation is assigned to individual movements or to combinations of movements in the case of shared lanes, based on delay. It is not unusual for some of the minor street movements to have LOS "D," "E," or "F" conditions while the major street movements have LOS "A," "B," or "C" conditions. In such a case, the minor street traffic experiences delay that can be substantial for individual minor street vehicles, but the majority of vehicles using the intersection have very little delay.

Table 4 presents the average delay criteria used to determine the level of service at unsignalized intersections.

Table 4: Level of Service Definition for Unsignalized Intersections

Level of Service (LOS)	Average Delay (seconds/vehicle)	Description
A	$\leq$ 10	Very Low Delay
B	> 10 and $\leq$ 15	Minimal Delays
C	> 15 and $\leq$ 25	Acceptable Delay
D	> 25 and $\leq$ 35	Approaching Unstable Operation and/or Significant Delays
E	> 35 and $\leq$ 50	Unstable Operation and/or Substantial Delays
F	> 50	Excessive Delays

Source: Highway Capacity Manual 6th Edition (HCM 6)
Notes: At two-way stop-controlled intersections, LOS is determined for each minor street movement and major street left turn. At all-way stop-controlled intersections, LOS is determined for each individual approach and for the entire intersections based on average control delay.

Signal Warrants

The potential need for traffic signals at unsignalized intersections where the minor street movements experience substantial delay is evaluated in accordance with the California Manual on Uniform Traffic Control Devices (CA MUTCD).

The analysis for the proposed project focuses on the peak hour warrant (Warrant 3). The peak hour warrant is being used as an indicator of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed the peak hour warrant are considered for the purposes of this analysis to be likely to meet one or more of the other signal warrants, such as the 4-hour or 8-hour warrants. This peak hour analysis is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction.

Signal Operations

For existing condition, signal timing sheets for the following signalized intersections on local streets were requested and received from the city:

- Airport Way and Louise Avenue
- Airport Way and Yosemite Avenue
- Airport Way and Daniels Street

Kittelson requested and received signal timing information for the following state-controlled signalized intersections directly from Caltrans District 10.

- Airport Way and SR 120 Westbound Ramps
- Airport Way and SR 120 Eastbound Ramps

EXISTING INTERSECTION OPERATIONS

Intersection turning movement volumes, lane configurations, and traffic control were used to calculate the levels of service at the study intersections for the AM and PM peak hours (Table 5). All study intersections operate at an existing LOS D or better.

Table 5: Intersection Operations, Existing Conditions

No.	Intersection	Traffic Control[2]	Peak Hour	LOS[3] (Delay)[4]
1	Airport Way & Louise Avenue	Signal	AM	C (33.0)
			PM	D (47.5)
2	Airport Way & 320 Airport Way Access[1]	None	AM	n/a
			PM	
3	Airport Way & Yosemite Avenue	Signal	AM	C (23.9)
			PM	D (46.2)
4	Airport Way & Daniels Street	Signal	AM	C (26.4)
			PM	D (50.0)
5	Airport Way & SR 120 WB Ramps	Signal	AM	C (26.1)
			PM	C (33.8)
6	Airport Way & SR 120 EB Ramps	Signal	AM	B (18.4)
			PM	B (19.4)

Source: Kittelson & Associates, Inc. 2021.
Notes:
[1] Intersection does not exist without the project.
[2] Signal = Signalized Intersection, TWSC = Two- or One-Way Stop Control intersection, AWSC = All-Way Stop Control Intersection.
[3] LOS = Level of Service
[4] Delay = Average vehicle delay reported in seconds per vehicle.

Section 3
Regulatory Setting

REGULATORY SETTING

This section summarizes applicable federal, state, regional, and local plans, laws, and regulations that are relevant to this analysis. This information provides a context for the discussion related to the Project's consistency with applicable policies, plans, laws, and regulations.

FEDERAL REGULATIONS

This section summarizes federal agencies and laws pertinent to the proposed project.

FEDERAL HIGHWAY ADMINISTRATION

The Federal Highway Administration (FHWA) is the agency of the United States Department of Transportation (DOT) responsible for the federally funded roadway system, including the interstate highway network and portions of the primary state highway network, such as Interstate 5 (I-5).

STATE REGULATIONS

This section summarizes State of California agencies, regulations, and policies that pertain to transportation in Manteca.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

The California Environmental Quality Act (CEQA) Guidelines, Appendix G Environmental Checklist Form describes four recommended categories of impacts related to transportation and traffic. These categories are recommended for formal environmental review of projects, but are referenced as appropriate for this TIA.

A project's impact is considered to be significant if it would:

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

b. Conflict or be inconsistent with CEQA Guideline section 15064.3, subdivision (b).

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

d. Result in inadequate emergency access.

Significance criteria "b" is related to the implementation of vehicle miles traveled (VMT) as the primary performance metric consistent with Senate Bill 743 as described below.

SENATE BILL 743

Senate Bill 743 (SB 743) was signed into law in September 2013. Senate Bill 743 (Steinberg, 2013) required changes to the California Environmental Quality Act (CEQA) Guidelines regarding the analysis of transportation impacts. The purpose of SB 743 is to promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.

Prior to implementation of SB 743, CEQA transportation analyses of individual projects typically determined impacts on the circulation system in terms of roadway delay and/or capacity usage at specific locations, such as street intersections or freeway segments. The SB 743 changes include the elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts.

Under SB 743, a project's effect on automobile delay shall not constitute a significant environmental impact. Therefore, level of service (LOS) and other similar vehicle delay or capacity metrics can no longer serve as transportation impact metrics for CEQA analysis. The California Office of Planning and Research (OPR) updated the CEQA Guidelines and provided a final technical advisory in December 2018, which recommends vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts under CEQA. The California Natural Resources Agency certified and adopted the CEQA Guidelines including the Guidelines section implementing SB 743. The changes have been approved by the Office of the Administrative Law and are now in effect.

Revisions to CEQA transportation analysis requirements do not preclude the application of local general plan policies, municipal and zoning codes, conditions of approval, or any other planning requirements through a city's planning approval process. These requirements aim to ensure adequate operation of the transportation system in terms of transportation congestion measures related to vehicular delay and roadway capacity.

CALIFORNIA DEPARTMENT OF TRANSPORTATION

The California Department of Transportation (Caltrans) is the primary State agency responsible for transportation issues. As owner/operator of the State Highway System, Caltrans may review projects and plans as a commenting agency or responsible agency under the California Environmental Quality Act (CEQA). IN relation to this role, Caltrans published the Vehicle Miles Traveled-Focused Transportation Impact Study Guide" in May, 2020. This replaced the "Guide for the Preparation of Traffic Impact Studies" (December 2002), which established Measures of Effectiveness based on level of service targets.

Caltrans recommends following the guidance on methods of VMT assessment found in OPR's Technical Advisory. Caltrans comments on a CEQA document may note methodological deviations from those methods and may recommend that significance determinations and mitigation be aligned with state greenhouse gas reduction goals as articulated in OPR's guidance, the California Air Resources Board's Scoping Plan, and related documentation.

Caltrans facilities within the Manteca study area include State Route 120 and its on- and off-ramps.

For projects that may physically affect facilities under its administration, Caltrans requires encroachment permits before any construction work may be undertaken.

REGIONAL REGULATIONS

This section summarizes regional agencies, plans, and policies that pertain to transportation in Manteca.

SAN JOAQUIN COUNCIL OF GOVERNMENTS REGIONAL CONGESTION MANAGEMENT PROGRAM

The San Joaquin Council of Governments (SJCOG) is responsible for the Regional Congestion Management Program (RCMP). The purpose of the RCM) is to monitor congestion, identify congestion problems, and establish a programming mechanism aimed at reducing congestion. Designation of a regional transportation system supports RCMP monitoring activities and focuses the implementation of the RCMP on a core network of key transportation facilities that facilitate regional travel within San Joaquin County.

The RCMP network includes the following facilities in the project study area:

- State Route 120
- Airport Way
- Louise Road
- Yosemite Avenue

The RCMP also designates multimodal corridors where quality of transportation service is monitored for transit, bicycles and pedestrians as well as vehicles. The following multimodal corridors are designated in the project study area:

- Yosemite Avenue, Airport Way to Northwoods Ave-Commerce Ave

Prior to 2021, the RCMP included LOS standards for the RCMP network that would affect the evaluation of local development traffic impacts. Consistent with the implementation of SB 743 CEQA streamlining legislation, the 2021 RCMP discontinues the use of LOS for the evaluation of RCMP congestion deficiencies.

The RCMP identifies deficient corridors based on combined speed-based congestion and reliability metrics. None of the deficient corridors identified in the 2021 RCMP are in the Manteca study area.

LOCAL REGULATIONS

This section summarizes City policies and regulations that pertain to transportation in Manteca.

MANTECA GENERAL PLAN

The 2021 update of trhe Manteca General Plan includes the follpowing policies relevant to the transportation evaluation of the project (Table x).

Table 6: Selected Manteca General Plan Policies

No.	Policy
C-1.1	Strive to balance levels of service (LOS) for all modes (vehicle, transit, bicycle, and pedestrian) to maintain a high level of access and mobility, while developing a safe, complete, and efficient circulation system. The impact of new development and land use proposals on VMT, LOS, and accessibility for all modes should be considered in the review process.
C-1.2	To the extent feasible, strive for a vehicular LOS of D or better during weekday AM and PM peak hours at all streets and intersections, except in the Downtown area or in accordance with Policy C-1.3.
C-1.3	At the discretion of the City Council or Planning Commission, certain locations may be allowed to fall below the City's LOS standard established by C-1.2 under the following circumstances: ▪ a. Where constructing facilities with enough capacity to provide LOS D is found to be unreasonably expensive. ▪ b. Where conditions are worse than LOS D and caused primarily by traffic from adjacent jurisdictions. ▪ C. Where maintaining LOS D will be a disincentive to use transit and active transportation modes (i.e., walking and bicycling) or to the implementation of transportation or land use improvements that would reduce vehicle travel. Examples include roadway or intersection widening in areas with substantial pedestrian activity or near major transit centers.
C-2.2	Design roadway improvements to occur in a contiguous, orderly fashion and strive to build roadway improvements in advance of new development particularly when addressing existing deficiencies. However, major circulation improvements shall be constructed no later than when abutting lands develop or redevelop, with dedication of right-of-way and construction of improvements, or participation in construction of such improvements, required as a condition of approval.
C-2.3	Require new development to pay a fair share of the costs of street and other transportation improvements based on impacts in conformance with the goals and policies established in this Circulation Element and the Public Facilities Implementation Program (PFIP).
C-2.13	Require development projects to arrange streets in an interconnected block pattern, so that pedestrians, bicyclists, and drivers are not forced onto arterial streets for inter- or intra-neighborhood travel. This approach will also ensure safe and efficient movement of emergency responders and ensure that vehicle miles traveled are minimized within the community. The street pattern shall include measures to provide a high level of connectivity and decrease vehicle miles traveled.

No.	Policy
C-2.14	Residential subdivisions with lots fronting on an existing arterial street shall provide for separate roadway access to the maximum extent feasible, with access to residential lots provided from residential or collector streets. For those properties that currently front arterial streets, consideration should be given to providing separate roadway access as a condition of approval for any redevelopment or subdivision of the property.
C-2.15	Ensure that development and infrastructure projects are designed in a way that provides pedestrian and bicycle connectivity to adjacent neighborhoods and areas (such as ensuring that sound walls, berms, and similar physical barriers are considered and gaps or other measures are provided to ensure connectivity).
C-2.19	In the development of new projects, give special attention to maintaining/ensuring adequate corner-sight distances appropriate for the speed and type of facility, including intersections of city streets and private access drives and roadways.

Source: Manteca General Plan, March, 2021, pp, 4-2 to 4-11

TRANSPORTATION IMPACT ANALYSIS REQUIREMENTS

The City of Manteca does not have a document that establishes specific requirements for transportation impact analysis studies. The methodologies and standards used in this TIA are based on the General Plan, state requirements and guidance, and prior studies conducted in the City of Manteca.

Section 4
CEQA Transportation Analysis

CEQA TRANSPORTATION ANALYSIS

The project is evaluated for transportation impacts relative to the four impact types in the CEQA checklist:

e. Conflicts with circulation system programs
f. Vehicle-miles of travel (VMT)
g. Hazards
h. Emergency access

CONFLICTS WITH PROGRAMS

The project would have an impact if it would conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

The project would be consistent with the City of Manteca General Plan and PFIP in terms of provisions for roadways, bicycle and pedestrian facilities:

- The project improvements on the east side of Airport Way would be consistent with city plans to provide two northbound through lanes, a bicycle lane and a sidewalk.
- The project would provide sidewalks throughout the project site to enhance local pedestrian circulation.
- The project would not conflict with other road, transit bicycle or pedestrian plans documented by the city.

Impact 1: Less than significant

Mitigation 1: No mitigation required

VEHICLE MILES OF TRAVEL

The project was assessed for VMT to comply with SB 743 requirements and CEQA Guideline section 15064.3, subdivision (b). The City of Manteca does not have published guidelines for VMT analysis for development projects. The methodology used is similar to a prior Manteca transportation impact study provided as an example.[1] Project VMT per capita to determine impact findings for the project is estimated based on the Manteca/Lathrop Travel Demand Model. Should the project have significant impacts for VMT, trip reductions with appropriate TDM measures would be recommended.

SCREENING CRITERIA

The proposed development was evaluated against the screening criteria in the Office of Planning and Research (OPR) Technical Advisory. The following criteria are applicable to residential developments:

[1] Fehr & Peers, "Lumina at Machado Ranch – Transportation Analysis," June, 2021

- Small projects – projects consistent with a Sustainable Communities Strategy and local general plan that generate or attract fewer than 110 trips per day.
- Projects near major transit stops – certain projects (residential, retail, office, or a mix of these uses) proposed within ½ mile of an existing major transit stop or an existing stop along a high-quality transit corridor.
- Affordable residential development – a project consisting of a high percentage of affordable housing may be a basis to find a less-than-significant impact on VMT.
- Projects in low VMT areas – residential and office projects that incorporate similar features (i.e., density, mix of uses, transit accessibility) as existing development in areas with low VMT will tend to exhibit similarly low VMT.

The 320 Airport Way project would generate more than 110 trips per day, would not be near a major transit stop, would not have a high percentage of affordable housing units, and would not be in an area already designated as a low VMT area. The project would not meet the screening criteria. Therefore, a VMT analysis is required.

VMT IMPACT CRITERIA

The methodology used in other Manteca studies is based on a comparison of future VMT conditions with the project to existing baseline VMT conditions. The calculated residential VMT for the "with project" scenario is compared with baseline citywide VMT per single family residential household. If the development would generate vehicle travel exceeding 15 percent below the established baseline, there is a significant impact.

The travel model developed for the City of Manteca General Plan Update was used to develop baseline (2019) VMT per single family residential household. The established baseline VMT per single family household is 103.8. Therefore, single family residential projects that exceed 88.2 VMT per household (15 percent below base year levels) would be considered to have a significant transportation impact. Projects that generate less than 88.2 VMT per household would be considered to have a less than significant transportation impact.

PROJECT VMT ANALYSIS

The 320 Airport Way project was added to the travel model and the total daily VMT was calculated based on the results (Table 7). The project VMT per household would be 41.6 percent lower than the baseline VMT per household, which is a greater reduction than the threshold of 15 percent lower than baseline. The project would not have a significant impact on VMT.

Table 7: Project VMT Evaluation

Scenario	Residential Units	Daily VMT	VMT per Unit
2019 Manteca Baseline	21,226	2,203,915	103.8
2040 Project	123	7,450	60.6
Comparison to Baseline			-41.6%

Source: Kittelson & Associates 2021 based on Manteca/Lathrop Travel Demand Model

Impact 2: Less than significant

Mitigation 2: No mitigation required

HAZARDS

The project would have an impact if it would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

- The project access would be provided at a stop-sign controlled intersection on Airport Way which would not introduce hazardous geometric design features. The new intersection would be designed consistent with accepted design guidelines for safety. The straight alignment of Airport Way would ensure adequate sight distance.
- The internal project streets are designed to meet geometric design standards and would not create hazardous driving conditions.
- The internal project streets would provide sidewalks so that pedestrians would be separated from vehicle traffic.

Impact 3: Less than significant

Mitigation 3: No mitigation required

EMERGENCY ACCESS

The project would have an impact if it would result in inadequate emergency access.

- The project would have access to all parcels via an intersection on Airport Way and an interior street system. All streets would be designed to accommodate emergency vehicles.
- As parcels adjacent to the project develop in the future, the project has allowed for future street connections which would provide additional emergency access routes.

Impact 4: Less than significant

Mitigation 4: No mitigation required

Section 5
Local Transportation Analysis

LOCAL TRANSPORTATION ANALYSIS

The local transportation impact analysis assesses how the study area's transportation system would operate with the implementation of the proposed project.

PROJECT TRIP GENERATION

Automobile trip generation by the Project was derived from rates contained in the Institute of Transportation Engineers (ITE) *Trip Generation Manual* 10th Edition.

The proposed land use for 320 Airport Way is predominantly attached duplex product with some detached single-family homes. The Trip Generation Manual does not have a specific category for attached duplex homes. The categories considered include ITE land use code 210 Single-Family Detached Housing and code 220 Multifamily Housing (Low-Rise). The ITE description of code 210 is:

- Single Family Detached Housing (ITE 210) - Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.

Although the proposed duplexes are not fully detached, they are assumed to have interior space (numbers of bedrooms) and numbers of residents more similar to single-family homes in surveyed suburban subdivisions than apartments. The land use code that is the most similar to the proposed land uses is ITE 210 for single family detached housing. Kittelson proposes to use ITE 210 for trip generation to be more conservative than application of a lower multifamily trip generation rate. Table 8 displays the trip generation rates.

Table 8 Trip Generation Rates

Land Use	Unit	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
			Total	In	Out	Total	In	Out
Single Family Detached Housing (210)	Dwelling Units	9.44	0.74	0.19	0.56	0.99	0.62	0.37

Source: Institute of Transportation Engineers, *Trip Generation Manual*, 10th Edition.

Table 9 summarizes the ITE trip generation for the proposed 123 residential units of this project.

Table 9: Proposed Project Trip Generation

Land Use	Dwelling Units	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
			Total	In	Out	Total	In	Out
Single Family Detached Housing (210)	123	1,161	91	23	68	122	77	45

Source: Kittelson & Associates, 2021.

PROJECT TRIP DISTRIBUTION

Trip distribution refers to the percentages of trips on routes leading to and from the project. The trip distribution was estimated based on the Manteca/Lathrop Travel Demand Model. The project was coded into the travel model and a "select zone" assignment was used to track the estimated trips to and from the project for the AM and PM peak periods and hours. Figure 6 shows the trip distribution percentages at each study intersection,

EXISTING PLUS PROJECT TRAFFIC OPERATIONS

Intersection operations were assessed for Existing plus Project conditions and compared to existing conditions (Table 10). The project would cause the following changes in level of service:

- Airport Way & Louise Avenue: From LOS C to D during the AM peak hour
- Airport Way & SR 120 WB Ramps: From LOS C to D during the PM peak hour
- Airport Way & SR 120 EB Ramps: From LOS B to C during the PM peak hour

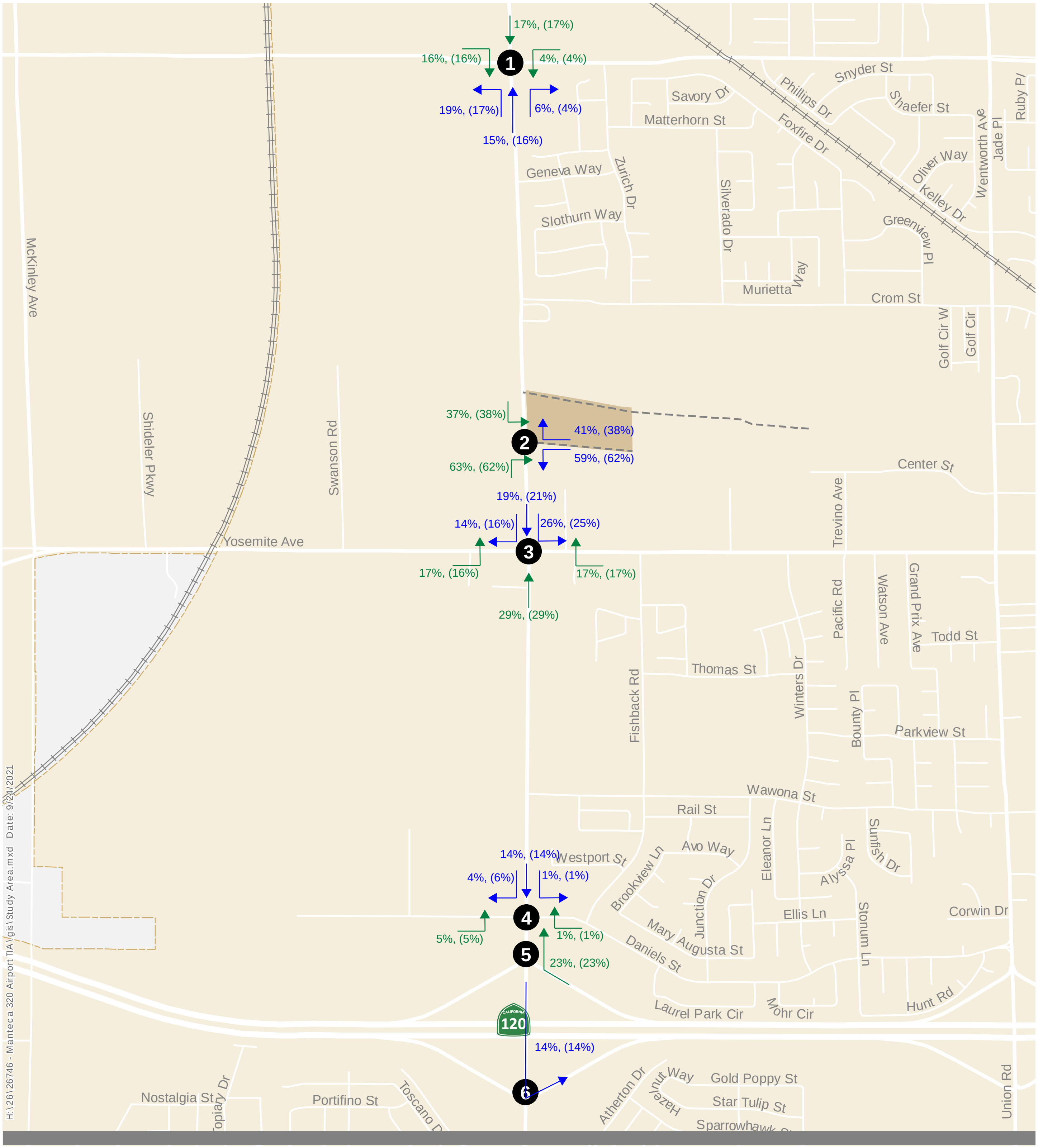
The new project access intersection (No. 2) would have delays at the stop sign exiting the project consistent with LOS D during the PM peak hour. Airport Way traffic would not be controlled at this new intersection and would not be impacted.

All study intersections would operate at LOS D or better with the project, consistent with General Plan policies.

Table 10: Intersection Operations, Existing Plus Project

No.	Intersection	Traffic Control[2]	Peak Hour	Existing LOS[3] (Delay)[4]	Existing + Project LOS[3] (Delay)[4]
1	Airport Way & Louise Avenue	Signal	AM	C (33.0)	D (36.6)
			PM	D (47.5)	D (52.8)
2	Airport Way & 320 Airport Way Access[1]	2WSC	AM	n/a[1]	B (11.9)
			PM		D (32.3)
3	Airport Way & Yosemite Avenue	Signal	AM	C (23.9)	C (24.7)
			PM	D (46.2)	D (51.8)
4	Airport Way & Daniels Street	Signal	AM	C (26.4)	C (26.6)
			PM	D (50.0)	D (53.7)
5	Airport Way & SR 120 WB Ramps	Signal	AM	C (26.1)	C (27.6)
			PM	C (33.8)	D (40.1)
6	Airport Way & SR 120 EB Ramps	Signal	AM	B (18.4)	B (19.2)
			PM	B (19.4)	C (21.6)

Source: Kittelson & Associates, Inc. 2021.
Notes:
[1] Intersection does not exist without the project
[2] Signal = Signalized Intersection, TWSC = Two- or One-Way Stop Control, AWSC = All-Way Stop Control
[3] LOS = Level of Service (for TWSC, on stop-controlled approach only)
[4] Delay = Average vehicle delay reported in seconds per vehicle. (for TWSC, on stop-controlled approach only)



Study Intersections

Planned Roads

Site

CityLimits

XX, (XX): AM In, (PM In)

XX, (XX): PM In, (PM Out)

0 2,000 Feet

Figure 6

Trip Distribution

Manteca, California

KITTELSON & ASSOCIATES

CUMULATIVE TRAFFIC OPERATIONS

The Cumulative and Cumulative Plus Project analysis forecasts how the study area's transportation system would operate with growth and changes of the surrounding community by the year 2040. The changes of the surrounding community and associated traffic changes by 2040 were derived from the Manteca/Lathrop Travel Demand Model. This model includes all of the approved and reasonably foreseeable growth anticipated in Manteca and the surrounding jurisdictions by 2040.

TRANSPORTATION IMPROVEMENTS

The cumulative conditions assume street improvements documented in the Transportation Public Facilities Implementation Plan (PFIP) version effective January 1, 2018.

- Airport Way (between Lathrop Rd. and Yosemite Ave.):
  - 2-lane existing cross section widened to 4-lane cross section with 11 ft lanes and 5 ft bike lanes on both sides (PLATE E-2.03 and 2.07 in PFIP)
- Airport Way (between Yosemite Ave. and Daniels Rd.):
  - 2-lane existing cross section widened to 6-lane cross section with 11 ft lanes and 5 feet bike lanes on both sides (PLATE E-2.06 in PFIP)
- Modify signalized Intersections at Louise Ave. and Airport Way, Yosemite Ave. and Airport Way
  - North of Yosemite Ave.: 12 ft single left-turn and right-turn lane (PLATE E-2.09 in PFIP)
  - The PFIP does not include specific information for the northbound approach south of Yosemite Ave.
- New signals along Airport Way at Geneva Way, Crom St., and Center St.
- Interchange (I/C2) Airport Way & SR 120: The PFIP indicates that interchange improvements are part of the PFIP, as shown in PLATE E-1.05, but there is no specific information on improvements.

TRAFFIC FORECASTS

The traffic forecasts for cumulative conditions are based on the Manteca/Lathrop Travel Demand Model. The travel model was recently updated in support of the 2021 Manteca General Plan Update and includes future assumptions for land use development and transportation improvements consistent with the General Plan.

Traffic forecasts for specific intersections were based on an incremental adjustment methodology to minimize the effects of differences between the travel model and observed traffic counts. For each study intersection turn movement, the increment was calculated between the model's 2018 base year turn movement and the model's 2040 forecast turn movement. This growth increment was then added to the observed traffic count to create the adjusted intersection turn movements. The adjusted turn movements were then checked to ensure logical growth and continuity between locations.

Traffic volume diagrams are included in the Appendix.

CUMULATIVE AND CUMULATIVE PLUS PROJECT TRAFFIC OPERATIONS

Intersection operations were assessed for Cumulative (2040 growth without the project) and Cumulative plus Project conditions (Table 10). The operations analysis assumes intersection improvements consistent with the information provided in the PFIP as listed above. Since there is no specific information on improvements at the interchange of Airport Wat with SR 120, no improvements are assumed.

Table 11: Intersection Operations, Cumulative

No.	Intersection	Traffic Control[2]	Peak Hour	Cumulative LOS[3] (Delay)[4]	Cumulative + Project LOS[3] (Delay)[4]
1	Airport Way & Louise Avenue	Signal	AM	F (133.4)	F (152.0)
			PM	F (202.0)	F (208.4)
2	Airport Way & 320 Airport Way Access[1]	2WSC	AM	n/a[1]	F (78.7)
			PM		F (337.7)
3	Airport Way & Yosemite Avenue	Signal	AM	F (103.0)	F (104.0)
			PM	F (168.7)	F (173.6)
4	Airport Way & Daniels Street	Signal	AM	D (47.4)	D (47.9)
			PM	F (161.4)	F (161.2)
5	Airport Way & SR 120 WB Ramps	Signal	AM	F (283.8)	F (288.3)
			PM	F (366.0)	F (379.9)
6	Airport Way & SR 120 EB Ramps	Signal	AM	F (404.9)	F (409.5)
			PM	F (296.3)	F (297.7)

Source: Kittelson & Associates, Inc. 2021.
Notes:
[1] Intersection does not exist without the project
[2] Signal = Signalized Intersection, TWSC = Two- or One-Way Stop Control, AWSC = All-Way Stop Control
[3] LOS = Level of Service (for TWSC, on stop-controlled approach only)
[4] Delay = Average vehicle delay reported in seconds per vehicle. (for TWSC, on stop-controlled approach only)

The travel model projects large increases in traffic volumes on Airport Way and the intersecting roads for the 2040 forecast year. Therefore, many of the intersections would have demands that exceed the committed capacity, resulting in LOS F conditions at all study intersections. Additional improvements beyond those specified in the PFIP are recommended to provide traffic operations consistent with General Plan policies. Without these improvements, the delays reported in Table 11 would not be expected to be observed in reality as many drivers would find alternative routes with lower delays.

The project would increase delays but would not change the LOS at any study intersection. Most of the changes in average delay caused by project traffic would be in the range of 1 to 2 percent in the AM peak hour and 0 to 4 percent in the PM peak hour. A larger increase of 14 percent in average delay is projected with project traffic at the intersection of Airport Way and Louise Avenue in the AM peak hour.

Recommended Intersection Improvements

The following improvements are recommended to provide future intersection operations consistent with the General Plan Policy C-1.2 which specifies that the city shall strive for LOS D operations outside the Downtown area.

Airport Way and Louise Avenue

The PFIP indicates that Louise Avenue will have two through lanes in each direction. It is recommended that the eastbound and westbound approaches in each direction on Louise Avenue at Airport Way be widened to provide dual left-turn lanes in place of the existing single left-turn lanes, and also provide an exclusive right-turn lane.

Airport Way & 320 Airport Way Access

The operational analysis indicates LOS F delays for vehicles exiting the project site at the stop sign at Airport Way. The California MUTCD peak hour signal warrant was evaluated to determine if a traffic signal should be installed. Despite the high delays at the stop sign, the volumes exiting the project access road would not be high enough to warrant the installation of a traffic signal for either the AM or PM peak hours.

The Manteca PFIP includes the installation of traffic signals at Crom Street north of the project and Center Street south of the project. It is recommended to prohibit left-turns from the project access road. Drivers from the project who want to go south on Airport Way would be able to turn right on Airport Way, then make a U-turn at the new signal at Crom Street to proceed south on Airport Way. The project site plan also indicates the potential for a future direct connection to Crom Way through the parcel to the north of the project site.

No significant delays are projected for vehicles turning left from southbound Airport Way to the 320 Airport Way project access road. Therefore, this movement may be permitted.

Airport Way & Yosemite Avenue

The PFIP indicates that Yosemite Avenue will have two through lanes in each direction. It is recommended that the eastbound and westbound approaches in each direction on Yosemite Avenue at Airport Way be widened to provide dual left-turn lanes in place of the existing single left-turn lanes, and also provide an exclusive right-turn lane at minimum on the westbound approach.

Airport Way & Daniels Street

It is recommended that the eastbound through lane be converted to a shared through-right lane.

Airport Way & SR 120 Ramps

The Manteca General Plan Major Streets Circulation Plan indicates an ultimate width of six lanes for Airport Way south of Daniels Street to Atherton Drive. Providing three through lanes in each direction at the SR 120 ramp intersections, along with widening the off-ramps from two to three approach lanes, would provide LOS D or better operations.

PROJECT SITE CIRCULATION

The project site plan was evaluated in terms of access, circulation and parking.

PROJECT ACCESS

The initial development of the project would have one access point, on Airport Way. As noted in the traffic operations analysis, this unsignalized access point would provide acceptable traffic operations in the near term, but would have long delays for vehicles turning from the stop sign when traffic on Airport Way increases to projected 2040 levels.

Future development of parcels to the north and east of the project site may provide the opportunity for additional access points. In particular, a connection to the north could allow project traffic to access Crom Street and use a proposed traffic signal at the intersection of Airport Way and Crom Street.

Sidewalks will be provided on both sides of all streets within the project. This will provide safe pedestrian travel within the site. In addition, the project will construct a portion of sidewalk and bicycle lane along the east side of Airport Way adjacent to the project site.

EMERGENCY ACCESS

The initial development of the project would have one access point. It is recommended that the city ensure that additional access points are opened as adjacent parcels are developed.

The proposed street widths are adequate for emergency vehicles. It is recommended that the city ensure that the intersections of the north-south streets with the east-west streets provide adequate turning space for larger emergency vehicles.

PARKING

The Manteca Municipal Code 17.52.050 includes the following requirements for single-family residential uses:

- Single-Family Dwelling Unit: 2 covered spaces/dwelling
- Small-Lot Single Family: 1 covered space/dwelling

The project proposes to provide a two-car garage and two driveway spaces per lot. The project would meet or exceed the city's parking requirement.

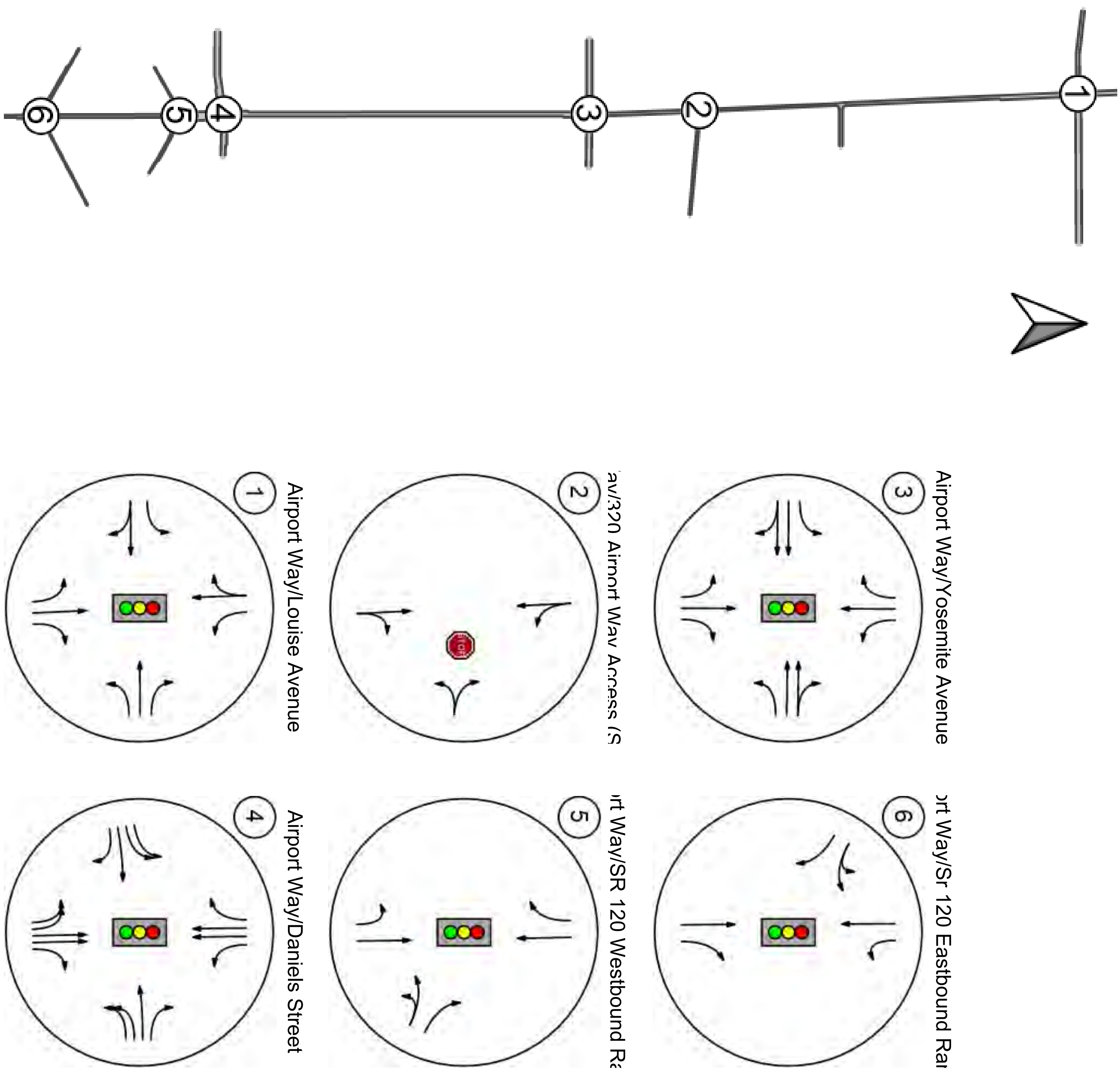
The project would also provide approximately 95 on-street parallel parking spaces, which could accommodate additional visitor parking.

Section 6
Appendix

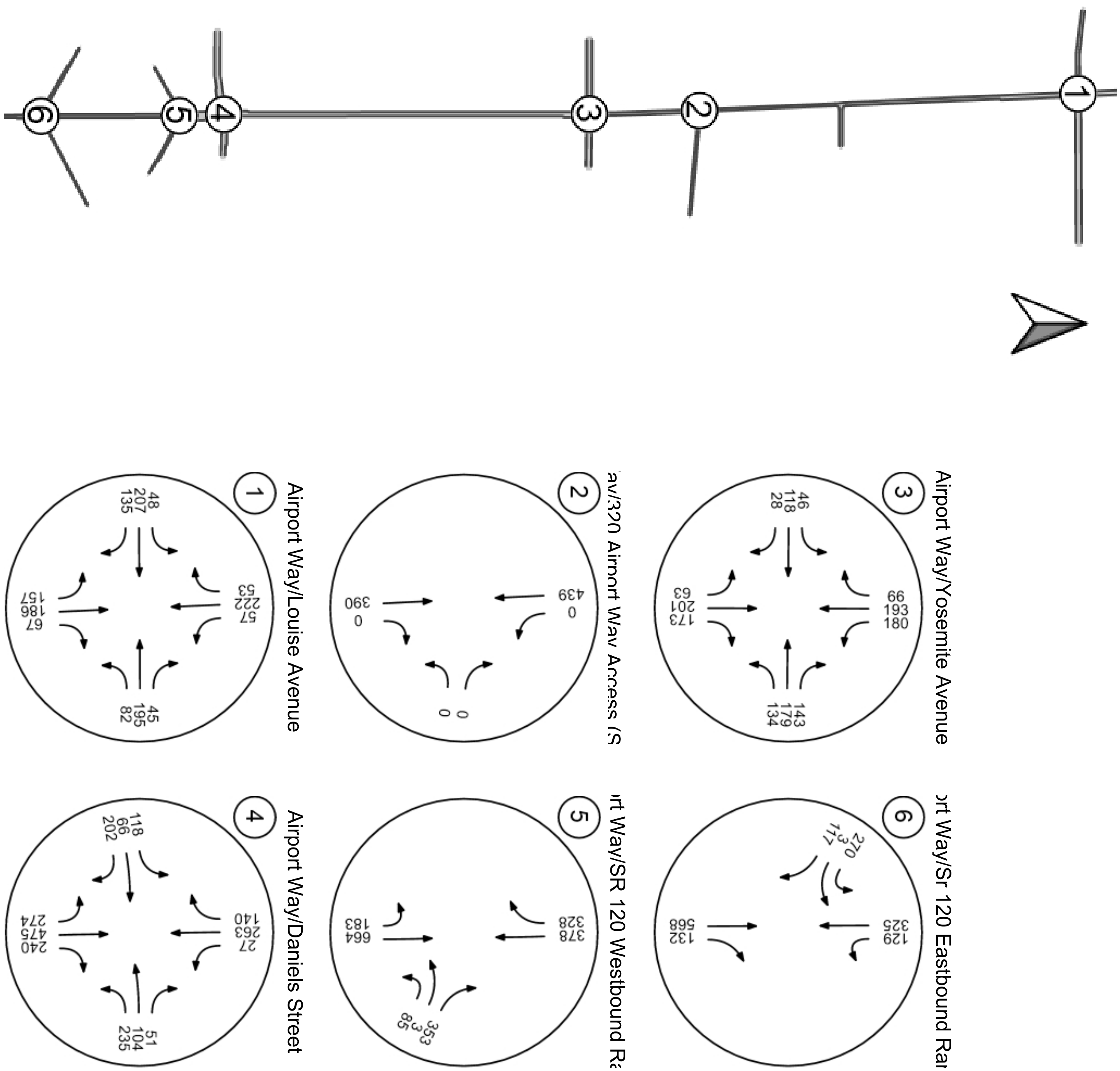
APPENDIX

EXISTING CONDITIONS

Report Figure 1: Lane Configuration and Traffic Control



Report Figure 2a: Traffic Volume - Base Volume



Intersection Level Of Service Report
Intersection 1: Airport Way/Louise Avenue

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

Intersection Setup

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	200.0	100.0	760.0	225.0	100.0	100.0	350.0	100.0	100.0	300.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Base Volume Input [veh/h]	157	186	67	57	222	53	48	207	135	82	195	45
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	6.00	14.00	3.00	2.00	9.00	30.00	42.00	4.00	10.00	4.00	4.00	11.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	157	186	67	57	222	53	48	207	135	82	195	45
Peak Hour Factor	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	43	51	18	15	60	14	13	56	37	22	53	12
Total Analysis Volume [veh/h]	171	202	73	62	241	58	52	225	147	89	212	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			1		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	137
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	7
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	10	0	6	10	0	6	10	0	6	10	6
Maximum Green [s]	20	40	0	20	40	0	25	30	0	25	30	20
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	3.5
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	25	46	0	25	46	0	30	36	0	30	36	25
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	7	7	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	25	0	22	22	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	2.5
Minimum Recall	Yes	Yes		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	L	C	R
C, Cycle Length [s]	74	74	74	74	74	74	74	74	74	74
L, Total Lost Time per Cycle [s]	4.50	5.70	5.70	4.50	5.70	4.50	5.70	4.50	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.70	3.70	2.50	3.70	2.50	3.70	2.50	3.70	3.70
g_i, Effective Green Time [s]	10	23	23	4	18	4	21	5	22	22
g / C, Green / Cycle	0.13	0.31	0.31	0.06	0.24	0.05	0.28	0.07	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.11	0.13	0.05	0.04	0.19	0.05	0.24	0.06	0.13	0.04
s, saturation flow rate [veh/h]	1551	1521	1401	1603	1536	1088	1548	1577	1656	1310
c, Capacity [veh/h]	209	477	440	94	366	58	434	113	495	391
d1, Uniform Delay [s]	31.20	20.12	18.39	34.16	26.72	34.86	25.24	33.85	20.90	18.92
k, delay calibration	0.11	0.23	0.23	0.11	0.23	0.11	0.25	0.11	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.72	1.27	0.38	7.64	9.20	33.12	10.48	11.45	1.26	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.42	0.17	0.66	0.82	0.89	0.86	0.79	0.43	0.13
d, Delay for Lane Group [s/veh]	38.91	21.39	18.77	41.80	35.92	67.99	35.73	45.30	22.16	19.23
Lane Group LOS	D	C	B	D	D	E	D	D	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.31	2.78	0.91	1.26	5.67	1.44	7.09	1.89	2.97	0.62
50th-Percentile Queue Length [ft/ln]	82.74	69.52	22.72	31.51	141.86	35.99	177.21	47.14	74.36	15.48
95th-Percentile Queue Length [veh/ln]	5.96	5.01	1.64	2.27	9.58	2.59	11.45	3.39	5.35	1.11
95th-Percentile Queue Length [ft/ln]	148.9	125.1	40.90	56.71	239.53	64.78	286.37	84.85	133.8	27.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.91	21.39	18.77	41.80	35.92	35.92	67.99	35.73	35.73	45.30	22.16	19.23
Movement LOS	D	C	B	D	D	D	E	D	D	D	C	B
d_A, Approach Delay [s/veh]	27.68			36.93			39.68			27.63		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	33.00											
Intersection LOS	C											
Intersection V/C	0.768											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.78	26.78	26.78	26.78
I_p,int, Pedestrian LOS Score for Intersection	2.345	2.282	2.210	2.427
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1090	1090	820	820
d_b, Bicycle Delay [s]	7.65	7.65	12.87	12.88
I_b,int, Bicycle LOS Score for Intersection	2.296	2.155	2.259	2.137
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Airport Way/Yosemite Avenue

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.577

Intersection Setup

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	225.0	100.0	225.0	300.0	100.0	100.0	170.0	100.0	100.0	175.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Base Volume Input [veh/h]	63	201	173	180	193	66	46	118	28	134	179	143
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	17.00	7.00	2.00	3.00	10.00	20.00	28.00	8.00	39.00	5.00	6.00	8.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	201	173	180	193	66	46	118	28	134	179	143
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	53	46	47	51	17	12	31	7	35	47	38
Total Analysis Volume [veh/h]	66	212	182	189	203	69	48	124	29	141	188	151
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	164
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	35	0	30	35	0	30	50	0	30	40	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	40	0	34	40	0	34	56	0	34	46	0
Vehicle Extension [s]	1.0	6.5	0.0	1.0	6.5	0.0	1.0	7.0	0.0	1.0	7.0	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	2.0	3.4	0.0	2.0	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	54	54	54	54	54	54	54	54	54	54	54	54
L, Total Lost Time per Cycle [s]	4.00	5.00	5.00	4.00	5.00	5.00	4.00	5.40	5.40	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.00	3.00	2.00	3.00	3.00	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	4	13	13	8	17	17	3	9	9	6	12	12
g / C, Green / Cycle	0.07	0.23	0.23	0.15	0.31	0.31	0.06	0.17	0.17	0.11	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.13	0.13	0.12	0.13	0.06	0.04	0.05	0.05	0.09	0.11	0.12
s, saturation flow rate [veh/h]	1410	1615	1431	1590	1575	1224	1268	1602	1486	1564	1629	1367
c, Capacity [veh/h]	99	377	334	232	486	377	73	268	249	175	361	303
d1, Uniform Delay [s]	24.39	18.21	18.13	22.30	14.78	13.64	24.84	19.60	19.65	23.34	18.32	18.46
k, delay calibration	0.04	0.52	0.52	0.04	0.52	0.52	0.04	0.69	0.69	0.04	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.81	6.23	6.56	2.68	2.75	1.11	3.67	3.73	4.31	3.31	6.63	8.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.56	0.55	0.82	0.42	0.18	0.66	0.29	0.30	0.81	0.50	0.53
d, Delay for Lane Group [s/veh]	27.20	24.44	24.69	24.97	17.53	14.76	28.51	23.33	23.96	26.64	24.96	27.27
Lane Group LOS	C	C	C	C	B	B	C	C	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.84	2.74	2.39	2.29	2.10	0.66	0.63	1.05	1.06	1.77	2.42	2.32
50th-Percentile Queue Length [ft/ln]	20.94	68.47	59.78	57.20	52.62	16.51	15.80	26.34	26.41	44.18	60.61	57.95
95th-Percentile Queue Length [veh/ln]	1.51	4.93	4.30	4.12	3.79	1.19	1.14	1.90	1.90	3.18	4.36	4.17
95th-Percentile Queue Length [ft/ln]	37.70	123.2	107.6	102.9	94.71	29.72	28.44	47.41	47.54	79.53	109.1	104.3

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.20	24.44	24.69	24.97	17.53	14.76	28.51	23.57	23.96	26.64	25.06	27.27
Movement LOS	C	C	C	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	24.93			20.17			24.80			26.22		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.93											
Intersection LOS	C											
Intersection V/C	0.577											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	16.18	16.18	16.18	16.18
I_p,int, Pedestrian LOS Score for Intersection	2.303	2.313	2.371	2.459
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1304	1304	1885	1512
d_b, Bicycle Delay [s]	3.25	3.25	0.09	1.60
I_b,int, Bicycle LOS Score for Intersection	2.319	2.320	1.725	1.956
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Airport Way/Daniels Street

Control Type:	Signalized		Delay (sec / veh):	26.4
Analysis Method:	HCM 6th Edition		Level Of Service:	C
Analysis Period:	15 minutes		Volume to Capacity (v/c):	0.611

Intersection Setup

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	2	0	1
Entry Pocket Length [ft]	280.0	100.0	300.0	150.0	100.0	200.0	215.0	100.0	215.0	155.0	100.0	250.0
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Base Volume Input [veh/h]	274	475	240	27	263	140	118	66	202	235	104	51
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	1.00	6.00	5.00	7.00	13.00	4.00	2.00	2.00	4.00	3.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	274	475	240	27	263	140	118	66	202	235	104	51
Peak Hour Factor	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	80	138	70	8	76	41	34	19	59	68	30	15
Total Analysis Volume [veh/h]	319	552	279	31	306	163	137	77	235	273	121	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	162
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	8	0
Maximum Green [s]	30	50	0	20	50	0	30	36	0	20	36	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	54	0	24	54	0	34	40	0	24	40	0
Vehicle Extension [s]	3.0	7.0	0.0	3.0	7.0	0.0	2.0	7.0	0.0	2.0	7.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	30	0	0	39	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	71	71	71	71	71	71	71	71	71	71	71	71
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	26	26	4	20	20	7	17	17	8	17	17
g / C, Green / Cycle	0.14	0.37	0.37	0.05	0.28	0.28	0.11	0.23	0.23	0.12	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.10	0.18	0.20	0.02	0.10	0.12	0.04	0.05	0.17	0.09	0.07	0.04
s, saturation flow rate [veh/h]	3138	3102	1420	1539	2921	1408	3113	1683	1408	3088	1710	1454
c, Capacity [veh/h]	435	1147	525	80	827	399	328	394	330	365	423	359
d1, Uniform Delay [s]	29.29	17.13	17.43	32.53	20.35	20.61	29.69	21.79	24.96	30.24	21.63	20.95
k, delay calibration	0.11	0.69	0.69	0.11	0.69	0.69	0.04	0.69	0.69	0.04	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.41	2.00	5.25	3.05	1.76	4.26	0.31	1.53	16.64	1.16	2.35	1.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.48	0.53	0.39	0.37	0.41	0.42	0.20	0.71	0.75	0.29	0.16
d, Delay for Lane Group [s/veh]	31.70	19.13	22.68	35.58	22.11	24.87	30.00	23.32	41.61	31.40	23.98	22.31
Lane Group LOS	C	B	C	D	C	C	C	C	D	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.64	3.51	4.05	0.57	2.12	2.54	1.07	1.15	4.96	2.22	1.83	0.87
50th-Percentile Queue Length [ft/ln]	66.03	87.74	101.2	14.15	52.93	63.44	26.69	28.75	123.9	55.58	45.73	21.73
95th-Percentile Queue Length [veh/ln]	4.75	6.32	7.29	1.02	3.81	4.57	1.92	2.07	8.61	4.00	3.29	1.56
95th-Percentile Queue Length [ft/ln]	118.8	157.9	182.1	25.48	95.27	114.2	48.05	51.75	215.2	100.0	82.32	39.12

Movement, Approach, & Intersection Results

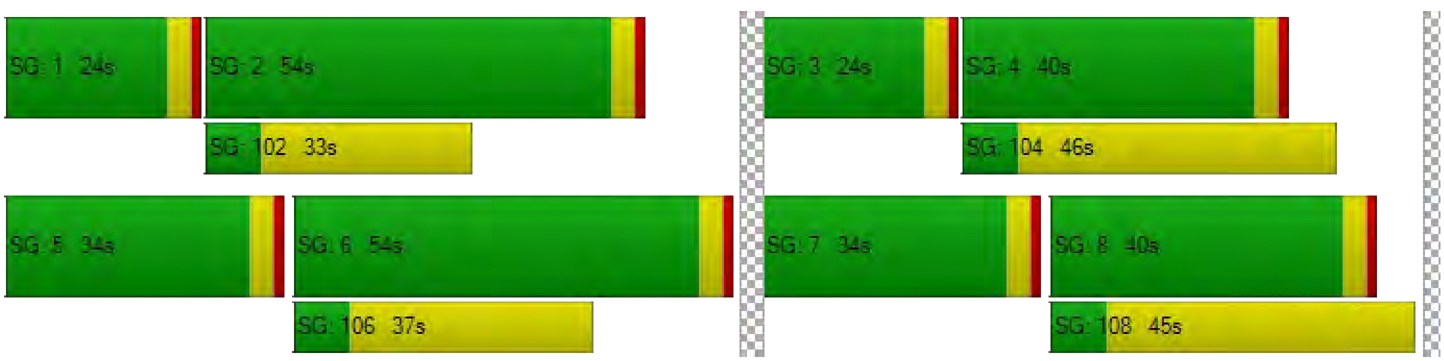
d_M, Delay for Movement [s/veh]	31.70	19.13	22.68	35.58	22.11	24.87	30.00	23.32	41.61	31.40	23.98	22.31
Movement LOS	C	B	C	D	C	C	C	C	D	C	C	C
d_A, Approach Delay [s/veh]	23.48			23.84			34.93			28.23		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	26.41											
Intersection LOS	C											
Intersection V/C	0.611											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.24	25.24	25.24	25.24
I_p,int, Pedestrian LOS Score for Intersection	2.854	2.642	2.611	2.450
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1413	1413	1017	1017
d_b, Bicycle Delay [s]	3.05	3.05	8.55	8.55
I_b,int, Bicycle LOS Score for Intersection	2.508	1.972	2.300	2.307
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Airport Way/SR 120 Westbound Ramps

Control Type:	Signalized	Delay (sec / veh):	26.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.928

Intersection Setup

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	280.0	100.0	100.0	100.0	100.0	400.0	100.0	100.0	100.0	100.0	100.0	500.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Base Volume Input [veh/h]	183	664	0	0	378	328	0	0	0	85	3	353
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	14.00	3.00	2.00	2.00	8.00	6.00	2.00	2.00	2.00	8.00	0.00	7.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	664	0	0	378	328	0	0	0	85	3	353
Peak Hour Factor	0.910	0.910	1.000	1.000	0.910	0.910	1.000	1.000	1.000	0.910	0.910	0.910
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	50	182	0	0	104	90	0	0	0	23	1	97
Total Analysis Volume [veh/h]	201	730	0	0	415	360	0	0	0	93	3	388
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	5	2	0	0	6	0	0	0	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	Lead	-
Minimum Green [s]	5	8	0	0	8	0	0	0	0	0	5	0
Maximum Green [s]	15	30	0	0	30	0	0	0	0	0	15	0
Amber [s]	3.0	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	3.6	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	19	36	0	0	36	0	0	0	0	0	20	0
Vehicle Extension [s]	3.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Walk [s]	0	10	0	0	10	0	0	0	0	0	10	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	Yes			Yes						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	R
C, Cycle Length [s]	53	53	53	53		53	53
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	5.30		4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	3.30		2.60	2.60
g_i, Effective Green Time [s]	9	29	16	16		15	15
g / C, Green / Cycle	0.17	0.53	0.29	0.29		0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.14	0.44	0.26	0.26		0.06	0.28
s, saturation flow rate [veh/h]	1448	1669	1602	1385		1529	1373
c, Capacity [veh/h]	244	893	468	404		428	385
d1, Uniform Delay [s]	21.50	10.29	18.12	18.14		14.81	19.28
k, delay calibration	0.11	0.23	0.04	0.04		0.04	0.37
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	6.86	3.90	2.32	2.75		0.10	41.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.82	0.89	0.89		0.22	1.01
d, Delay for Lane Group [s/veh]	28.35	14.19	20.44	20.89		14.90	61.02
Lane Group LOS	C	B	C	C		B	F
Critical Lane Group	No	Yes	No	No		No	Yes
50th-Percentile Queue Length [veh/ln]	2.67	6.20	4.58	4.02		0.81	8.62
50th-Percentile Queue Length [ft/ln]	66.86	155.00	114.47	100.59		20.25	215.59
95th-Percentile Queue Length [veh/ln]	4.81	10.28	8.09	7.24		1.46	13.51
95th-Percentile Queue Length [ft/ln]	120.35	257.09	202.20	181.07		36.44	337.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.35	14.19	0.00	0.00	20.44	20.89	0.00	0.00	0.00	14.90	14.90	61.02
Movement LOS	C	B			C	C				B	B	F
d_A, Approach Delay [s/veh]	17.25			20.65			0.00			51.88		
Approach LOS	B			C			A			D		
d_I, Intersection Delay [s/veh]	26.11											
Intersection LOS	C											
Intersection V/C	0.928											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1149	1149	0	576
d_b, Bicycle Delay [s]	4.85	4.84	26.72	13.54
I_b,int, Bicycle LOS Score for Intersection	3.096	2.838	4.132	1.560
Bicycle LOS	C	C	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Aiport Way/Sr 120 Eastbound Ramps

Control Type:	Signalized	Delay (sec / veh):	18.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.853

Intersection Setup

Name				Airport Way								
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left2	Left	Right	Left	Right	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	225.0	300.0	100.0	100.0	100.0	100.0	575.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name				Airport Way								
Base Volume Input [veh/h]	0	568	132	129	325	0	270	3	117	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	6.00	5.00	16.00	4.00	2.00	5.00	33.00	14.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	568	132	129	325	0	270	3	117	0	0	0
Peak Hour Factor	1.000	0.930	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	153	35	35	87	0	73	1	31	0	0	0
Total Analysis Volume [veh/h]	0	611	142	139	349	0	290	3	126	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		3			1			0			0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	2	0	1	6	0	0	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	Lead	-	-	-	-
Minimum Green [s]	0	8	0	5	8	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	20	0	0	0	0
Amber [s]	0.0	4.3	0.0	3.0	4.3	0.0	0.0	3.6	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	36	0	34	36	0	0	25	0	0	0	0
Vehicle Extension [s]	0.0	0.2	0.0	2.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	0	0	10	0	0	10	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.3	0.0	2.0	3.3	0.0	0.0	2.6	0.0	0.0	0.0	0.0
Minimum Recall		Yes		No	Yes			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R	
C, Cycle Length [s]	53	53	53	53	53	53	
L, Total Lost Time per Cycle [s]	5.30	5.30	4.00	5.30	4.60	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.30	3.30	2.00	3.30	2.60	2.60	
g_i, Effective Green Time [s]	21	21	6	32	12	12	
g / C, Green / Cycle	0.40	0.40	0.12	0.59	0.22	0.22	
(v / s)_i Volume / Saturation Flow Rate	0.38	0.10	0.10	0.21	0.19	0.10	
s, saturation flow rate [veh/h]	1629	1364	1423	1656	1561	1293	
c, Capacity [veh/h]	652	546	169	984	344	285	
d1, Uniform Delay [s]	15.37	10.69	22.96	5.57	19.97	17.97	
k, delay calibration	0.13	0.04	0.04	0.04	0.04	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	8.46	0.09	3.73	0.08	2.33	0.40	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.94	0.26	0.82	0.35	0.85	0.44	
d, Delay for Lane Group [s/veh]	23.83	10.78	26.69	5.65	22.30	18.37	
Lane Group LOS	C	B	C	A	C	B	
Critical Lane Group	Yes	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	7.39	0.96	1.74	1.40	3.34	1.24	
50th-Percentile Queue Length [ft/ln]	184.75	24.03	43.47	35.07	83.55	30.98	
95th-Percentile Queue Length [veh/ln]	11.85	1.73	3.13	2.53	6.02	2.23	
95th-Percentile Queue Length [ft/ln]	296.21	43.25	78.25	63.13	150.39	55.76	

Movement, Approach, & Intersection Results

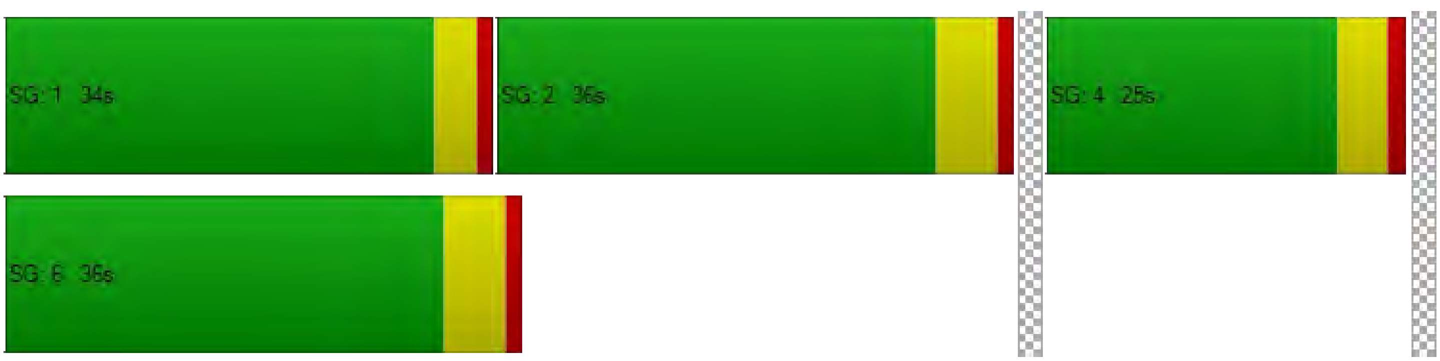
d_M, Delay for Movement [s/veh]	0.00	23.83	10.78	26.69	5.65	0.00	22.30	22.30	18.37	0.00	0.00	0.00
Movement LOS		C	B	C	A		C	C	B			
d_A, Approach Delay [s/veh]	21.37			11.64			21.12			0.00		
Approach LOS	C			B			C			A		
d_I, Intersection Delay [s/veh]	18.45											
Intersection LOS	B											
Intersection V/C	0.853											

Other Modes

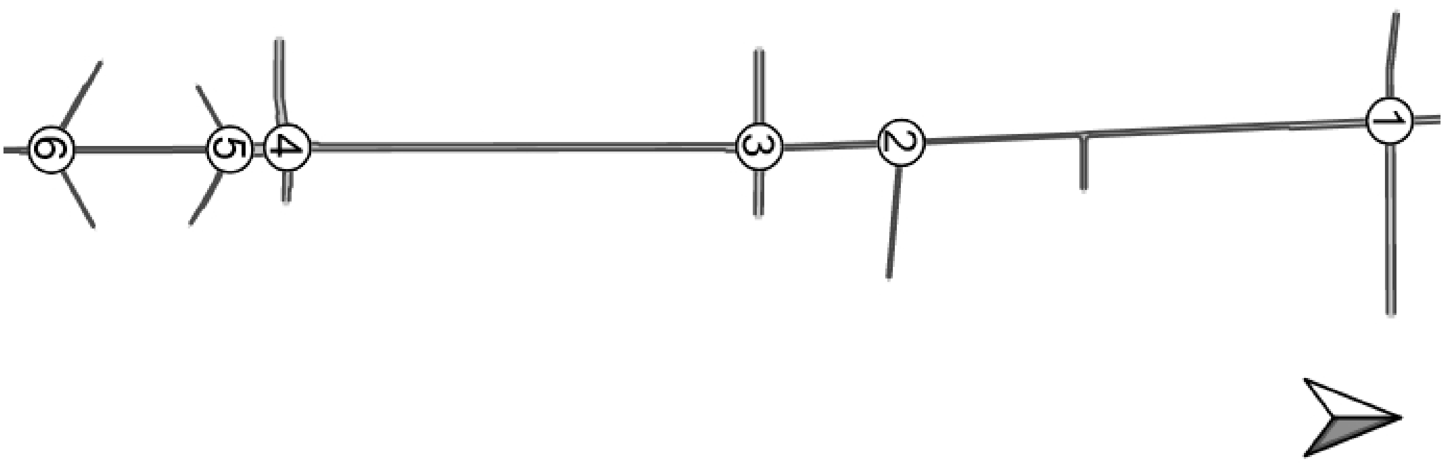
g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1153	1153	766	0
d_b, Bicycle Delay [s]	4.78	4.77	10.13	26.62
I_b,int, Bicycle LOS Score for Intersection	2.802	2.365	1.560	4.132
Bicycle LOS	C	B	A	D

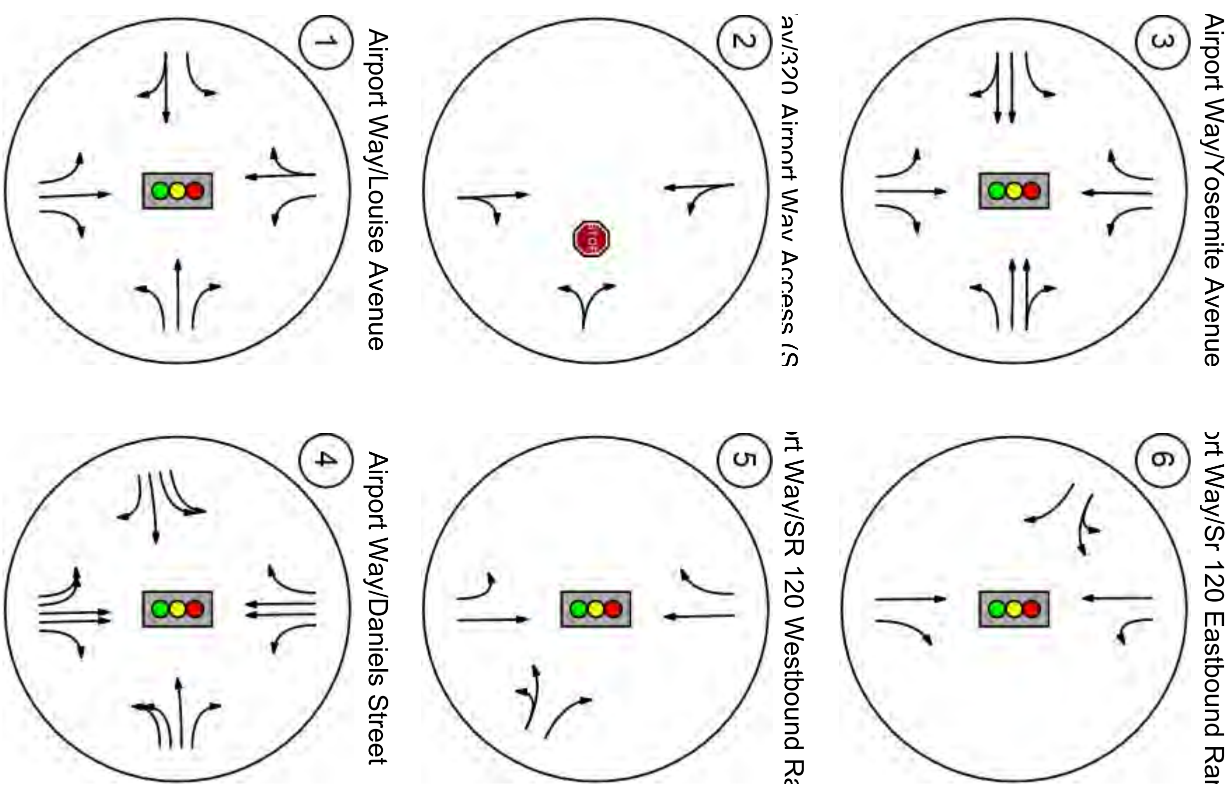
Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

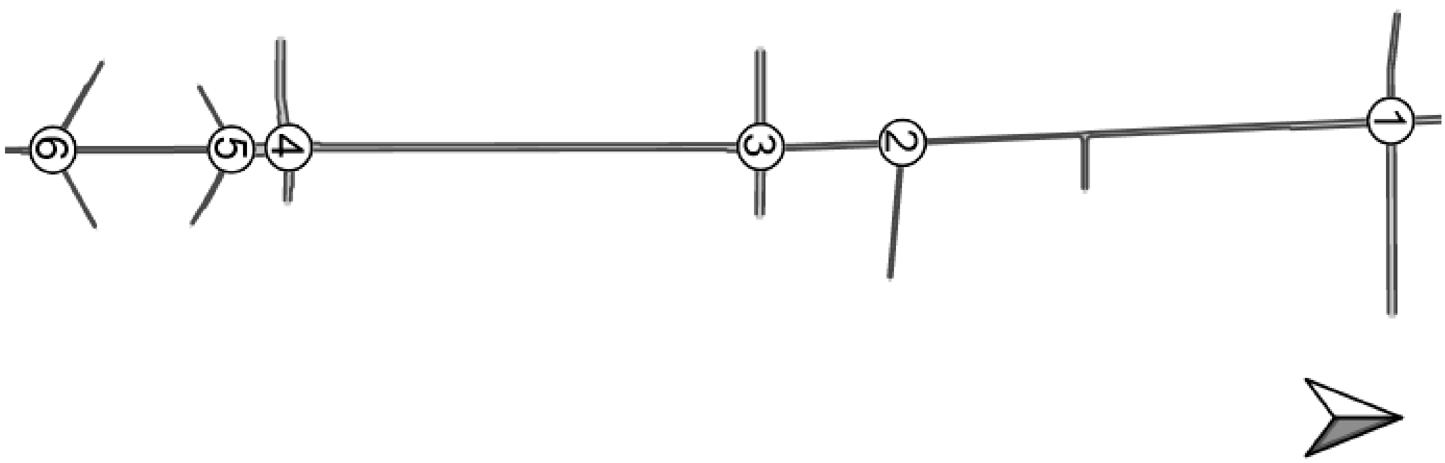


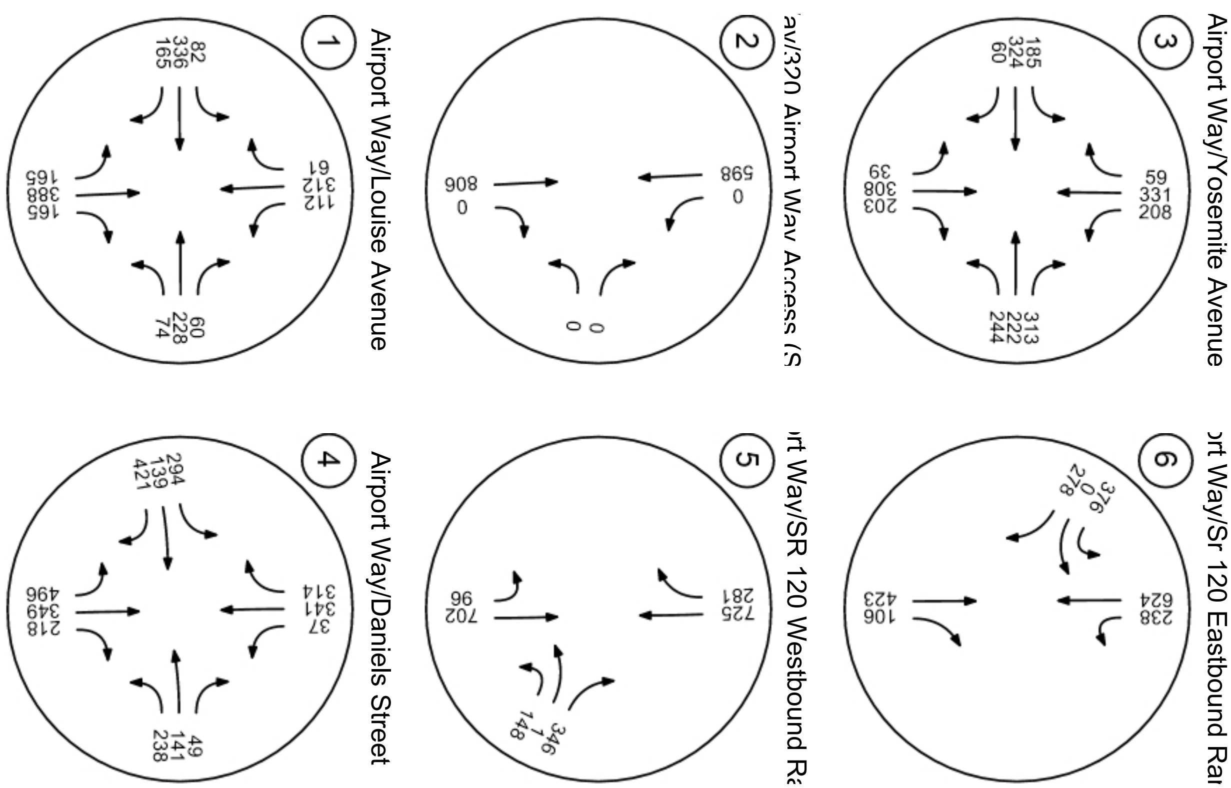
Report Figure 1: Lane Configuration and Traffic Control





Report Figure 2a: Traffic Volume - Base Volume





Intersection Level Of Service Report
Intersection 1: Airport Way/Louise Avenue

Control Type:	Signalized	Delay (sec / veh):	47.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.869

Intersection Setup

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	200.0	100.0	760.0	225.0	100.0	100.0	350.0	100.0	100.0	300.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Base Volume Input [veh/h]	165	388	165	112	312	61	82	336	165	74	228	60
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	7.00	5.00	2.00	1.00	6.00	16.00	11.00	1.00	4.00	0.00	1.00	8.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	165	388	165	112	312	61	82	336	165	74	228	60
Peak Hour Factor	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	43	100	43	29	80	16	21	87	43	19	59	15
Total Analysis Volume [veh/h]	170	400	170	115	322	63	85	346	170	76	235	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	137
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	7
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	10	0	6	10	0	6	10	0	6	10	6
Maximum Green [s]	20	40	0	20	40	0	25	30	0	25	30	20
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	3.5
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	25	46	0	25	46	0	30	36	0	30	36	25
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	7	7	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	25	0	22	22	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	2.5
Minimum Recall	Yes	Yes		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	L	C	R
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.50	5.70	5.70	4.50	5.70	4.50	5.70	4.50	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.70	3.70	2.50	3.70	2.50	3.70	2.50	3.70	3.70
g_i, Effective Green Time [s]	12	30	30	8	26	7	30	6	29	29
g / C, Green / Cycle	0.13	0.32	0.32	0.09	0.28	0.07	0.32	0.06	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.11	0.24	0.12	0.07	0.24	0.06	0.32	0.05	0.14	0.05
s, saturation flow rate [veh/h]	1539	1642	1431	1616	1583	1487	1603	1629	1696	1362
c, Capacity [veh/h]	201	525	458	143	440	106	507	97	518	415
d1, Uniform Delay [s]	40.26	28.98	24.88	42.37	32.65	43.38	32.39	43.96	26.56	23.97
k, delay calibration	0.11	0.25	0.23	0.11	0.25	0.11	0.45	0.11	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.34	5.14	1.07	9.90	11.66	13.20	42.14	12.75	1.33	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.76	0.37	0.80	0.87	0.80	1.02	0.78	0.45	0.15
d, Delay for Lane Group [s/veh]	49.60	34.12	25.95	52.27	44.31	56.58	74.52	56.70	27.89	24.32
Lane Group LOS	D	C	C	D	D	E	F	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.34	8.69	3.03	3.00	9.62	2.33	17.13	2.09	4.38	1.04
50th-Percentile Queue Length [ft/ln]	108.4	217.1	75.78	75.11	240.50	58.24	428.30	52.13	109.6	25.98
95th-Percentile Queue Length [veh/ln]	7.76	13.52	5.46	5.41	14.71	4.19	24.18	3.75	7.82	1.87
95th-Percentile Queue Length [ft/ln]	193.9	337.9	136.4	135.19	367.66	104.83	604.53	93.84	195.4	46.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.60	34.12	25.95	52.27	44.31	44.31	56.58	74.52	74.52	56.70	27.89	24.32
Movement LOS	D	C	C	D	D	D	E	E	E	E	C	C
d_A, Approach Delay [s/veh]	35.80			46.14			71.99			33.17		
Approach LOS	D			D			E			C		
d_I, Intersection Delay [s/veh]	47.51											
Intersection LOS	D											
Intersection V/C	0.869											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.96	36.96	36.96	36.96
I_p,int, Pedestrian LOS Score for Intersection	2.452	2.388	2.290	2.498
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	852	852	640	640
d_b, Bicycle Delay [s]	15.60	15.60	21.87	21.87
I_b,int, Bicycle LOS Score for Intersection	2.781	2.385	2.551	2.175
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Airport Way/Yosemite Avenue

Control Type:	Signalized	Delay (sec / veh):	46.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.821

Intersection Setup

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	225.0	100.0	225.0	300.0	100.0	100.0	170.0	100.0	100.0	175.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Base Volume Input [veh/h]	39	308	203	208	331	59	185	324	60	244	222	313
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	10.00	5.00	2.00	4.00	2.00	19.00	6.00	3.00	7.00	2.00	4.00	3.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	308	203	208	331	59	185	324	60	244	222	313
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	81	53	55	87	16	49	85	16	64	58	82
Total Analysis Volume [veh/h]	41	324	214	219	348	62	195	341	63	257	234	329
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			2			2		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	164
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	35	0	30	35	0	30	50	0	30	40	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	40	0	34	40	0	34	56	0	34	46	0
Vehicle Extension [s]	1.0	6.5	0.0	1.0	6.5	0.0	1.0	7.0	0.0	1.0	7.0	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	2.0	3.4	0.0	2.0	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	109	109	109	109	109	109	109	109	109	109	109	109
L, Total Lost Time per Cycle [s]	4.00	5.00	5.00	4.00	5.00	5.00	4.00	5.40	5.40	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.00	3.00	2.00	3.00	3.00	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	4	27	27	17	39	39	16	28	28	19	32	32
g / C, Green / Cycle	0.04	0.24	0.24	0.16	0.36	0.36	0.14	0.26	0.26	0.18	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.03	0.20	0.15	0.14	0.21	0.05	0.13	0.12	0.13	0.16	0.14	0.24
s, saturation flow rate [veh/h]	1500	1642	1412	1577	1683	1235	1551	1669	1567	1603	1656	1376
c, Capacity [veh/h]	59	400	344	245	606	445	221	427	401	283	480	399
d1, Uniform Delay [s]	51.85	38.93	36.75	45.25	28.22	23.57	45.97	34.54	34.62	44.10	32.06	36.18
k, delay calibration	0.04	0.52	0.52	0.04	0.52	0.52	0.04	0.69	0.69	0.08	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.42	16.71	8.56	4.50	4.11	0.68	4.55	5.37	5.88	8.62	4.83	22.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.81	0.62	0.89	0.57	0.14	0.88	0.48	0.49	0.91	0.49	0.82
d, Delay for Lane Group [s/veh]	57.27	55.64	45.31	49.75	32.32	24.25	50.52	39.91	40.51	52.72	36.89	58.94
Lane Group LOS	E	E	D	D	C	C	D	D	D	D	D	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.19	9.94	5.86	6.08	7.94	1.16	5.43	5.28	5.09	7.43	5.72	10.58
50th-Percentile Queue Length [ft/ln]	29.85	248.5	146.4	152.0	198.3	29.06	135.8	131.9	127.3	185.7	143.0	264.4
95th-Percentile Queue Length [veh/ln]	2.15	15.11	9.83	10.13	12.56	2.09	9.25	9.04	8.79	11.90	9.64	15.91
95th-Percentile Queue Length [ft/ln]	53.73	377.8	245.7	253.1	313.8	52.31	231.3	226.1	219.8	297.5	241.0	397.7

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.27	55.64	45.31	49.75	32.32	24.25	50.52	40.15	40.51	52.72	36.89	58.94
Movement LOS	E	E	D	D	C	C	D	D	D	D	D	E
d_A, Approach Delay [s/veh]	51.93			37.59			43.56			50.70		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	46.21											
Intersection LOS	D											
Intersection V/C	0.821											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	43.20	43.20	43.20	43.20
I_p,int, Pedestrian LOS Score for Intersection	2.443	2.499	2.491	2.619
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	642	642	928	744
d_b, Bicycle Delay [s]	25.17	25.15	15.69	21.52
I_b,int, Bicycle LOS Score for Intersection	2.515	2.597	2.054	2.236
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Airport Way/Daniels Street

Control Type:	Signalized	Delay (sec / veh):	50.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.881

Intersection Setup

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	2	0	1
Entry Pocket Length [ft]	280.0	100.0	300.0	150.0	100.0	200.0	215.0	100.0	215.0	155.0	100.0	250.0
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Base Volume Input [veh/h]	496	349	218	37	341	314	294	139	421	238	141	49
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	6.00	0.00	0.00	5.00	0.00	0.00	1.00	1.00	0.00	1.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	496	349	218	37	341	314	294	139	421	238	141	49
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	127	89	56	9	87	80	75	35	107	61	36	13
Total Analysis Volume [veh/h]	506	356	222	38	348	320	300	142	430	243	144	50
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			4			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	162
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	8	0
Maximum Green [s]	30	50	0	20	50	0	30	36	0	20	36	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	54	0	24	54	0	34	40	0	24	40	0
Vehicle Extension [s]	3.0	7.0	0.0	3.0	7.0	0.0	2.0	7.0	0.0	2.0	7.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	30	0	0	39	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	51	51	6	35	35	14	36	36	11	34	34
g / C, Green / Cycle	0.18	0.42	0.42	0.05	0.29	0.29	0.11	0.30	0.30	0.09	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.16	0.11	0.15	0.02	0.11	0.22	0.09	0.08	0.30	0.08	0.08	0.03
s, saturation flow rate [veh/h]	3163	3102	1512	1629	3127	1432	3163	1696	1420	3163	1696	1431
c, Capacity [veh/h]	577	1312	640	78	903	413	358	510	427	298	478	403
d1, Uniform Delay [s]	47.62	22.50	23.35	55.53	34.07	38.82	52.00	31.94	41.58	53.18	33.73	31.98
k, delay calibration	0.11	0.69	0.69	0.11	0.69	0.69	0.04	0.69	0.69	0.04	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.44	0.71	2.06	4.59	1.72	17.63	2.03	1.88	52.92	2.07	2.23	0.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.27	0.35	0.49	0.39	0.77	0.84	0.28	1.01	0.81	0.30	0.12
d, Delay for Lane Group [s/veh]	52.06	23.21	25.41	60.12	35.79	56.45	54.03	33.81	94.51	55.25	35.96	32.86
Lane Group LOS	D	C	C	E	D	E	D	C	F	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.67	3.40	4.60	1.22	4.28	10.54	4.51	3.42	18.63	3.67	3.60	1.18
50th-Percentile Queue Length [ft/ln]	191.7	85.10	115.1	30.45	106.9	263.4	112.6	85.43	465.6	91.66	89.88	29.60
95th-Percentile Queue Length [veh/ln]	12.21	6.13	8.12	2.19	7.67	15.86	7.99	6.15	25.81	6.60	6.47	2.13
95th-Percentile Queue Length [ft/ln]	305.2	153.1	203.0	54.81	191.7	396.5	199.6	153.7	645.3	164.9	161.7	53.28

Movement, Approach, & Intersection Results

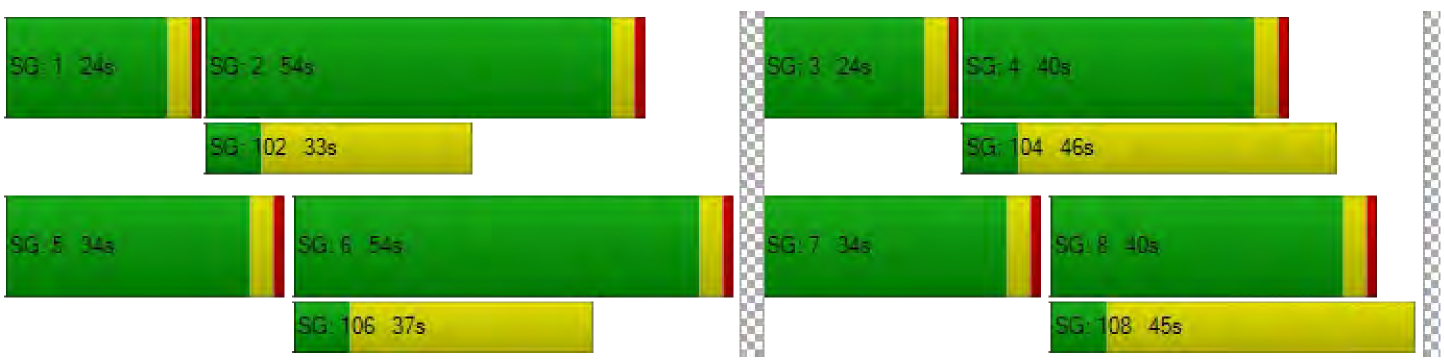
d_M, Delay for Movement [s/veh]	52.06	23.21	25.41	60.12	35.79	56.45	54.03	33.81	94.51	55.25	35.96	32.86
Movement LOS	D	C	C	E	D	E	D	C	F	E	D	C
d_A, Approach Delay [s/veh]		37.13			46.46			70.70			46.33	
Approach LOS		D			D			E			D	
d_I, Intersection Delay [s/veh]	50.00											
Intersection LOS	D											
Intersection V/C	0.881											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.30	49.30	49.30	49.30
I_p,int, Pedestrian LOS Score for Intersection	2.901	2.696	2.766	2.477
Crosswalk LOS	C	B	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	836	836	602	602
d_b, Bicycle Delay [s]	20.25	20.29	29.27	29.22
I_b,int, Bicycle LOS Score for Intersection	2.454	2.142	2.998	2.281
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Airport Way/SR 120 Westbound Ramps

Control Type:	Signalized	Delay (sec / veh):	33.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.946

Intersection Setup

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	280.0	100.0	100.0	100.0	100.0	400.0	100.0	100.0	100.0	100.0	100.0	500.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Base Volume Input [veh/h]	96	702	0	0	725	281	0	0	0	148	1	346
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	19.00	2.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00	2.00	4.00	4.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	702	0	0	725	281	0	0	0	148	1	346
Peak Hour Factor	0.970	0.970	1.000	1.000	0.970	0.970	1.000	1.000	1.000	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	25	181	0	0	187	72	0	0	0	38	0	89
Total Analysis Volume [veh/h]	99	724	0	0	747	290	0	0	0	153	1	357
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			5			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	5	2	0	0	6	0	0	0	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	Lead	-
Minimum Green [s]	5	8	0	0	8	0	0	0	0	0	5	0
Maximum Green [s]	15	30	0	0	30	0	0	0	0	0	15	0
Amber [s]	3.0	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	3.6	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	19	36	0	0	36	0	0	0	0	0	20	0
Vehicle Extension [s]	3.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Walk [s]	0	10	0	0	10	0	0	0	0	0	10	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	Yes			Yes						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	R
C, Cycle Length [s]	64	64	64	64		64	64
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	5.30		4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	3.30		2.60	2.60
g_i, Effective Green Time [s]	6	39	30	30		15	15
g / C, Green / Cycle	0.09	0.61	0.46	0.46		0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.07	0.43	0.44	0.21		0.10	0.25
s, saturation flow rate [veh/h]	1384	1683	1683	1407		1603	1408
c, Capacity [veh/h]	121	1031	779	652		374	329
d1, Uniform Delay [s]	28.84	8.47	16.65	11.59		20.89	24.63
k, delay calibration	0.11	0.34	0.37	0.04		0.04	0.43
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	12.75	2.77	19.29	0.18		0.27	71.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.70	0.96	0.44		0.41	1.09
d, Delay for Lane Group [s/veh]	41.59	11.24	35.94	11.77		21.16	96.00
Lane Group LOS	D	B	D	B		C	F
Critical Lane Group	Yes	No	Yes	No		No	Yes
50th-Percentile Queue Length [veh/ln]	1.85	5.92	13.15	2.46		1.86	11.12
50th-Percentile Queue Length [ft/ln]	46.36	147.96	328.84	61.46		46.52	278.11
95th-Percentile Queue Length [veh/ln]	3.34	9.91	19.10	4.43		3.35	17.33
95th-Percentile Queue Length [ft/ln]	83.45	247.70	477.54	110.63		83.74	433.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.59	11.24	0.00	0.00	35.94	11.77	0.00	0.00	0.00	21.16	21.16	96.00
Movement LOS	D	B			D	B				C	C	F
d_A, Approach Delay [s/veh]	14.89			29.18			0.00			73.44		
Approach LOS	B			C			A			E		
d_I, Intersection Delay [s/veh]	33.76											
Intersection LOS	C											
Intersection V/C	0.946											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	958	958	0	480
d_b, Bicycle Delay [s]	8.71	8.73	32.06	18.51
I_b,int, Bicycle LOS Score for Intersection	2.918	3.271	4.132	1.560
Bicycle LOS	C	C	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Aiport Way/Sr 120 Eastbound Ramps

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.671

Intersection Setup

Name				Airport Way								
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left2	Left	Right	Left	Right	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	225.0	300.0	100.0	100.0	100.0	100.0	575.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name				Airport Way								
Base Volume Input [veh/h]	0	423	106	238	624	0	376	0	278	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	6.00	7.00	4.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	423	106	238	624	0	376	0	278	0	0	0
Peak Hour Factor	1.000	0.940	0.940	0.940	0.940	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	113	28	63	166	0	94	0	70	0	0	0
Total Analysis Volume [veh/h]	0	450	113	253	664	0	376	0	278	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			6			0			0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	2	0	1	6	0	0	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	Lead	-	-	-	-
Minimum Green [s]	0	8	0	5	8	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	20	0	0	0	0
Amber [s]	0.0	4.3	0.0	3.0	4.3	0.0	0.0	3.6	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	36	0	34	36	0	0	25	0	0	0	0
Vehicle Extension [s]	0.0	0.2	0.0	2.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	0	0	10	0	0	10	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.3	0.0	2.0	3.3	0.0	0.0	2.6	0.0	0.0	0.0	0.0
Minimum Recall		Yes		No	Yes			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R	
C, Cycle Length [s]	57	57	57	57	57	57	
L, Total Lost Time per Cycle [s]	5.30	5.30	4.00	5.30	4.60	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.30	3.30	2.00	3.30	2.60	2.60	
g_i, Effective Green Time [s]	17	17	11	32	15	15	
g / C, Green / Cycle	0.30	0.30	0.19	0.56	0.26	0.26	
(v / s)_i Volume / Saturation Flow Rate	0.28	0.08	0.16	0.39	0.23	0.19	
s, saturation flow rate [veh/h]	1629	1373	1577	1683	1603	1431	
c, Capacity [veh/h]	493	416	302	948	423	378	
d1, Uniform Delay [s]	19.30	15.22	22.38	9.04	20.32	19.31	
k, delay calibration	0.04	0.04	0.04	0.21	0.13	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	2.84	0.13	2.42	1.80	7.55	1.05	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.91	0.27	0.84	0.70	0.89	0.74	
d, Delay for Lane Group [s/veh]	22.14	15.35	24.80	10.84	27.87	20.36	
Lane Group LOS	C	B	C	B	C	C	
Critical Lane Group	Yes	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	5.50	1.03	3.21	4.94	5.23	3.16	
50th-Percentile Queue Length [ft/ln]	137.53	25.68	80.37	123.42	130.70	78.98	
95th-Percentile Queue Length [veh/ln]	9.35	1.85	5.79	8.58	8.98	5.69	
95th-Percentile Queue Length [ft/ln]	233.69	46.23	144.66	214.52	224.44	142.16	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	22.14	15.35	24.80	10.84	0.00	27.87	27.87	20.36	0.00	0.00	0.00
Movement LOS		C	B	C	B		C	C	C			
d_A, Approach Delay [s/veh]	20.78			14.69			24.68			0.00		
Approach LOS	C			B			C			A		
d_I, Intersection Delay [s/veh]	19.36											
Intersection LOS	B											
Intersection V/C	0.671											

Other Modes

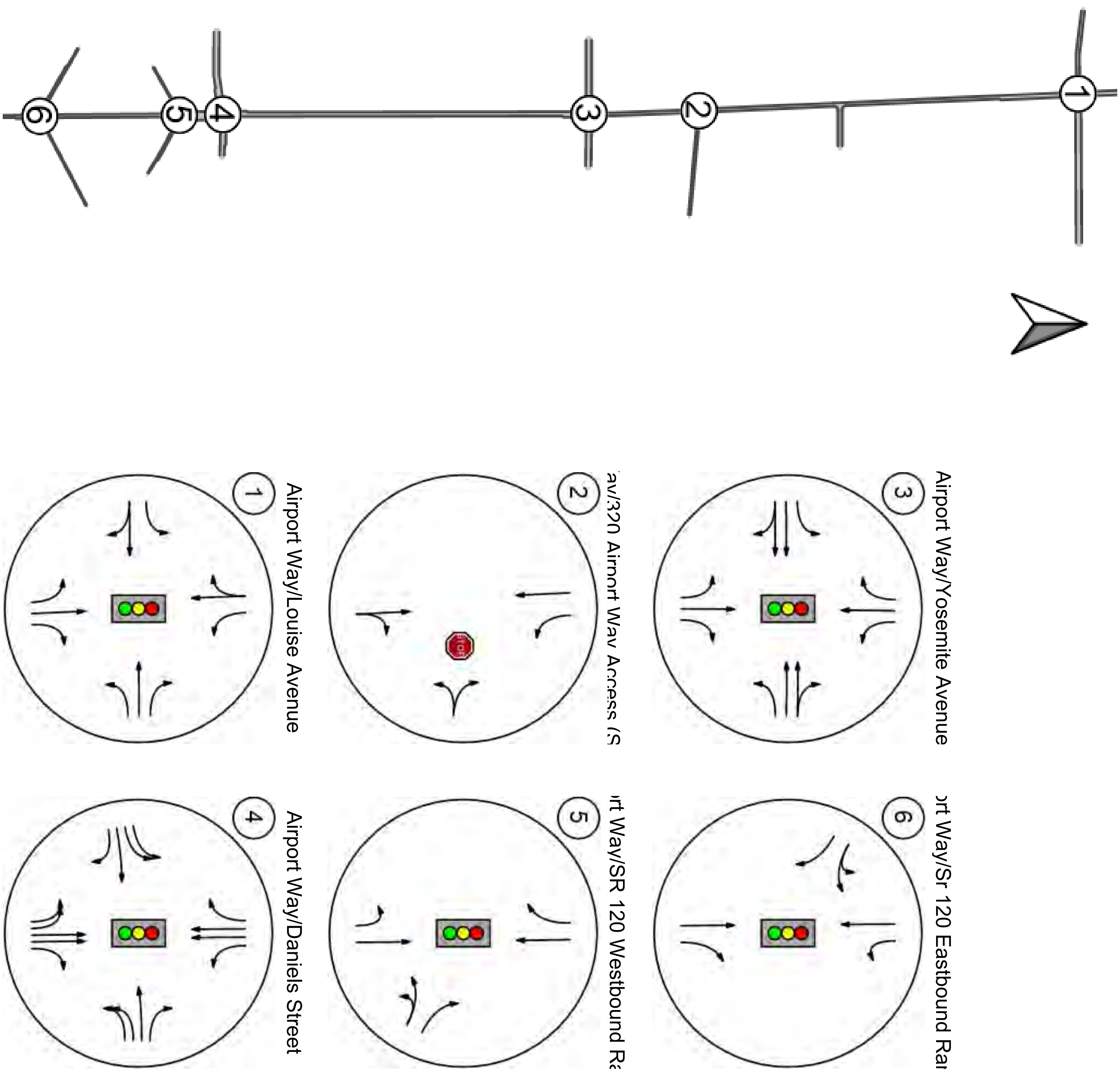
g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1071	1071	712	0
d_b, Bicycle Delay [s]	6.18	6.20	11.89	28.66
I_b,int, Bicycle LOS Score for Intersection	2.489	3.073	1.560	4.132
Bicycle LOS	B	C	A	D

Sequence

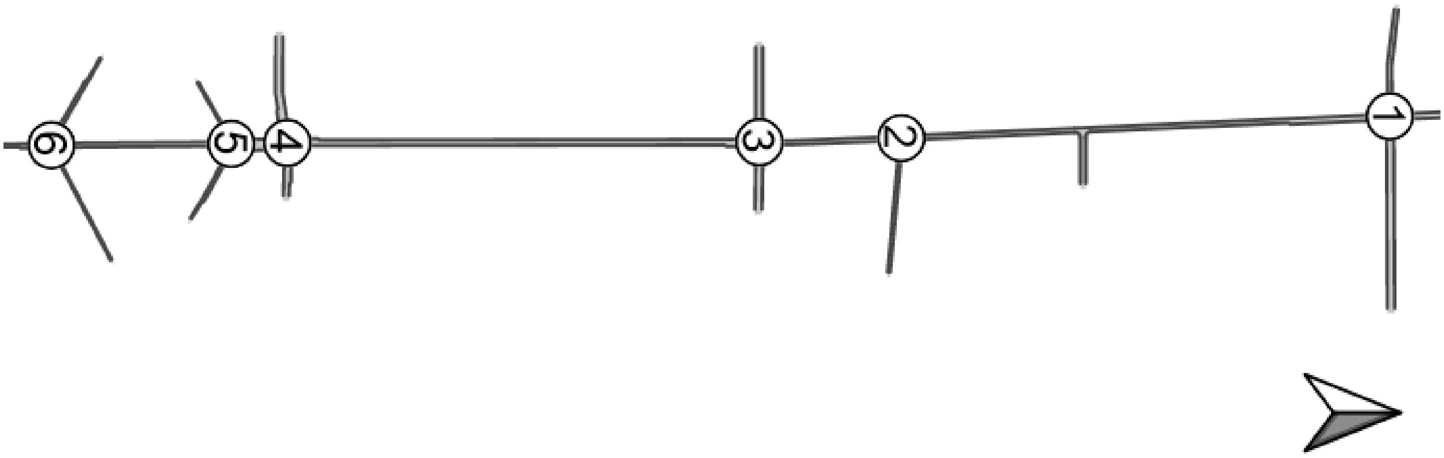
Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

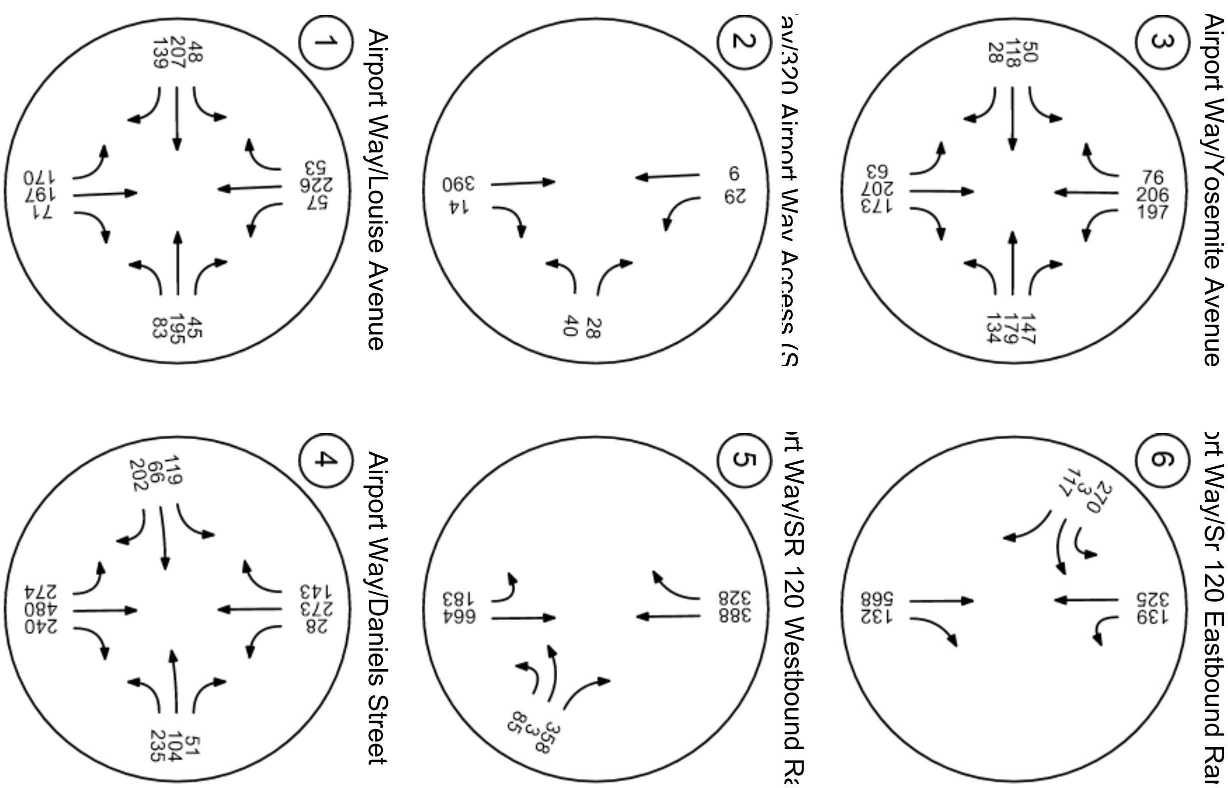
EXISTING PLUS PROJECT

Report Figure 1: Lane Configuration and Traffic Control



Report Figure 2a: Traffic Volume - Base Volume





Intersection Level Of Service Report
Intersection 1: Airport Way/Louise Avenue

Control Type:	Signalized	Delay (sec / veh):	36.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.793

Intersection Setup

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	200.0	100.0	760.0	225.0	100.0	100.0	350.0	100.0	100.0	300.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Base Volume Input [veh/h]	170	197	71	57	226	53	48	207	139	83	195	45
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	6.00	14.00	3.00	2.00	9.00	30.00	42.00	4.00	10.00	4.00	4.00	11.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	170	197	71	57	226	53	48	207	139	83	195	45
Peak Hour Factor	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	48	55	20	16	63	15	13	58	39	23	55	13
Total Analysis Volume [veh/h]	191	221	80	64	254	60	54	233	156	93	219	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	137
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	7
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	10	0	6	10	0	6	10	0	6	10	6
Maximum Green [s]	20	40	0	20	40	0	25	30	0	25	30	20
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	3.5
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	25	46	0	25	46	0	30	36	0	30	36	25
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	7	7	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	25	0	22	22	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	2.5
Minimum Recall	Yes	Yes		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	L	C	R
C, Cycle Length [s]	82	82	82	82	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	4.50	5.70	5.70	4.50	5.70	4.50	5.70	4.50	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.70	3.70	2.50	3.70	2.50	3.70	2.50	3.70	3.70
g_i, Effective Green Time [s]	12	27	27	5	20	4	23	6	25	25
g / C, Green / Cycle	0.15	0.33	0.33	0.06	0.24	0.05	0.29	0.07	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.12	0.15	0.06	0.04	0.20	0.05	0.25	0.06	0.13	0.04
s, saturation flow rate [veh/h]	1551	1521	1419	1603	1537	1088	1547	1577	1656	1327
c, Capacity [veh/h]	227	508	474	90	375	58	442	118	508	407
d1, Uniform Delay [s]	33.99	21.23	19.23	37.94	29.39	38.57	27.89	37.22	22.65	20.44
k, delay calibration	0.11	0.23	0.23	0.11	0.23	0.11	0.29	0.11	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.11	1.26	0.36	9.70	10.08	39.33	13.89	11.10	1.23	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.44	0.17	0.71	0.84	0.93	0.88	0.79	0.43	0.13
d, Delay for Lane Group [s/veh]	42.10	22.49	19.59	47.64	39.47	77.90	41.78	48.32	23.88	20.73
Lane Group LOS	D	C	B	D	D	E	D	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.10	3.34	1.08	1.48	6.68	1.69	8.63	2.15	3.41	0.71
50th-Percentile Queue Length [ft/ln]	102.5	83.47	27.09	36.94	166.97	42.27	215.64	53.80	85.34	17.85
95th-Percentile Queue Length [veh/ln]	7.38	6.01	1.95	2.66	10.92	3.04	13.44	3.87	6.14	1.28
95th-Percentile Queue Length [ft/ln]	184.5	150.2	48.76	66.50	272.93	76.09	336.06	96.84	153.6	32.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.10	22.49	19.59	47.64	39.47	39.47	77.90	41.78	41.78	48.32	23.88	20.73
Movement LOS	D	C	B	D	D	D	E	D	D	D	C	C
d_A, Approach Delay [s/veh]	29.63			40.86			46.18			29.70		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	36.55											
Intersection LOS	D											
Intersection V/C	0.793											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	30.56	30.56	30.56	30.56
I_p,int, Pedestrian LOS Score for Intersection	2.368	2.297	2.231	2.439
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	987	987	742	742
d_b, Bicycle Delay [s]	10.46	10.46	16.14	16.14
I_b,int, Bicycle LOS Score for Intersection	2.371	2.183	2.291	2.159
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Airport Way/320 Airport Way Access (Street "B")

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.073

Intersection Setup

Name	Airport Way		Airport Way		Street "B"	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Airport Way		Airport Way		Street "B"	
Base Volume Input [veh/h]	390	14	29	9	40	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	390	14	29	9	40	28
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	98	4	7	2	10	7
Total Analysis Volume [veh/h]	390	14	29	9	40	28
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.07	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	8.17	0.00	12.39	11.28
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.08	0.00	0.39	0.39
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.91	0.00	9.77	9.77
d_A, Approach Delay [s/veh]	0.00		6.23		11.94	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.06					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Airport Way/Yosemite Avenue

Control Type:	Signalized	Delay (sec / veh):	24.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

Intersection Setup

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	225.0	100.0	225.0	300.0	100.0	100.0	170.0	100.0	100.0	175.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Base Volume Input [veh/h]	63	207	173	197	206	76	50	118	28	134	179	147
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	17.00	7.00	2.00	3.00	10.00	20.00	28.00	8.00	39.00	5.00	6.00	8.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	207	173	197	206	76	50	118	28	134	179	147
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	17	54	46	52	54	20	13	31	7	35	47	39
Total Analysis Volume [veh/h]	66	218	182	207	217	80	53	124	29	141	188	155
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			2			2		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	164
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	35	0	30	35	0	30	50	0	30	40	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	40	0	34	40	0	34	56	0	34	46	0
Vehicle Extension [s]	1.0	6.5	0.0	1.0	6.5	0.0	1.0	7.0	0.0	1.0	7.0	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	2.0	3.4	0.0	2.0	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	56	56	56	56	56	56	56	56	56	56	56	56
L, Total Lost Time per Cycle [s]	4.00	5.00	5.00	4.00	5.00	5.00	4.00	5.40	5.40	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.00	3.00	2.00	3.00	3.00	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	4	13	13	9	18	18	3	9	9	6	12	12
g / C, Green / Cycle	0.07	0.23	0.23	0.16	0.32	0.32	0.06	0.17	0.17	0.11	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.05	0.13	0.13	0.13	0.14	0.07	0.04	0.05	0.05	0.09	0.11	0.12
s, saturation flow rate [veh/h]	1410	1615	1412	1590	1575	1224	1268	1602	1485	1564	1629	1361
c, Capacity [veh/h]	98	377	330	251	507	394	77	271	251	175	358	300
d1, Uniform Delay [s]	25.49	19.05	18.88	22.88	14.95	13.80	25.83	20.35	20.41	24.33	19.21	19.36
k, delay calibration	0.04	0.52	0.52	0.04	0.52	0.52	0.04	0.69	0.69	0.04	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.01	6.59	6.79	2.63	2.75	1.21	4.02	3.65	4.23	3.31	6.94	9.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.58	0.55	0.83	0.43	0.20	0.69	0.29	0.30	0.81	0.51	0.54
d, Delay for Lane Group [s/veh]	28.50	25.64	25.67	25.51	17.70	15.01	29.85	24.01	24.64	27.64	26.15	28.66
Lane Group LOS	C	C	C	C	B	B	C	C	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.88	2.97	2.51	2.61	2.31	0.79	0.73	1.09	1.09	1.85	2.58	2.46
50th-Percentile Queue Length [ft/ln]	22.09	74.16	62.64	65.35	57.87	19.71	18.35	27.28	27.32	46.36	64.53	61.62
95th-Percentile Queue Length [veh/ln]	1.59	5.34	4.51	4.71	4.17	1.42	1.32	1.96	1.97	3.34	4.65	4.44
95th-Percentile Queue Length [ft/ln]	39.76	133.4	112.7	117.6	104.1	35.48	33.03	49.10	49.17	83.44	116.1	110.9

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.50	25.64	25.67	25.51	17.70	15.01	29.85	24.24	24.64	27.64	26.24	28.66
Movement LOS	C	C	C	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	26.06			20.48			25.74			27.42		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	24.72											
Intersection LOS	C											
Intersection V/C	0.596											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	17.26	17.26	17.26	17.26
I_p,int, Pedestrian LOS Score for Intersection	2.311	2.329	2.377	2.466
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1251	1251	1809	1451
d_b, Bicycle Delay [s]	3.92	3.92	0.26	2.11
I_b,int, Bicycle LOS Score for Intersection	2.329	2.391	1.730	1.959
Bicycle LOS	B	B	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Airport Way/Daniels Street

Control Type:	Signalized	Delay (sec / veh):	26.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.618

Intersection Setup

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	2	0	1
Entry Pocket Length [ft]	280.0	100.0	300.0	150.0	100.0	200.0	215.0	100.0	215.0	155.0	100.0	250.0
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Base Volume Input [veh/h]	274	480	240	28	273	143	119	66	202	235	104	51
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	1.00	6.00	5.00	7.00	13.00	4.00	2.00	2.00	4.00	3.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	274	480	240	28	273	143	119	66	202	235	104	51
Peak Hour Factor	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	80	140	70	8	79	42	35	19	59	68	30	15
Total Analysis Volume [veh/h]	319	558	279	33	317	166	138	77	235	273	121	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			4			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	162
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	8	0
Maximum Green [s]	30	50	0	20	50	0	30	36	0	20	36	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	54	0	24	54	0	34	40	0	24	40	0
Vehicle Extension [s]	3.0	7.0	0.0	3.0	7.0	0.0	2.0	7.0	0.0	2.0	7.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	30	0	0	39	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	71	71	71	71	71	71	71	71	71	71	71	71
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	26	26	4	20	20	7	17	17	8	18	18
g / C, Green / Cycle	0.14	0.37	0.37	0.05	0.29	0.29	0.11	0.23	0.23	0.12	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.10	0.18	0.19	0.02	0.11	0.12	0.04	0.05	0.17	0.09	0.07	0.04
s, saturation flow rate [veh/h]	3138	3102	1452	1539	2921	1386	3113	1683	1385	3088	1710	1454
c, Capacity [veh/h]	434	1146	537	83	834	396	327	394	324	365	423	359
d1, Uniform Delay [s]	29.50	17.30	17.57	32.63	20.45	20.67	29.92	21.95	25.14	30.45	21.77	21.09
k, delay calibration	0.11	0.69	0.69	0.11	0.69	0.69	0.04	0.69	0.69	0.04	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.43	2.05	4.93	3.02	1.82	4.48	0.32	1.53	17.74	1.17	2.35	1.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.49	0.52	0.40	0.38	0.42	0.42	0.20	0.72	0.75	0.29	0.16
d, Delay for Lane Group [s/veh]	31.93	19.35	22.49	35.65	22.27	25.15	30.24	23.48	42.89	31.62	24.13	22.45
Lane Group LOS	C	B	C	D	C	C	C	C	D	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.66	3.59	4.05	0.60	2.21	2.61	1.09	1.16	5.06	2.24	1.84	0.88
50th-Percentile Queue Length [ft/ln]	66.58	89.75	101.1	15.10	55.32	65.28	27.13	28.97	126.5	56.03	46.05	21.88
95th-Percentile Queue Length [veh/ln]	4.79	6.46	7.29	1.09	3.98	4.70	1.95	2.09	8.75	4.03	3.32	1.58
95th-Percentile Queue Length [ft/ln]	119.8	161.5	182.1	27.18	99.57	117.5	48.83	52.14	218.8	100.8	82.89	39.39

Movement, Approach, & Intersection Results

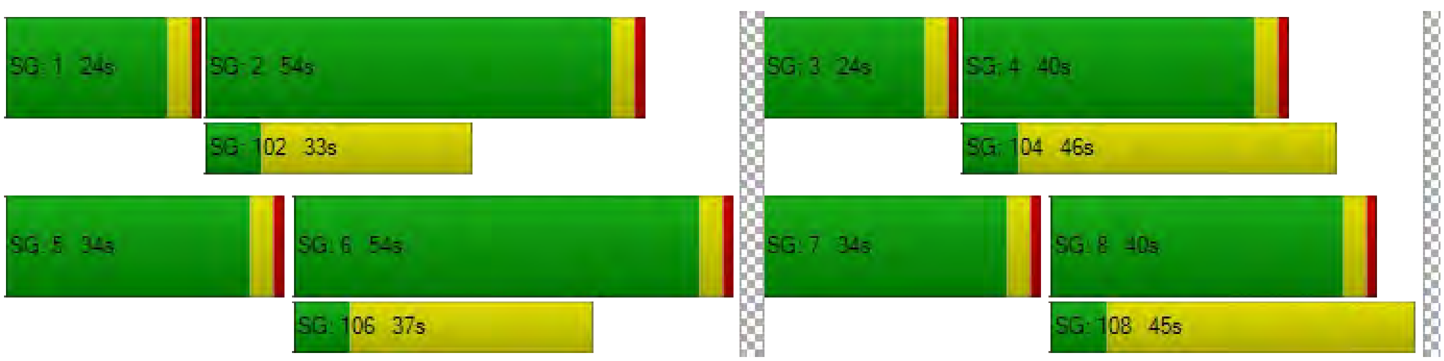
d_M, Delay for Movement [s/veh]	31.93	19.35	22.49	35.65	22.27	25.15	30.24	23.48	42.89	31.62	24.13	22.45
Movement LOS	C	B	C	D	C	C	C	C	D	C	C	C
d_A, Approach Delay [s/veh]	23.58			24.06			35.69			28.42		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	26.64											
Intersection LOS	C											
Intersection V/C	0.618											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.47	25.47	25.47	25.47
I_p,int, Pedestrian LOS Score for Intersection	2.857	2.647	2.612	2.451
Crosswalk LOS	C	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1403	1403	1011	1011
d_b, Bicycle Delay [s]	3.17	3.18	8.74	8.72
I_b,int, Bicycle LOS Score for Intersection	2.513	1.985	2.302	2.307
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Airport Way/SR 120 Westbound Ramps

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.930

Intersection Setup

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	280.0	100.0	100.0	100.0	100.0	400.0	100.0	100.0	100.0	100.0	100.0	500.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Base Volume Input [veh/h]	183	664	0	0	388	328	0	0	0	85	3	358
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	14.00	3.00	2.00	2.00	8.00	6.00	2.00	2.00	2.00	8.00	0.00	7.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	664	0	0	388	328	0	0	0	85	3	358
Peak Hour Factor	0.910	0.910	1.000	1.000	0.910	0.910	1.000	1.000	1.000	0.910	0.910	0.910
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	50	182	0	0	107	90	0	0	0	23	1	98
Total Analysis Volume [veh/h]	201	730	0	0	426	360	0	0	0	93	3	393
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	5	2	0	0	6	0	0	0	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	Lead	-
Minimum Green [s]	5	8	0	0	8	0	0	0	0	0	5	0
Maximum Green [s]	15	30	0	0	30	0	0	0	0	0	15	0
Amber [s]	3.0	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	3.6	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	19	36	0	0	36	0	0	0	0	0	20	0
Vehicle Extension [s]	3.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Walk [s]	0	10	0	0	10	0	0	0	0	0	10	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	Yes			Yes						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	R
C, Cycle Length [s]	54	54	54	54		54	54
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	5.30		4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	3.30		2.60	2.60
g_i, Effective Green Time [s]	9	29	16	16		15	15
g / C, Green / Cycle	0.17	0.54	0.30	0.30		0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.14	0.44	0.27	0.27		0.06	0.29
s, saturation flow rate [veh/h]	1448	1669	1602	1348		1529	1373
c, Capacity [veh/h]	244	901	476	401		424	381
d1, Uniform Delay [s]	21.72	10.18	18.19	18.04		15.07	19.55
k, delay calibration	0.11	0.23	0.04	0.04		0.04	0.39
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	6.90	3.81	2.43	2.96		0.10	49.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.81	0.89	0.90		0.23	1.03
d, Delay for Lane Group [s/veh]	28.62	14.00	20.61	21.00		15.17	68.73
Lane Group LOS	C	B	C	C		B	F
Critical Lane Group	No	Yes	No	No		No	Yes
50th-Percentile Queue Length [veh/ln]	2.71	6.19	4.77	4.06		0.83	9.39
50th-Percentile Queue Length [ft/ln]	67.66	154.63	119.15	101.39		20.63	234.70
95th-Percentile Queue Length [veh/ln]	4.87	10.26	8.35	7.30		1.49	14.67
95th-Percentile Queue Length [ft/ln]	121.79	256.60	208.65	182.50		37.14	366.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.62	14.00	0.00	0.00	20.61	21.00	0.00	0.00	0.00	15.17	15.17	68.73
Movement LOS	C	B			C	C				B	B	F
d_A, Approach Delay [s/veh]	17.16			20.79			0.00			58.22		
Approach LOS	B			C			A			E		
d_I, Intersection Delay [s/veh]	27.55											
Intersection LOS	C											
Intersection V/C	0.930											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1137	1137	0	571
d_b, Bicycle Delay [s]	5.02	5.03	26.99	13.79
I_b,int, Bicycle LOS Score for Intersection	3.096	2.857	4.132	1.560
Bicycle LOS	C	C	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Aiport Way/Sr 120 Eastbound Ramps

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name				Airport Way								
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left2	Left	Right	Left	Right	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	225.0	300.0	100.0	100.0	100.0	100.0	575.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name				Airport Way								
Base Volume Input [veh/h]	0	568	132	139	325	0	270	3	117	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	6.00	5.00	16.00	4.00	2.00	5.00	33.00	14.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	568	132	139	325	0	270	3	117	0	0	0
Peak Hour Factor	1.000	0.930	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	153	35	37	87	0	73	1	31	0	0	0
Total Analysis Volume [veh/h]	0	611	142	149	349	0	290	3	126	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			6			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	2	0	1	6	0	0	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	Lead	-	-	-	-
Minimum Green [s]	0	8	0	5	8	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	20	0	0	0	0
Amber [s]	0.0	4.3	0.0	3.0	4.3	0.0	0.0	3.6	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	36	0	34	36	0	0	25	0	0	0	0
Vehicle Extension [s]	0.0	0.2	0.0	2.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	0	0	10	0	0	10	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.3	0.0	2.0	3.3	0.0	0.0	2.6	0.0	0.0	0.0	0.0
Minimum Recall		Yes		No	Yes			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R	
C, Cycle Length [s]	55	55	55	55	55	55	
L, Total Lost Time per Cycle [s]	5.30	5.30	4.00	5.30	4.60	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.30	3.30	2.00	3.30	2.60	2.60	
g_i, Effective Green Time [s]	22	22	7	33	12	12	
g / C, Green / Cycle	0.40	0.40	0.13	0.60	0.22	0.22	
(v / s)_i Volume / Saturation Flow Rate	0.38	0.10	0.10	0.21	0.19	0.10	
s, saturation flow rate [veh/h]	1629	1396	1423	1656	1561	1293	
c, Capacity [veh/h]	650	557	181	993	342	284	
d1, Uniform Delay [s]	15.80	10.99	23.27	5.56	20.52	18.47	
k, delay calibration	0.15	0.04	0.04	0.04	0.04	0.04	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	9.39	0.09	3.54	0.08	2.41	0.41	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.94	0.25	0.82	0.35	0.86	0.44	
d, Delay for Lane Group [s/veh]	25.19	11.08	26.81	5.63	22.93	18.87	
Lane Group LOS	C	B	C	A	C	B	
Critical Lane Group	Yes	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	7.79	1.00	1.90	1.43	3.46	1.28	
50th-Percentile Queue Length [ft/ln]	194.72	24.96	47.53	35.82	86.49	32.06	
95th-Percentile Queue Length [veh/ln]	12.37	1.80	3.42	2.58	6.23	2.31	
95th-Percentile Queue Length [ft/ln]	309.14	44.93	85.56	64.47	155.69	57.70	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	25.19	11.08	26.81	5.63	0.00	22.93	22.93	18.87	0.00	0.00	0.00
Movement LOS		C	B	C	A		C	C	B			
d_A, Approach Delay [s/veh]	22.53			11.97			21.71			0.00		
Approach LOS	C			B			C			A		
d_I, Intersection Delay [s/veh]	19.18											
Intersection LOS	B											
Intersection V/C	0.668											

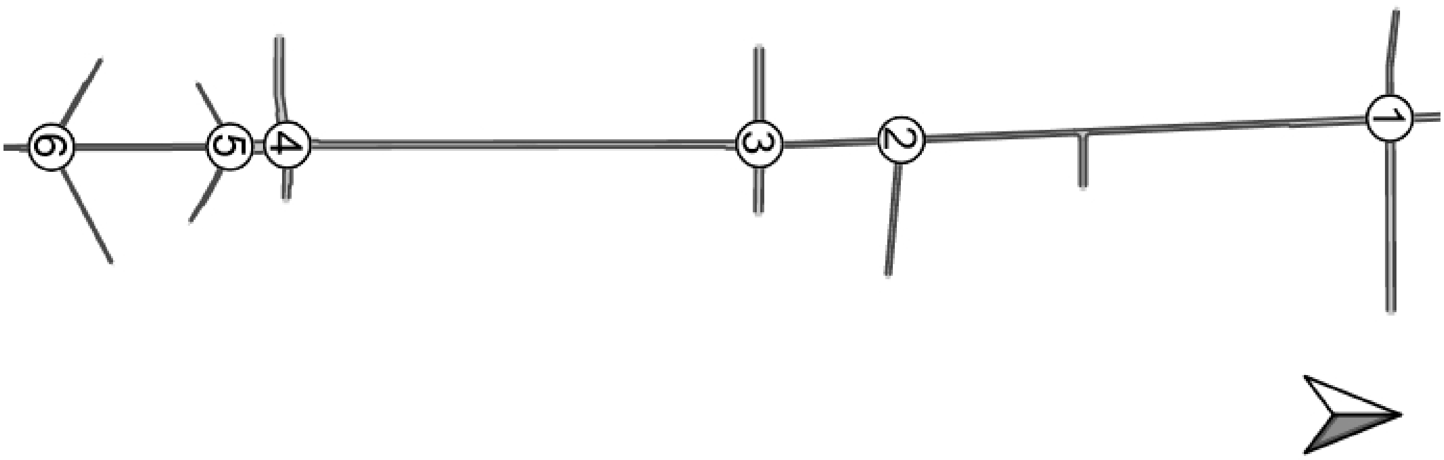
Other Modes

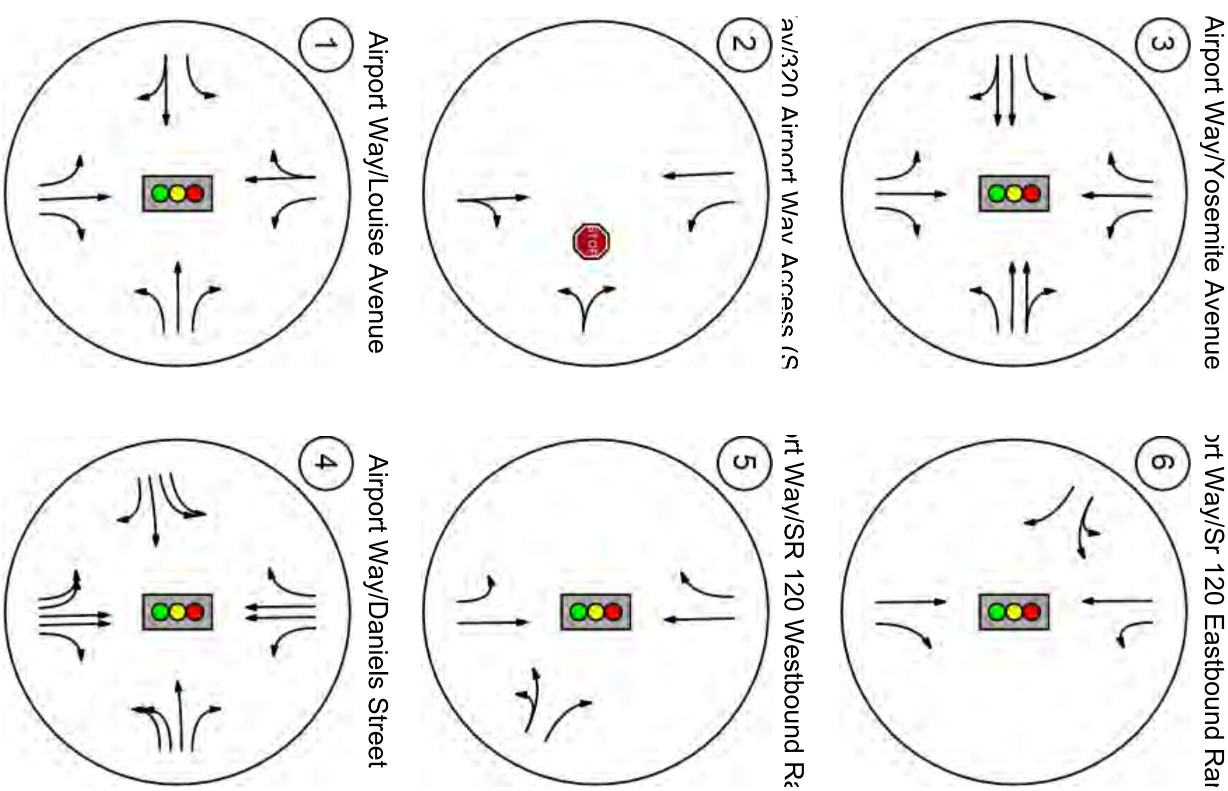
g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1125	1125	747	0
d_b, Bicycle Delay [s]	5.23	5.25	10.71	27.30
I_b,int, Bicycle LOS Score for Intersection	2.802	2.381	1.560	4.132
Bicycle LOS	C	B	A	D

Sequence

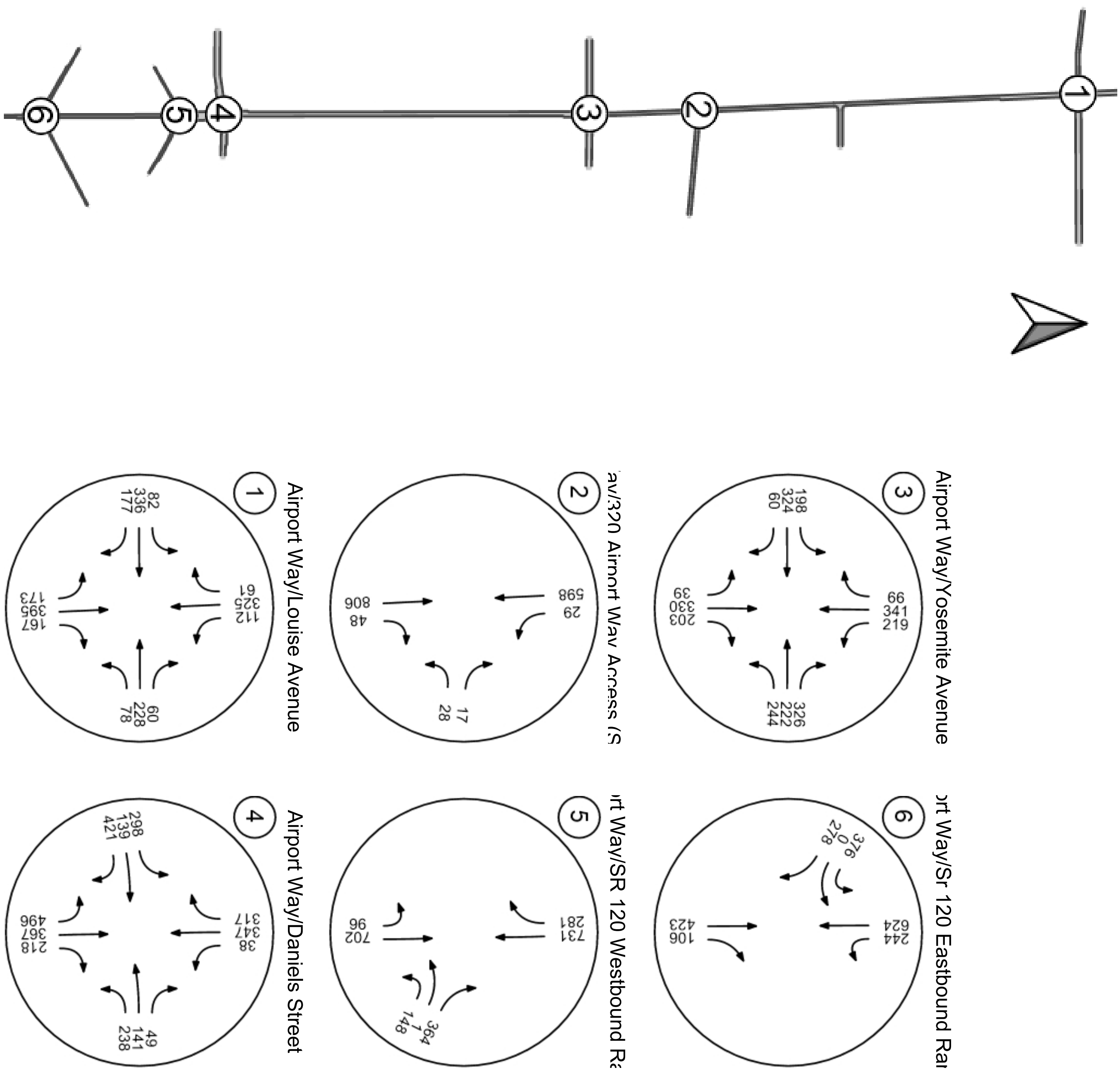
Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Report Figure 1: Lane Configuration and Traffic Control





Report Figure 2a: Traffic Volume - Base Volume



Intersection Level Of Service Report
Intersection 1: Airport Way/Louise Avenue

Control Type:	Signalized	Delay (sec / veh):	52.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

Intersection Setup

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	200.0	100.0	760.0	225.0	100.0	100.0	350.0	100.0	100.0	300.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Base Volume Input [veh/h]	173	395	167	112	325	61	82	336	177	78	228	60
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	7.00	5.00	2.00	1.00	6.00	16.00	11.00	1.00	4.00	0.00	1.00	8.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	173	395	167	112	325	61	82	336	177	78	228	60
Peak Hour Factor	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	45	102	43	29	84	16	21	87	46	20	59	15
Total Analysis Volume [veh/h]	178	407	172	115	335	63	85	346	182	80	235	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	137
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	7
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	10	0	6	10	0	6	10	0	6	10	6
Maximum Green [s]	20	40	0	20	40	0	25	30	0	25	30	20
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	3.5
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	25	46	0	25	46	0	30	36	0	30	36	25
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	7	7	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	25	0	22	22	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	2.5
Minimum Recall	Yes	Yes		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	L	C	R
C, Cycle Length [s]	97	97	97	97	97	97	97	97	97	97
L, Total Lost Time per Cycle [s]	4.50	5.70	5.70	4.50	5.70	4.50	5.70	4.50	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.70	3.70	2.50	3.70	2.50	3.70	2.50	3.70	3.70
g_i, Effective Green Time [s]	13	32	32	9	28	7	30	6	29	29
g / C, Green / Cycle	0.14	0.33	0.33	0.09	0.28	0.07	0.31	0.06	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.12	0.25	0.12	0.07	0.25	0.06	0.33	0.05	0.14	0.05
s, saturation flow rate [veh/h]	1539	1642	1431	1616	1585	1487	1599	1629	1696	1362
c, Capacity [veh/h]	208	545	474	143	451	106	492	102	508	408
d1, Uniform Delay [s]	41.18	28.93	24.74	43.58	33.30	44.60	33.72	45.02	27.74	25.04
k, delay calibration	0.11	0.26	0.23	0.11	0.26	0.11	0.48	0.11	0.23	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.58	4.86	0.99	10.05	12.73	13.27	60.38	12.27	1.40	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.75	0.36	0.80	0.88	0.81	1.07	0.78	0.46	0.15
d, Delay for Lane Group [s/veh]	50.76	33.80	25.73	53.64	46.03	57.87	94.10	57.29	29.15	25.41
Lane Group LOS	D	C	C	D	D	E	F	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.68	8.96	3.10	3.09	10.34	2.39	19.51	2.24	4.57	1.08
50th-Percentile Queue Length [ft/ln]	116.9	223.8	77.53	77.33	258.60	59.83	487.65	55.93	114.3	27.08
95th-Percentile Queue Length [veh/ln]	8.23	13.86	5.58	5.57	15.62	4.31	27.95	4.03	8.08	1.95
95th-Percentile Queue Length [ft/ln]	205.6	346.5	139.5	139.20	390.47	107.70	698.86	100.6	201.9	48.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.76	33.80	25.73	53.64	46.03	46.03	57.87	94.10	94.10	57.29	29.15	25.41
Movement LOS	D	C	C	D	D	D	E	F	F	E	C	C
d_A, Approach Delay [s/veh]	35.95			47.74			89.07			34.50		
Approach LOS	D			D			F			C		
d_I, Intersection Delay [s/veh]	52.79											
Intersection LOS	D											
Intersection V/C	0.893											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	38.28	38.28	38.28	38.28
I_p,int, Pedestrian LOS Score for Intersection	2.465	2.395	2.298	2.500
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	828	828	623	623
d_b, Bicycle Delay [s]	16.70	16.70	23.07	23.07
I_b,int, Bicycle LOS Score for Intersection	2.809	2.406	2.571	2.182
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Airport Way/320 Airport Way Access (Street "B")

Control Type:	Two-way stop	Delay (sec / veh):	38.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.210

Intersection Setup

Name	Airport Way		Airport Way		Street "B"	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Airport Way		Airport Way		Street "B"	
Base Volume Input [veh/h]	806	48	29	598	28	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	806	48	29	598	28	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	202	12	7	150	7	4
Total Analysis Volume [veh/h]	806	48	29	598	28	17
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.04	0.01	0.21	0.05
d_M, Delay for Movement [s/veh]	0.00	0.00	9.71	0.00	38.84	21.52
Movement LOS	A	A	A	A	E	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.11	0.00	0.97	0.97
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2.84	0.00	24.28	24.28
d_A, Approach Delay [s/veh]	0.00		0.45		32.30	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	1.14					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 3: Airport Way/Yosemite Avenue

Control Type:	Signalized	Delay (sec / veh):	51.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.855

Intersection Setup

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	225.0	100.0	225.0	300.0	100.0	100.0	170.0	100.0	100.0	175.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Base Volume Input [veh/h]	39	330	203	219	341	66	198	324	60	244	222	326
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	10.00	5.00	2.00	4.00	2.00	19.00	6.00	3.00	7.00	2.00	4.00	3.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	330	203	219	341	66	198	324	60	244	222	326
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	10	87	53	58	90	17	52	85	16	64	58	86
Total Analysis Volume [veh/h]	41	347	214	231	359	69	208	341	63	257	234	343
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			2			2		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	164
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	35	0	30	35	0	30	50	0	30	40	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	40	0	34	40	0	34	56	0	34	46	0
Vehicle Extension [s]	1.0	6.5	0.0	1.0	6.5	0.0	1.0	7.0	0.0	1.0	7.0	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	0.0	2.0	3.0	0.0	2.0	3.4	0.0	2.0	3.4	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	5.00	5.00	4.00	5.00	5.00	4.00	5.40	5.40	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.00	3.00	2.00	3.00	3.00	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	4	30	30	19	45	45	18	32	32	21	35	35
g / C, Green / Cycle	0.04	0.25	0.25	0.16	0.37	0.37	0.15	0.26	0.26	0.18	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.03	0.21	0.15	0.15	0.21	0.06	0.13	0.12	0.13	0.16	0.14	0.25
s, saturation flow rate [veh/h]	1500	1642	1412	1577	1683	1235	1551	1669	1567	1603	1656	1376
c, Capacity [veh/h]	56	407	350	255	626	459	232	438	412	281	478	397
d1, Uniform Delay [s]	57.29	43.16	40.03	49.52	30.16	25.13	50.26	37.31	37.40	48.70	35.43	40.53
k, delay calibration	0.04	0.52	0.52	0.09	0.52	0.52	0.04	0.69	0.69	0.13	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.67	20.56	8.12	9.64	3.97	0.72	5.35	4.98	5.45	13.63	4.90	27.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.85	0.61	0.91	0.57	0.15	0.90	0.47	0.48	0.91	0.49	0.86
d, Delay for Lane Group [s/veh]	63.96	63.72	48.15	59.16	34.13	25.86	55.61	42.29	42.85	62.33	40.33	68.02
Lane Group LOS	E	E	D	E	C	C	E	D	D	E	D	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.34	12.09	6.38	7.47	8.94	1.41	6.47	5.73	5.52	8.60	6.33	12.55
50th-Percentile Queue Length [ft/ln]	33.38	302.3	159.4	186.7	223.4	35.32	161.6	143.2	137.9	215.0	158.2	313.8
95th-Percentile Queue Length [veh/ln]	2.40	17.80	10.52	11.95	13.84	2.54	10.64	9.65	9.37	13.41	10.45	18.36
95th-Percentile Queue Length [ft/ln]	60.09	444.8	262.9	298.8	345.9	63.58	265.9	241.3	234.3	335.2	261.3	459.1

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.96	63.72	48.15	59.16	34.13	25.86	55.61	42.51	42.85	62.33	40.33	68.02
Movement LOS	E	E	D	E	C	C	E	D	D	E	D	E
d_A, Approach Delay [s/veh]	58.20			42.04			47.00			58.50		
Approach LOS	E			D			D			E		
d_I, Intersection Delay [s/veh]	51.83											
Intersection LOS	D											
Intersection V/C	0.855											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	48.62	48.62	48.62	48.62
I_p,int, Pedestrian LOS Score for Intersection	2.456	2.524	2.499	2.629
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	583	843	676
d_b, Bicycle Delay [s]	30.14	30.13	20.11	26.32
I_b,int, Bicycle LOS Score for Intersection	2.553	2.647	2.065	2.248
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Airport Way/Daniels Street

Control Type:	Signalized	Delay (sec / veh):	53.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.907

Intersection Setup

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	2	0	1
Entry Pocket Length [ft]	280.0	100.0	300.0	150.0	100.0	200.0	215.0	100.0	215.0	155.0	100.0	250.0
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Base Volume Input [veh/h]	496	367	218	38	347	317	298	139	421	238	141	49
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	6.00	0.00	0.00	5.00	0.00	0.00	1.00	1.00	0.00	1.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	496	367	218	38	347	317	298	139	421	238	141	49
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	131	97	57	10	91	83	78	37	111	63	37	13
Total Analysis Volume [veh/h]	522	386	229	40	365	334	314	146	443	251	148	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			4			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	162
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	8	0
Maximum Green [s]	30	50	0	20	50	0	30	36	0	20	36	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	54	0	24	54	0	34	40	0	24	40	0
Vehicle Extension [s]	3.0	7.0	0.0	3.0	7.0	0.0	2.0	7.0	0.0	2.0	7.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	30	0	0	39	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	123	123	123	123	123	123	123	123	123	123	123	123
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	53	53	6	36	36	14	36	36	12	33	33
g / C, Green / Cycle	0.19	0.43	0.43	0.05	0.30	0.30	0.12	0.29	0.29	0.10	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.17	0.12	0.15	0.02	0.12	0.23	0.10	0.09	0.31	0.08	0.09	0.04
s, saturation flow rate [veh/h]	3163	3102	1512	1629	3127	1432	3163	1696	1420	3163	1696	1431
c, Capacity [veh/h]	590	1346	656	79	926	424	370	495	414	305	459	387
d1, Uniform Delay [s]	48.93	22.59	23.31	57.29	34.63	39.72	53.42	33.89	43.45	54.75	35.95	34.05
k, delay calibration	0.11	0.69	0.69	0.11	0.69	0.69	0.04	0.69	0.69	0.04	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.67	0.74	2.03	4.94	1.74	18.37	2.11	2.10	71.70	2.16	2.56	1.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.29	0.35	0.51	0.39	0.79	0.85	0.30	1.07	0.82	0.32	0.13
d, Delay for Lane Group [s/veh]	53.60	23.33	25.34	62.23	36.38	58.09	55.52	35.99	115.1	56.91	38.51	35.05
Lane Group LOS	D	C	C	E	D	E	E	D	F	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.20	3.78	4.83	1.33	4.61	11.37	4.88	3.70	20.67	3.92	3.91	1.30
50th-Percentile Queue Length [ft/ln]	204.8	94.50	120.6	33.18	115.3	284.3	121.9	92.58	516.8	97.99	97.71	32.48
95th-Percentile Queue Length [veh/ln]	12.89	6.80	8.43	2.39	8.13	16.90	8.50	6.67	29.34	7.05	7.03	2.34
95th-Percentile Queue Length [ft/ln]	322.2	170.1	210.7	59.72	203.3	422.6	212.5	166.6	733.4	176.3	175.8	58.46

Movement, Approach, & Intersection Results

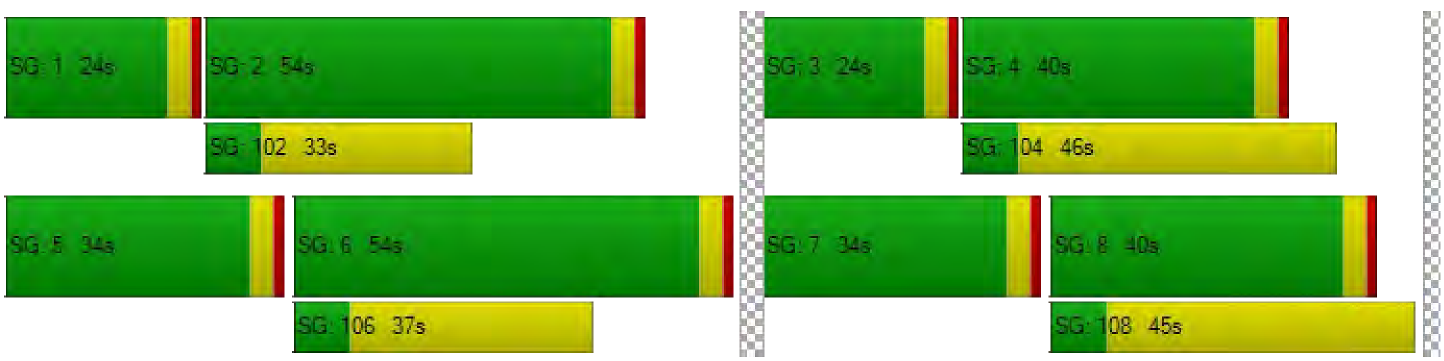
d_M, Delay for Movement [s/veh]	53.60	23.33	25.34	62.23	36.38	58.09	55.52	35.99	115.1	56.91	38.51	35.05
Movement LOS	D	C	C	E	D	E	E	D	F	E	D	D
d_A, Approach Delay [s/veh]	37.63			47.59			81.62			48.36		
Approach LOS	D			D			F			D		
d_I, Intersection Delay [s/veh]	53.70											
Intersection LOS	D											
Intersection V/C	0.907											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.16	51.16	51.16	51.16
I_p,int, Pedestrian LOS Score for Intersection	2.915	2.710	2.778	2.484
Crosswalk LOS	C	B	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	811	811	584	584
d_b, Bicycle Delay [s]	21.81	21.85	30.99	30.92
I_b,int, Bicycle LOS Score for Intersection	2.498	2.169	3.050	2.304
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Airport Way/SR 120 Westbound Ramps

Control Type:	Signalized	Delay (sec / veh):	40.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.975

Intersection Setup

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	280.0	100.0	100.0	100.0	100.0	400.0	100.0	100.0	100.0	100.0	100.0	500.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Base Volume Input [veh/h]	96	702	0	0	731	281	0	0	0	148	1	364
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	19.00	2.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00	4.00	0.00	4.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	702	0	0	731	281	0	0	0	148	1	364
Peak Hour Factor	0.960	0.960	1.000	1.000	0.960	0.960	1.000	1.000	1.000	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	25	183	0	0	190	73	0	0	0	39	0	95
Total Analysis Volume [veh/h]	100	731	0	0	761	293	0	0	0	154	1	379
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			5			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	5	2	0	0	6	0	0	0	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	Lead	-
Minimum Green [s]	5	8	0	0	8	0	0	0	0	0	5	0
Maximum Green [s]	15	30	0	0	30	0	0	0	0	0	15	0
Amber [s]	3.0	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	3.6	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	19	36	0	0	36	0	0	0	0	0	20	0
Vehicle Extension [s]	3.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Walk [s]	0	10	0	0	10	0	0	0	0	0	10	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	Yes			Yes						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	R
C, Cycle Length [s]	65	65	65	65		65	65
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	5.30		4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	3.30		2.60	2.60
g_i, Effective Green Time [s]	6	40	30	30		15	15
g / C, Green / Cycle	0.09	0.61	0.46	0.46		0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.07	0.43	0.45	0.21		0.10	0.27
s, saturation flow rate [veh/h]	1384	1683	1683	1407		1577	1408
c, Capacity [veh/h]	123	1035	781	653		366	327
d1, Uniform Delay [s]	28.92	8.48	16.95	11.66		21.15	24.83
k, delay calibration	0.11	0.36	0.39	0.04		0.04	0.49
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	11.93	2.91	22.84	0.18		0.29	100.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.71	0.97	0.45		0.42	1.16
d, Delay for Lane Group [s/veh]	40.85	11.39	39.79	11.83		21.43	125.20
Lane Group LOS	D	B	D	B		C	F
Critical Lane Group	Yes	No	Yes	No		No	Yes
50th-Percentile Queue Length [veh/ln]	1.86	6.05	14.29	2.50		1.90	13.73
50th-Percentile Queue Length [ft/ln]	46.52	151.22	357.18	62.57		47.51	343.33
95th-Percentile Queue Length [veh/ln]	3.35	10.08	20.49	4.51		3.42	21.39
95th-Percentile Queue Length [ft/ln]	83.74	252.06	512.15	112.63		85.52	534.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.85	11.39	0.00	0.00	39.79	11.83	0.00	0.00	0.00	21.43	21.43	125.2
Movement LOS	D	B			D	B				C	C	F
d_A, Approach Delay [s/veh]	14.94			32.02			0.00			95.08		
Approach LOS	B			C			A			F		
d_I, Intersection Delay [s/veh]	40.07											
Intersection LOS	D											
Intersection V/C	0.975											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	951	951	0	477
d_b, Bicycle Delay [s]	8.88	8.90	32.28	18.72
I_b,int, Bicycle LOS Score for Intersection	2.931	3.299	4.132	1.560
Bicycle LOS	C	C	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Aiport Way/Sr 120 Eastbound Ramps

Control Type:	Signalized	Delay (sec / veh):	21.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.689

Intersection Setup

Name					Airport Way							
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left2	Left	Right	Left	Right	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	225.0	300.0	100.0	100.0	100.0	100.0	575.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name				Airport Way								
Base Volume Input [veh/h]	0	423	106	244	624	0	376	0	278	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	6.00	7.00	4.00	2.00	2.00	1.00	0.00	7.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	423	106	244	624	0	376	0	278	0	0	0
Peak Hour Factor	1.000	0.940	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	113	28	65	166	0	100	0	74	0	0	0
Total Analysis Volume [veh/h]	0	450	113	260	664	0	400	0	296	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			6			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	2	0	1	6	0	0	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	Lead	-	-	-	-
Minimum Green [s]	0	8	0	5	8	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	20	0	0	0	0
Amber [s]	0.0	4.3	0.0	3.0	4.3	0.0	0.0	3.6	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	36	0	34	36	0	0	25	0	0	0	0
Vehicle Extension [s]	0.0	0.2	0.0	2.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	0	0	10	0	0	10	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.3	0.0	2.0	3.3	0.0	0.0	2.6	0.0	0.0	0.0	0.0
Minimum Recall		Yes		No	Yes			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R	
C, Cycle Length [s]	61	61	61	61	61	61	
L, Total Lost Time per Cycle [s]	5.30	5.30	4.00	5.30	4.60	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.30	3.30	2.00	3.30	2.60	2.60	
g_i, Effective Green Time [s]	18	18	12	34	17	17	
g / C, Green / Cycle	0.30	0.30	0.19	0.56	0.27	0.27	
(v / s)_i Volume / Saturation Flow Rate	0.28	0.08	0.16	0.39	0.25	0.22	
s, saturation flow rate [veh/h]	1629	1373	1577	1683	1616	1373	
c, Capacity [veh/h]	491	414	307	946	445	378	
d1, Uniform Delay [s]	20.49	16.16	23.60	9.63	21.22	20.35	
k, delay calibration	0.04	0.04	0.04	0.24	0.19	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.24	0.13	2.51	2.14	11.21	3.76	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.92	0.27	0.85	0.70	0.90	0.78	
d, Delay for Lane Group [s/veh]	23.73	16.29	26.11	11.77	32.43	24.12	
Lane Group LOS	C	B	C	B	C	C	
Critical Lane Group	Yes	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	5.97	1.11	3.54	5.49	6.34	3.91	
50th-Percentile Queue Length [ft/ln]	149.13	27.72	88.47	137.32	158.55	97.84	
95th-Percentile Queue Length [veh/ln]	9.97	2.00	6.37	9.34	10.47	7.04	
95th-Percentile Queue Length [ft/ln]	249.26	49.89	159.25	233.41	261.80	176.11	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	23.73	16.29	26.11	11.77	0.00	32.43	32.43	24.12	0.00	0.00	0.00
Movement LOS		C	B	C	B		C	C	C			
d_A, Approach Delay [s/veh]	22.24			15.80			28.89			0.00		
Approach LOS	C			B			C			A		
d_I, Intersection Delay [s/veh]	21.64											
Intersection LOS	C											
Intersection V/C	0.689											

Other Modes

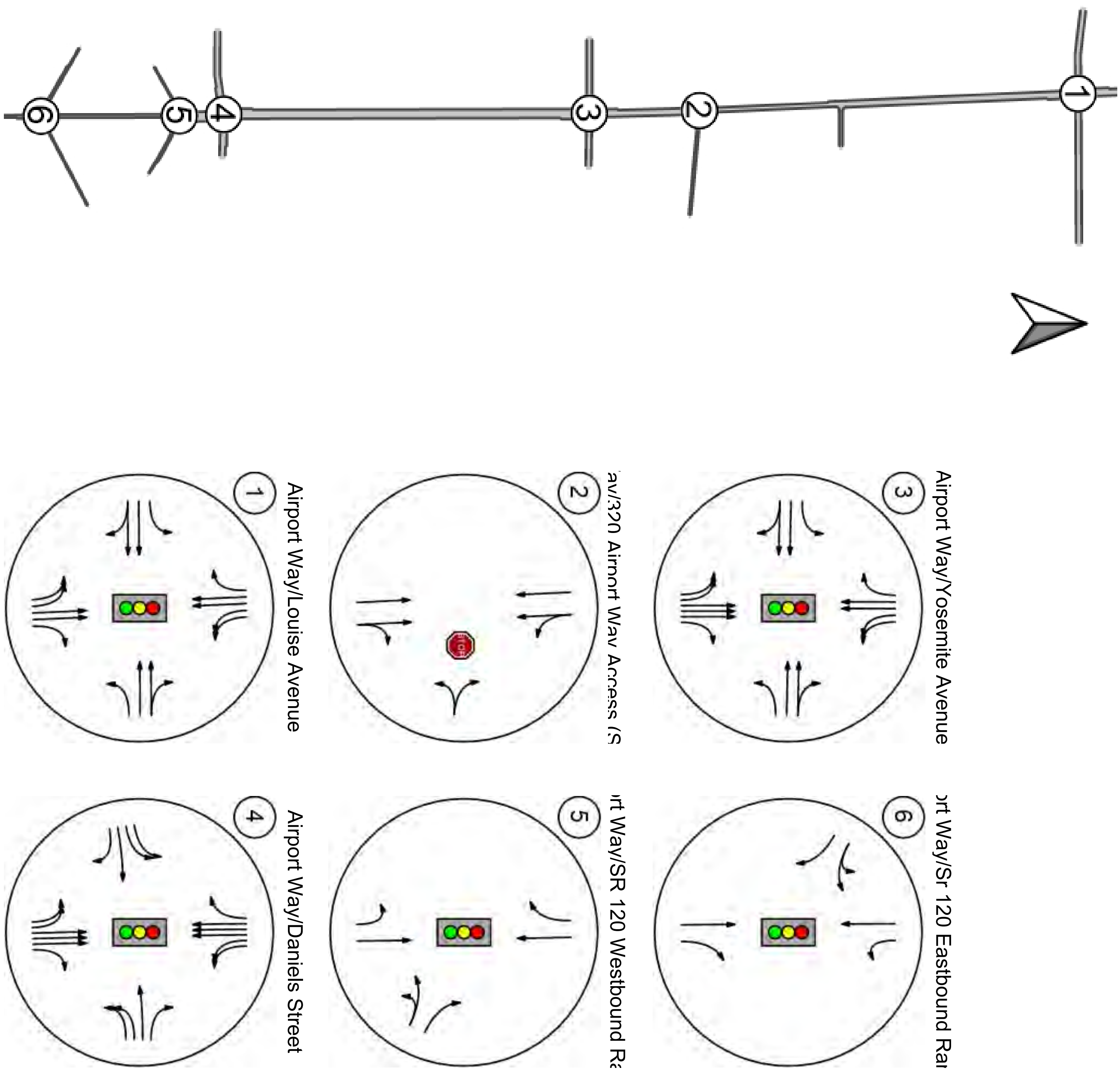
g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1013	1013	673	0
d_b, Bicycle Delay [s]	7.38	7.41	13.34	30.31
I_b,int, Bicycle LOS Score for Intersection	2.489	3.084	1.560	4.132
Bicycle LOS	B	C	A	D

Sequence

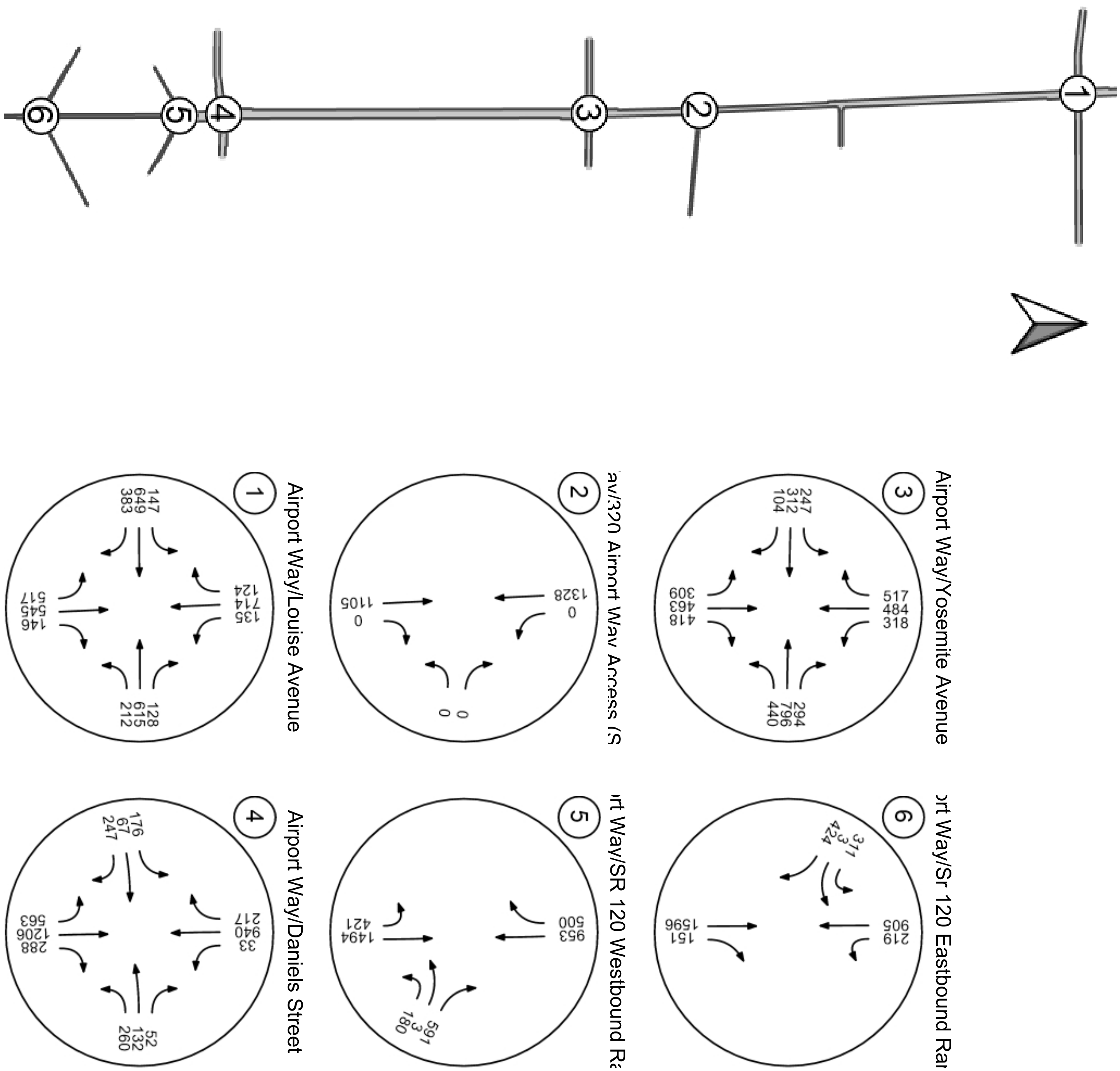
Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CUMULATIVE CONDITIONS

Report Figure 1: Lane Configuration and Traffic Control



Report Figure 2a: Traffic Volume - Base Volume



Intersection Level Of Service Report
Intersection 1: Airport Way/Louise Avenue

Control Type:	Signalized	Delay (sec / veh):	133.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.088

Intersection Setup

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	250.0	100.0	250.0	250.0	100.0	250.0	350.0	100.0	100.0	300.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Base Volume Input [veh/h]	517	545	146	135	714	124	147	649	383	212	615	128
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	6.00	14.00	3.00	2.00	9.00	30.00	42.00	4.00	10.00	4.00	4.00	11.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	517	545	146	135	714	124	147	649	383	212	615	128
Peak Hour Factor	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920	0.920
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	140	148	40	37	194	34	40	176	104	58	167	35
Total Analysis Volume [veh/h]	562	592	159	147	776	135	160	705	416	230	668	139
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			1		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	137
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	7
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	10	0	6	10	0	6	10	0	6	10	6
Maximum Green [s]	20	40	0	20	40	0	25	30	0	25	30	20
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	3.5
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	25	46	0	25	46	0	30	36	0	30	36	25
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	7	7	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	25	0	22	22	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	2.5
Minimum Recall	Yes	Yes		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	128	128	128	128	128	128	128	128	128	128	128	128
L, Total Lost Time per Cycle [s]	4.50	5.70	5.70	4.50	5.70	5.70	4.50	5.70	5.70	4.50	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.70	3.70	2.50	3.70	3.70	2.50	3.70	3.70	2.50	3.70	3.70
g_i, Effective Green Time [s]	20	49	49	8	37	37	21	30	30	21	30	30
g / C, Green / Cycle	0.16	0.38	0.38	0.06	0.29	0.29	0.16	0.23	0.23	0.16	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.19	0.20	0.11	0.05	0.26	0.12	0.15	0.36	0.36	0.15	0.25	0.25
s, saturation flow rate [veh/h]	3013	2896	1401	3113	3024	1109	1088	1656	1454	1577	1656	1550
c, Capacity [veh/h]	470	1100	532	203	874	320	176	388	341	255	388	363
d1, Uniform Delay [s]	54.07	30.98	27.76	58.77	43.58	36.89	52.78	49.06	49.06	52.73	49.07	49.07
k, delay calibration	0.13	0.23	0.23	0.11	0.23	0.23	0.25	0.50	0.50	0.25	0.48	0.48
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	93.65	0.88	0.67	4.86	6.69	1.88	29.90	251.0	260.9	21.79	65.21	68.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.20	0.54	0.30	0.72	0.89	0.42	0.91	1.53	1.55	0.90	1.07	1.08
d, Delay for Lane Group [s/veh]	147.7	31.86	28.42	63.63	50.27	38.77	82.68	300.1	310.0	74.52	114.2	117.7
Lane Group LOS	F	C	C	E	D	D	F	F	F	E	F	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.67	7.26	3.53	2.48	12.51	3.61	6.51	39.39	35.52	8.80	19.34	18.46
50th-Percentile Queue Length [ft/ln]	341.7	181.4	88.17	62.01	312.6	90.29	162.8	984.7	887.9	219.9	483.5	461.4
95th-Percentile Queue Length [veh/ln]	21.35	11.68	6.35	4.46	18.31	6.50	10.70	60.46	55.20	13.66	27.64	26.62
95th-Percentile Queue Length [ft/ln]	533.7	291.9	158.7	111.6	457.6	162.5	267.4	1511.	1379.	341.5	691.1	665.4

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	147.7	31.86	28.42	63.63	50.27	38.77	82.68	301.6	310.0	74.52	115.5	117.7
Movement LOS	F	C	C	E	D	D	F	F	F	E	F	F
d_A, Approach Delay [s/veh]		81.03			50.66			277.03			106.76	
Approach LOS		F			D			F			F	
d_I, Intersection Delay [s/veh]						133.42						
Intersection LOS						F						
Intersection V/C						1.088						

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.47	53.47	53.47	53.47
I_p,int, Pedestrian LOS Score for Intersection	2.992	2.882	2.833	2.716
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	630	630	473	473
d_b, Bicycle Delay [s]	30.06	30.04	37.29	37.30
I_b,int, Bicycle LOS Score for Intersection	2.643	2.432	2.616	2.415
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Airport Way/Yosemite Avenue

Control Type:	Signalized	Delay (sec / veh):	103.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.069

Intersection Setup

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	250.0	100.0	250.0	250.0	100.0	250.0	170.0	100.0	100.0	175.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Base Volume Input [veh/h]	309	463	418	318	484	517	247	312	104	440	796	294
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	17.00	7.00	2.00	3.00	10.00	20.00	28.00	8.00	39.00	5.00	6.00	8.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	309	463	418	318	484	517	247	312	104	440	796	294
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	81	122	110	84	127	136	65	82	27	116	209	77
Total Analysis Volume [veh/h]	325	487	440	335	509	544	260	328	109	463	838	309
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			1		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	164
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	5	7	4	1	1	6	0	5	2	0
Auxiliary Signal Groups			5,8			1,4						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	35	30	30	35	30	30	50	0	30	50	0
Amber [s]	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	40	34	34	40	34	34	56	0	34	56	0
Vehicle Extension [s]	1.0	6.5	1.0	1.0	6.5	1.0	1.0	7.0	0.0	1.0	7.0	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	2.0	2.0	3.0	2.0	2.0	3.4	0.0	2.0	3.4	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	152	152	152	152	152	152	152	152	152	152	152	152
L, Total Lost Time per Cycle [s]	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.40	5.40	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.00	0.00	2.00	3.00	0.00	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	20	35	70	18	34	69	30	50	50	30	50	50
g / C, Green / Cycle	0.13	0.23	0.46	0.12	0.22	0.45	0.20	0.33	0.33	0.20	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.12	0.11	0.31	0.11	0.17	0.44	0.20	0.14	0.14	0.30	0.36	0.38
s, saturation flow rate [veh/h]	2738	4400	1431	3088	2999	1224	1268	1602	1457	1564	1629	1473
c, Capacity [veh/h]	361	1017	660	376	663	552	250	527	479	309	536	484
d1, Uniform Delay [s]	65.03	50.53	31.85	65.78	55.55	41.20	61.01	39.89	39.98	61.01	51.01	51.01
k, delay calibration	0.04	0.52	0.50	0.04	0.52	0.50	0.48	0.69	0.69	0.50	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.40	1.69	5.27	2.99	8.68	34.79	65.94	3.55	3.99	241.2	75.34	96.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.48	0.67	0.89	0.77	0.99	1.04	0.43	0.44	1.50	1.10	1.15
d, Delay for Lane Group [s/veh]	68.42	52.22	37.13	68.76	64.23	75.99	126.9	43.44	43.97	302.2	126.3	147.1
Lane Group LOS	E	D	D	E	E	E	F	D	D	F	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.40	5.56	13.58	6.58	9.99	25.19	14.25	7.26	6.76	32.60	31.51	31.28
50th-Percentile Queue Length [ft/ln]	159.9	138.9	339.4	164.5	249.8	629.7	356.1	181.3	168.9	815.0	787.8	782.0
95th-Percentile Queue Length [veh/ln]	10.54	9.42	19.62	10.79	15.18	33.42	20.86	11.67	11.02	50.12	43.38	44.29
95th-Percentile Queue Length [ft/ln]	263.6	235.5	490.5	269.6	379.4	835.4	521.4	291.8	275.5	1252.	1084.	1107.

Movement, Approach, & Intersection Results

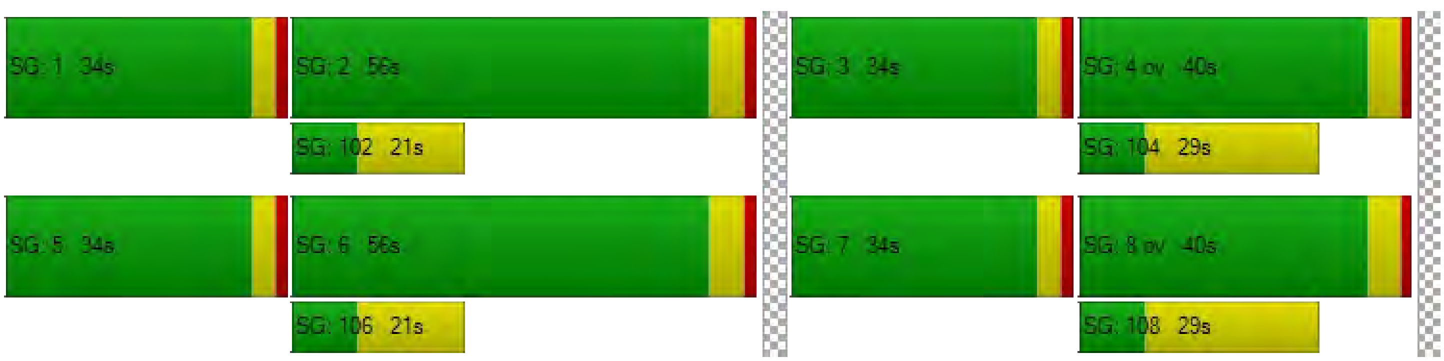
d_M, Delay for Movement [s/veh]	68.42	52.22	37.13	68.76	64.23	75.99	126.9	43.60	43.97	302.2	132.5	147.1
Movement LOS	E	D	D	E	E	E	F	D	D	F	F	F
d_A, Approach Delay [s/veh]	51.12			69.93			74.75			184.12		
Approach LOS	D			E			E			F		
d_I, Intersection Delay [s/veh]	103.01											
Intersection LOS	F											
Intersection V/C	1.069											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	64.43	64.43	64.43	64.43
I_p,int, Pedestrian LOS Score for Intersection	3.126	3.048	2.793	2.853
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	461	461	666	666
d_b, Bicycle Delay [s]	44.99	44.99	33.80	33.80
I_b,int, Bicycle LOS Score for Intersection	2.248	2.705	2.135	2.888
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Airport Way/Daniels Street

Control Type:	Signalized	Delay (sec / veh):	47.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.870

Intersection Setup

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	2	0	1
Entry Pocket Length [ft]	280.0	100.0	300.0	250.0	100.0	250.0	215.0	100.0	215.0	155.0	100.0	250.0
No. of Lanes in Exit Pocket	0	0	2	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Base Volume Input [veh/h]	563	1206	288	33	940	217	176	67	247	260	132	52
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	1.00	6.00	5.00	7.00	13.00	4.00	2.00	2.00	4.00	3.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	563	1206	288	33	940	217	176	67	247	260	132	52
Peak Hour Factor	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	164	351	84	10	273	63	51	19	72	76	38	15
Total Analysis Volume [veh/h]	655	1402	335	38	1093	252	205	78	287	302	153	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	162
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	8	0
Maximum Green [s]	30	50	0	20	50	0	30	36	0	20	36	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	54	0	24	54	0	34	40	0	24	40	0
Vehicle Extension [s]	3.0	7.0	0.0	3.0	7.0	0.0	2.0	7.0	0.0	2.0	7.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	30	0	0	39	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	141	141	141	141	141	141	141	141	141	141	141	141
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	71	71	6	48	48	11	32	32	16	36	36
g / C, Green / Cycle	0.21	0.50	0.50	0.04	0.34	0.34	0.08	0.23	0.23	0.11	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.21	0.32	0.23	0.01	0.26	0.18	0.07	0.05	0.20	0.10	0.09	0.04
s, saturation flow rate [veh/h]	3138	4437	1433	2988	4180	1408	3113	1683	1408	3088	1710	1454
c, Capacity [veh/h]	665	2235	722	133	1406	473	254	381	319	347	440	374
d1, Uniform Delay [s]	55.60	25.49	22.67	65.51	42.24	37.99	63.97	44.44	53.24	61.83	42.89	40.73
k, delay calibration	0.11	0.69	0.69	0.11	0.69	0.69	0.04	0.69	0.69	0.04	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.19	1.86	2.96	1.18	5.86	5.84	2.34	1.68	38.27	2.65	2.99	1.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.99	0.63	0.46	0.29	0.78	0.53	0.81	0.20	0.90	0.87	0.35	0.16
d, Delay for Lane Group [s/veh]	68.79	27.35	25.62	66.69	48.10	43.83	66.31	46.12	91.51	64.47	45.88	42.00
Lane Group LOS	E	C	C	E	D	D	E	D	F	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	12.84	11.72	7.82	0.69	12.20	7.89	3.73	2.43	13.31	5.48	4.79	1.78
50th-Percentile Queue Length [ft/ln]	320.9	292.9	195.4	17.22	305.0	197.1	93.19	60.72	332.7	137.0	119.6	44.45
95th-Percentile Queue Length [veh/ln]	18.71	17.33	12.40	1.24	17.93	12.49	6.71	4.37	19.29	9.32	8.37	3.20
95th-Percentile Queue Length [ft/ln]	467.8	433.3	310.0	31.00	448.2	312.2	167.7	109.3	482.3	233.0	209.3	80.01

Movement, Approach, & Intersection Results

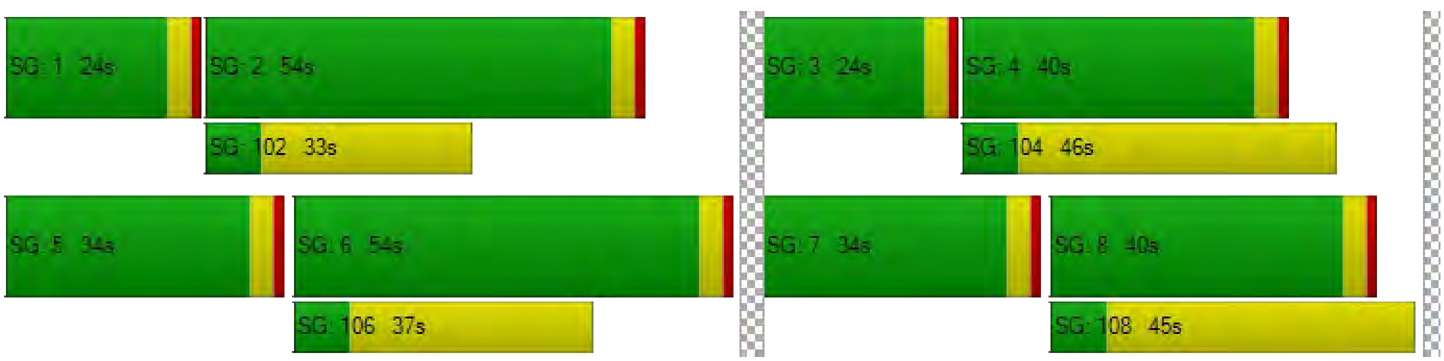
d_M, Delay for Movement [s/veh]	68.79	27.35	25.62	66.69	48.10	43.83	66.31	46.12	91.51	64.47	45.88	42.00
Movement LOS	E	C	C	E	D	D	E	D	F	E	D	D
d_A, Approach Delay [s/veh]	38.46			47.83			76.24			56.33		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	47.45											
Intersection LOS	D											
Intersection V/C	0.870											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.15	60.15	60.15	60.15
I_p,int, Pedestrian LOS Score for Intersection	3.312	3.201	2.739	2.631
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	707	707	509	509
d_b, Bicycle Delay [s]	29.59	29.56	39.31	39.31
I_b,int, Bicycle LOS Score for Intersection	2.875	2.320	2.500	2.409
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Airport Way/SR 120 Westbound Ramps

Control Type:	Signalized	Delay (sec / veh):	283.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.738

Intersection Setup

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	280.0	100.0	100.0	100.0	100.0	400.0	100.0	100.0	100.0	100.0	100.0	500.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Base Volume Input [veh/h]	421	1494	0	0	953	500	0	0	0	180	3	591
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	14.00	3.00	2.00	2.00	8.00	6.00	2.00	2.00	2.00	8.00	0.00	7.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	421	1494	0	0	953	500	0	0	0	180	3	591
Peak Hour Factor	0.910	0.910	1.000	1.000	0.910	0.910	1.000	1.000	1.000	0.910	0.910	0.910
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	116	410	0	0	262	137	0	0	0	49	1	162
Total Analysis Volume [veh/h]	463	1642	0	0	1047	549	0	0	0	198	3	649
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	5	2	0	0	6	0	0	0	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	Lead	-
Minimum Green [s]	5	8	0	0	8	0	0	0	0	0	5	0
Maximum Green [s]	15	30	0	0	30	0	0	0	0	0	15	0
Amber [s]	3.0	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	3.6	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	19	36	0	0	36	0	0	0	0	0	20	0
Vehicle Extension [s]	3.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Walk [s]	0	10	0	0	10	0	0	0	0	0	10	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	Yes			Yes						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	R
C, Cycle Length [s]	74	74	74	74		74	74
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	5.30		4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	3.30		2.60	2.60
g_i, Effective Green Time [s]	15	49	30	30		15	15
g / C, Green / Cycle	0.20	0.66	0.41	0.41		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.32	0.98	0.65	0.40		0.13	0.47
s, saturation flow rate [veh/h]	1448	1669	1602	1385		1527	1373
c, Capacity [veh/h]	294	1107	650	562		310	279
d1, Uniform Delay [s]	29.45	12.45	21.95	21.61		27.03	29.45
k, delay calibration	0.50	0.50	0.50	0.39		0.09	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	274.48	222.39	281.62	28.29		1.87	608.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	1.57	1.48	1.61	0.98		0.65	2.33
d, Delay for Lane Group [s/veh]	303.93	234.84	303.57	49.89		28.90	638.42
Lane Group LOS	F	F	F	D		C	F
Critical Lane Group	No	Yes	No	No		No	Yes
50th-Percentile Queue Length [veh/ln]	27.39	81.63	61.06	12.89		3.28	51.86
50th-Percentile Queue Length [ft/ln]	684.67	2040.72	1526.62	322.16		82.01	1296.48
95th-Percentile Queue Length [veh/ln]	43.44	126.29	95.48	18.77		5.91	82.92
95th-Percentile Queue Length [ft/ln]	1085.98	3157.20	2386.88	469.34		147.63	2072.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	303.9	234.8	0.00	0.00	303.5	49.89	0.00	0.00	0.00	28.90	28.90	638.4
Movement LOS	F	F			F	D				C	C	F
d_A, Approach Delay [s/veh]	250.03			216.31			0.00			494.29		
Approach LOS	F			F			A			F		
d_I, Intersection Delay [s/veh]	283.83											
Intersection LOS	F											
Intersection V/C	1.738											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	831	831	0	417
d_b, Bicycle Delay [s]	12.65	12.63	36.95	23.15
I_b,int, Bicycle LOS Score for Intersection	5.033	4.193	4.132	1.560
Bicycle LOS	F	D	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Aiport Way/Sr 120 Eastbound Ramps

Control Type:	Signalized	Delay (sec / veh):	404.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.854

Intersection Setup

Name				Airport Way								
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left2	Left	Right	Left	Right	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	225.0	300.0	100.0	100.0	100.0	100.0	575.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name				Airport Way								
Base Volume Input [veh/h]	0	1596	151	219	905	0	311	3	424	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	6.00	5.00	16.00	4.00	2.00	5.00	33.00	14.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1596	151	219	905	0	311	3	424	0	0	0
Peak Hour Factor	1.000	0.930	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	429	41	59	243	0	84	1	114	0	0	0
Total Analysis Volume [veh/h]	0	1716	162	235	973	0	334	3	456	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		3			1			0			0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	2	0	1	6	0	0	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	Lead	-	-	-	-
Minimum Green [s]	0	8	0	5	8	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	20	0	0	0	0
Amber [s]	0.0	4.3	0.0	3.0	4.3	0.0	0.0	3.6	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	36	0	34	36	0	0	25	0	0	0	0
Vehicle Extension [s]	0.0	0.2	0.0	2.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	0	0	10	0	0	10	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.3	0.0	2.0	3.3	0.0	0.0	2.6	0.0	0.0	0.0	0.0
Minimum Recall		Yes		No	Yes			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R	
C, Cycle Length [s]	79	79	79	79	79	79	
L, Total Lost Time per Cycle [s]	5.30	5.30	4.00	5.30	4.60	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.30	3.30	2.00	3.30	2.60	2.60	
g_i, Effective Green Time [s]	30	30	15	49	20	20	
g / C, Green / Cycle	0.38	0.38	0.19	0.62	0.25	0.25	
(v / s)_i Volume / Saturation Flow Rate	1.05	0.12	0.17	0.59	0.22	0.35	
s, saturation flow rate [veh/h]	1629	1364	1423	1656	1561	1293	
c, Capacity [veh/h]	620	519	269	1028	396	328	
d1, Uniform Delay [s]	24.40	17.09	31.04	13.76	27.97	29.40	
k, delay calibration	0.50	0.04	0.04	0.50	0.27	0.50	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	799.60	0.13	3.50	17.87	11.96	193.12	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	2.77	0.31	0.87	0.95	0.85	1.39	
d, Delay for Lane Group [s/veh]	823.99	17.22	34.54	31.62	39.93	222.52	
Lane Group LOS	F	B	C	C	D	F	
Critical Lane Group	Yes	No	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	148.42	1.97	4.45	17.89	7.09	23.51	
50th-Percentile Queue Length [ft/ln]	3710.55	49.26	111.16	447.27	177.21	587.72	
95th-Percentile Queue Length [veh/ln]	239.21	3.55	7.90	24.83	11.45	36.93	
95th-Percentile Queue Length [ft/ln]	5980.16	88.67	197.61	620.69	286.36	923.26	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	823.9	17.22	34.54	31.62	0.00	39.93	39.93	222.5	0.00	0.00	0.00
Movement LOS		F	B	C	C		D	D	F			
d_A, Approach Delay [s/veh]	754.40			32.19			144.93			0.00		
Approach LOS	F			C			F			A		
d_I, Intersection Delay [s/veh]	404.89											
Intersection LOS	F											
Intersection V/C	1.854											

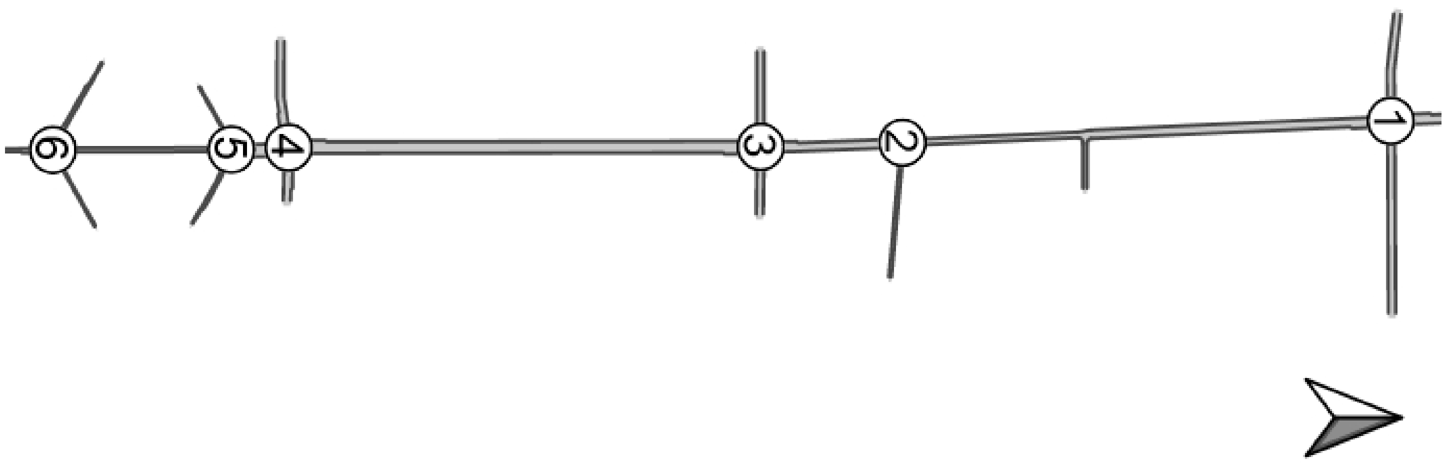
Other Modes

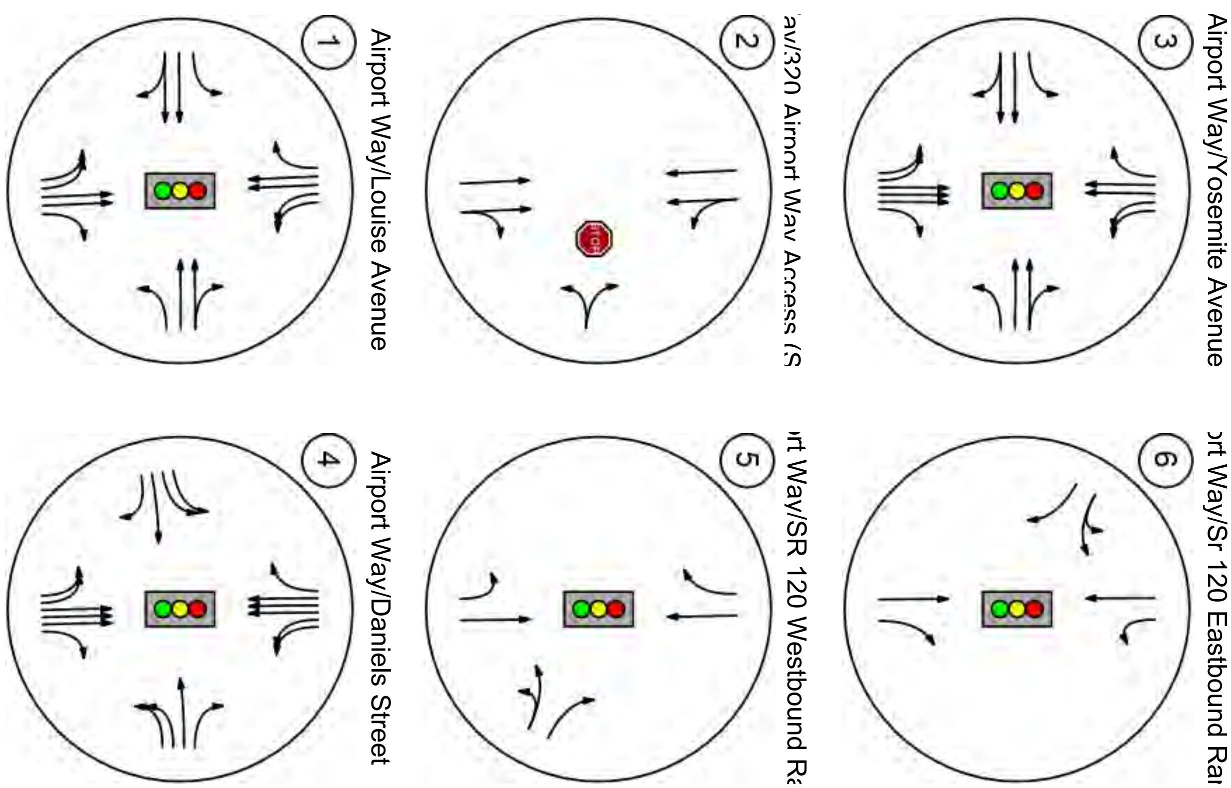
g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	780	780	518	0
d_b, Bicycle Delay [s]	14.67	14.66	21.61	39.37
I_b,int, Bicycle LOS Score for Intersection	4.658	3.553	1.560	4.132
Bicycle LOS	E	D	A	D

Sequence

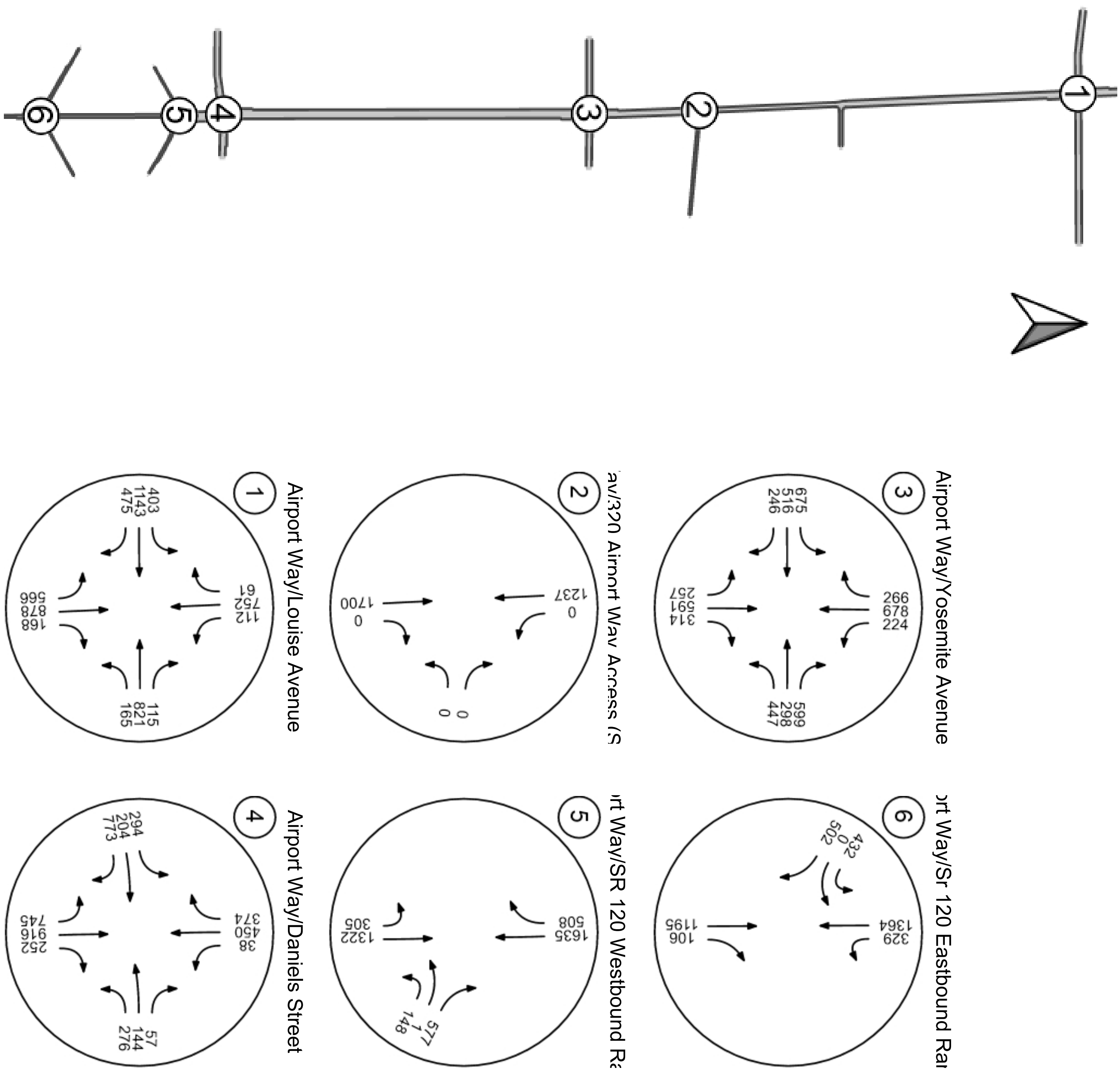
Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Report Figure 1: Lane Configuration and Traffic Control





Report Figure 2a: Traffic Volume - Base Volume



Intersection Level Of Service Report
Intersection 1: Airport Way/Louise Avenue

Control Type:	Signalized	Delay (sec / veh):	202.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.243

Intersection Setup

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	250.0	100.0	250.0	250.0	100.0	250.0	350.0	100.0	100.0	300.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Base Volume Input [veh/h]	566	878	168	112	752	61	403	1143	475	165	821	115
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	7.00	5.00	2.00	1.00	6.00	16.00	11.00	1.00	4.00	0.00	1.00	8.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	566	878	168	112	752	61	403	1143	475	165	821	115
Peak Hour Factor	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	146	226	43	29	194	16	104	295	122	43	212	30
Total Analysis Volume [veh/h]	584	905	173	115	775	63	415	1178	490	170	846	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	137
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	7
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	10	0	6	10	0	6	10	0	6	10	6
Maximum Green [s]	20	40	0	20	40	0	25	30	0	25	30	20
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	3.5
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	25	46	0	25	46	0	30	36	0	30	36	25
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	7	7	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	25	0	22	22	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	2.5
Minimum Recall	Yes	Yes		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	132	132	132	132	132	132	132	132	132	132	132	132
L, Total Lost Time per Cycle [s]	4.50	5.70	5.70	4.50	5.70	5.70	4.50	5.70	5.70	4.50	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.70	3.70	2.50	3.70	3.70	2.50	3.70	3.70	2.50	3.70	3.70
g_i, Effective Green Time [s]	20	50	50	7	37	37	25	39	39	16	30	30
g / C, Green / Cycle	0.15	0.38	0.38	0.05	0.28	0.28	0.19	0.30	0.30	0.12	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.20	0.29	0.12	0.04	0.25	0.05	0.28	0.49	0.54	0.10	0.29	0.29
s, saturation flow rate [veh/h]	2988	3127	1431	3138	3102	1270	1487	1696	1537	1629	1696	1624
c, Capacity [veh/h]	452	1178	539	167	865	354	281	502	455	195	385	368
d1, Uniform Delay [s]	56.15	36.15	29.23	61.54	45.86	36.19	53.65	46.59	46.59	57.19	51.15	51.15
k, delay calibration	0.17	0.23	0.23	0.11	0.23	0.23	0.50	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	137.4	2.29	0.73	4.95	7.19	0.51	232.8	306.8	384.1	11.32	144.9	146.2
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.29	0.77	0.32	0.69	0.90	0.18	1.48	1.66	1.83	0.87	1.28	1.28
d, Delay for Lane Group [s/veh]	193.5	38.44	29.95	66.50	53.04	36.70	286.4	353.3	430.7	68.51	196.0	197.4
Lane Group LOS	F	D	C	E	D	D	F	F	F	E	F	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	16.15	13.11	4.04	2.02	13.06	1.62	27.50	59.12	63.33	6.21	28.19	27.13
50th-Percentile Queue Length [ft/ln]	403.8	327.6	101.0	50.51	326.5	40.39	687.5	1478.	1583.	155.1	704.6	678.1
95th-Percentile Queue Length [veh/ln]	25.34	19.04	7.28	3.64	18.99	2.91	42.69	91.36	99.63	10.29	41.91	40.51
95th-Percentile Queue Length [ft/ln]	633.4	476.0	181.9	90.92	474.7	72.69	1067.	2284.	2490.	257.3	1047.	1012.

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	193.5	38.44	29.95	66.50	53.04	36.70	286.4	375.9	430.7	68.51	196.6	197.4
Movement LOS	F	D	C	E	D	D	F	F	F	E	F	F
d_A, Approach Delay [s/veh]	92.07			53.59			371.02			177.53		
Approach LOS	F			D			F			F		
d_I, Intersection Delay [s/veh]	202.03											
Intersection LOS	F											
Intersection V/C	1.243											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	55.59	55.59	55.59	55.59
I_p,int, Pedestrian LOS Score for Intersection	3.044	2.946	3.016	2.825
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	609	609	458	458
d_b, Bicycle Delay [s]	31.97	31.97	39.30	39.30
I_b,int, Bicycle LOS Score for Intersection	2.931	2.346	3.278	2.496
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Airport Way/Yosemite Avenue

Control Type:	Signalized	Delay (sec / veh):	168.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.385

Intersection Setup

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	250.0	100.0	250.0	250.0	100.0	250.0	170.0	100.0	100.0	175.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Base Volume Input [veh/h]	257	591	314	224	678	266	675	516	246	447	298	599
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	10.00	5.00	2.00	4.00	2.00	19.00	6.00	3.00	7.00	2.00	4.00	3.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	257	591	314	224	678	266	675	516	246	447	298	599
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	68	156	83	59	178	70	178	136	65	118	78	158
Total Analysis Volume [veh/h]	271	622	331	236	714	280	711	543	259	471	314	631
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			2			2		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	164
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	5	7	4	1	1	6	0	5	2	0
Auxiliary Signal Groups			5,8			1,4						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	35	30	30	35	30	30	50	0	30	40	0
Amber [s]	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	40	34	34	40	34	34	56	0	34	46	0
Vehicle Extension [s]	1.0	6.5	1.0	1.0	6.5	1.0	1.0	7.0	0.0	1.0	7.0	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	2.0	2.0	3.0	2.0	2.0	3.4	0.0	2.0	3.4	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	142	142	142	142	142	142	142	142	142	142	142	142
L, Total Lost Time per Cycle [s]	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.40	5.40	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.00	0.00	2.00	3.00	0.00	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	15	37	72	13	34	69	30	44	44	30	44	44
g / C, Green / Cycle	0.11	0.26	0.51	0.09	0.24	0.49	0.21	0.31	0.31	0.21	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.09	0.14	0.23	0.08	0.22	0.23	0.46	0.25	0.26	0.29	0.19	0.45
s, saturation flow rate [veh/h]	2913	4474	1421	3063	3204	1235	1551	1669	1478	1603	1656	1389
c, Capacity [veh/h]	313	1154	717	280	776	604	328	516	457	339	512	430
d1, Uniform Delay [s]	62.30	45.35	22.63	63.42	52.42	23.96	55.91	45.08	45.75	55.91	41.74	48.97
k, delay calibration	0.04	0.52	0.50	0.04	0.52	0.50	0.50	0.69	0.69	0.50	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.86	1.89	2.14	2.66	18.51	2.55	534.9	16.92	22.21	192.3	7.40	227.8
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.54	0.46	0.84	0.92	0.46	2.17	0.81	0.84	1.39	0.61	1.47
d, Delay for Lane Group [s/veh]	65.17	47.24	24.76	66.08	70.93	26.51	590.8	62.00	67.96	248.2	49.14	276.8
Lane Group LOS	E	D	C	E	E	C	F	E	E	F	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.94	6.54	7.57	4.31	14.37	6.66	60.47	15.92	15.48	30.21	10.47	42.30
50th-Percentile Queue Length [ft/ln]	123.5	163.4	189.1	107.6	359.1	166.4	1511.	398.0	386.9	755.2	261.6	1057.
95th-Percentile Queue Length [veh/ln]	8.59	10.73	12.08	7.71	20.58	10.89	95.33	22.47	21.93	45.84	15.77	64.77
95th-Percentile Queue Length [ft/ln]	214.6	268.2	301.9	192.7	514.5	272.2	2383.	561.6	548.1	1145.	394.2	1619.

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.17	47.24	24.76	66.08	70.93	26.51	590.8	63.38	67.96	248.2	49.14	276.8
Movement LOS	E	D	C	E	E	C	F	E	E	F	D	F
d_A, Approach Delay [s/veh]	45.13			59.88			312.04			216.84		
Approach LOS	D			E			F			F		
d_I, Intersection Delay [s/veh]	168.69											
Intersection LOS	F											
Intersection V/C	1.385											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.32	59.32	59.32	59.32
I_p,int, Pedestrian LOS Score for Intersection	3.159	3.136	2.785	2.813
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	494	494	715	573
d_b, Bicycle Delay [s]	40.15	40.13	29.28	36.06
I_b,int, Bicycle LOS Score for Intersection	2.233	2.574	2.808	2.728
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Airport Way/Daniels Street

Control Type:	Signalized	Delay (sec / veh):	161.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.339

Intersection Setup

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	2	0	1
Entry Pocket Length [ft]	280.0	100.0	300.0	250.0	100.0	250.0	215.0	100.0	215.0	155.0	100.0	250.0
No. of Lanes in Exit Pocket	0	0	2	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Base Volume Input [veh/h]	745	916	252	38	450	374	294	204	773	276	144	57
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	6.00	0.00	0.00	5.00	0.00	0.00	1.00	1.00	0.00	1.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	745	916	252	38	450	374	294	204	773	276	144	57
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	196	241	66	10	118	98	77	54	203	73	38	15
Total Analysis Volume [veh/h]	784	964	265	40	474	394	309	215	814	291	152	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			4			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	162
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	8	0
Maximum Green [s]	30	50	0	20	50	0	30	36	0	20	36	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	54	0	24	54	0	34	40	0	24	40	0
Vehicle Extension [s]	3.0	7.0	0.0	3.0	7.0	0.0	2.0	7.0	0.0	2.0	7.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	30	0	0	39	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	142	142	142	142	142	142	142	142	142	142	142	142
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	69	69	6	45	45	16	36	36	15	35	35
g / C, Green / Cycle	0.21	0.48	0.48	0.04	0.32	0.32	0.11	0.25	0.25	0.11	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.25	0.22	0.18	0.01	0.11	0.28	0.10	0.13	0.57	0.09	0.09	0.04
s, saturation flow rate [veh/h]	3163	4437	1512	3163	4474	1432	3163	1696	1420	3163	1696	1431
c, Capacity [veh/h]	665	2145	731	143	1424	456	359	429	359	337	417	352
d1, Uniform Delay [s]	56.31	24.31	23.08	65.86	37.08	45.48	62.13	45.61	53.02	62.68	44.54	42.27
k, delay calibration	0.15	0.69	0.69	0.11	0.69	0.69	0.04	0.69	0.69	0.04	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	85.35	0.95	1.93	1.06	0.87	24.86	2.41	5.71	583.3	2.59	3.39	1.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.18	0.45	0.36	0.28	0.33	0.86	0.86	0.50	2.27	0.86	0.36	0.16
d, Delay for Lane Group [s/veh]	141.6	25.26	25.01	66.92	37.95	70.35	64.54	51.32	636.3	65.27	47.93	43.66
Lane Group LOS	F	C	C	E	D	E	E	D	F	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	19.83	7.39	6.03	0.73	4.38	16.18	5.64	7.25	70.87	5.33	4.89	1.77
50th-Percentile Queue Length [ft/ln]	495.8	184.8	150.8	18.21	109.4	404.4	140.9	181.3	1771.	133.1	122.3	44.15
95th-Percentile Queue Length [veh/ln]	29.54	11.85	10.06	1.31	7.81	22.78	9.53	11.67	112.6	9.11	8.52	3.18
95th-Percentile Queue Length [ft/ln]	738.6	296.3	251.5	32.78	195.1	569.4	238.2	291.7	2817.	227.8	213.0	79.47

Movement, Approach, & Intersection Results

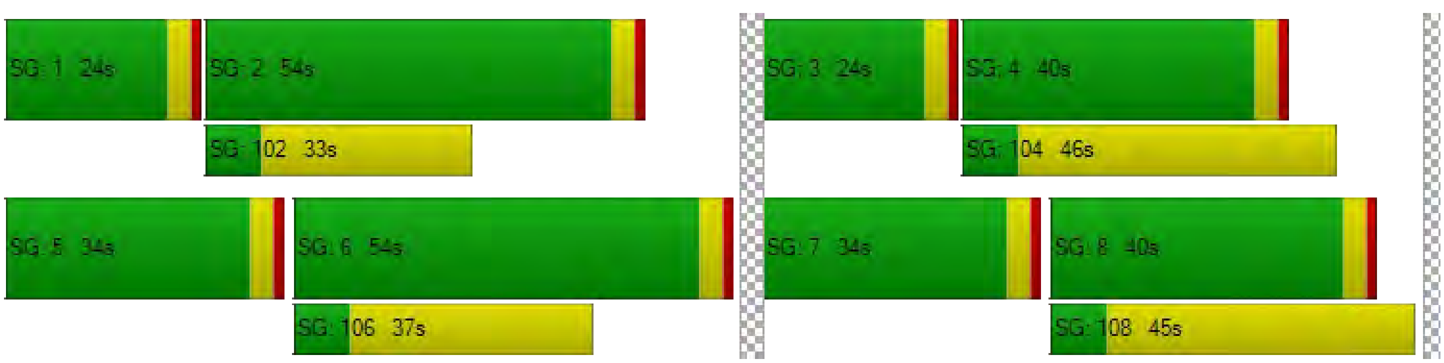
d_M, Delay for Movement [s/veh]	141.6	25.26	25.01	66.92	37.95	70.35	64.54	51.32	636.3	65.27	47.93	43.66
Movement LOS	F	C	C	E	D	E	E	D	F	E	D	D
d_A, Approach Delay [s/veh]	70.56			53.29			410.28			57.51		
Approach LOS	E			D			F			E		
d_I, Intersection Delay [s/veh]	161.39											
Intersection LOS	F											
Intersection V/C	1.339											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.67	60.67	60.67	60.67
I_p,int, Pedestrian LOS Score for Intersection	3.260	3.114	2.908	2.641
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	702	702	505	505
d_b, Bicycle Delay [s]	30.02	30.08	39.88	39.80
I_b,int, Bicycle LOS Score for Intersection	2.667	2.059	3.767	2.386
Bicycle LOS	B	B	D	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Airport Way/SR 120 Westbound Ramps

Control Type:	Signalized	Delay (sec / veh):	366.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.972

Intersection Setup

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	280.0	100.0	100.0	100.0	100.0	400.0	100.0	100.0	100.0	100.0	100.0	500.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Base Volume Input [veh/h]	305	1322	0	0	1635	508	0	0	0	148	1	577
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	19.00	2.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00	4.00	0.00	4.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	305	1322	0	0	1635	508	0	0	0	148	1	577
Peak Hour Factor	0.970	0.970	1.000	1.000	0.970	0.970	1.000	1.000	1.000	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	79	341	0	0	421	131	0	0	0	38	0	149
Total Analysis Volume [veh/h]	314	1363	0	0	1686	524	0	0	0	153	1	595
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			5			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	5	2	0	0	6	0	0	0	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	Lead	-
Minimum Green [s]	5	8	0	0	8	0	0	0	0	0	5	0
Maximum Green [s]	15	30	0	0	30	0	0	0	0	0	15	0
Amber [s]	3.0	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	3.6	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	19	36	0	0	36	0	0	0	0	0	20	0
Vehicle Extension [s]	3.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Walk [s]	0	10	0	0	10	0	0	0	0	0	10	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	Yes			Yes						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	R
C, Cycle Length [s]	74	74	74	74		74	74
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	5.30		4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	3.30		2.60	2.60
g_i, Effective Green Time [s]	15	49	30	30		15	15
g / C, Green / Cycle	0.20	0.66	0.41	0.41		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.23	0.81	1.00	0.37		0.10	0.42
s, saturation flow rate [veh/h]	1384	1683	1683	1407		1577	1408
c, Capacity [veh/h]	281	1116	683	571		320	286
d1, Uniform Delay [s]	29.45	12.45	21.95	20.48		26.01	29.45
k, delay calibration	0.49	0.50	0.50	0.34		0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	88.55	107.86	664.89	16.54		0.42	498.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	1.12	1.22	2.47	0.92		0.48	2.08
d, Delay for Lane Group [s/veh]	118.00	120.31	686.84	37.03		26.43	528.44
Lane Group LOS	F	F	F	D		C	F
Critical Lane Group	Yes	No	Yes	No		No	Yes
50th-Percentile Queue Length [veh/ln]	11.66	46.79	136.89	10.29		2.34	44.43
50th-Percentile Queue Length [ft/ln]	291.52	1169.72	3422.28	257.19		58.42	1110.80
95th-Percentile Queue Length [veh/ln]	18.24	67.88	221.12	15.55		4.21	71.07
95th-Percentile Queue Length [ft/ln]	455.93	1697.07	5528.01	388.69		105.16	1776.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	118.0	120.3	0.00	0.00	686.8	37.03	0.00	0.00	0.00	26.43	26.43	528.4
Movement LOS	F	F			F	D				C	C	F
d_A, Approach Delay [s/veh]	119.88			532.77			0.00			425.22		
Approach LOS	F			F			A			F		
d_I, Intersection Delay [s/veh]	366.03											
Intersection LOS	F											
Intersection V/C	1.972											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	831	831	0	417
d_b, Bicycle Delay [s]	12.63	12.66	36.95	23.15
I_b,int, Bicycle LOS Score for Intersection	4.327	5.206	4.132	1.560
Bicycle LOS	E	F	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 6: Aiport Way/Sr 120 Eastbound Ramps

Control Type:	Signalized	Delay (sec / veh):	296.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.391

Intersection Setup

Name				Airport Way								
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left2	Left	Right	Left	Right	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	225.0	300.0	100.0	100.0	100.0	100.0	575.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name					Airport Way							
Base Volume Input [veh/h]	0	1195	106	329	1364	0	432	0	502	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	6.00	7.00	4.00	2.00	2.00	1.00	1.00	7.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1195	106	329	1364	0	432	0	502	0	0	0
Peak Hour Factor	1.000	0.940	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	318	28	88	363	0	115	0	134	0	0	0
Total Analysis Volume [veh/h]	0	1271	113	350	1451	0	460	0	534	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			6			0			0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	2	0	1	6	0	0	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	Lead	-	-	-	-
Minimum Green [s]	0	8	0	5	8	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	20	0	0	0	0
Amber [s]	0.0	4.3	0.0	3.0	4.3	0.0	0.0	3.6	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	36	0	34	36	0	0	25	0	0	0	0
Vehicle Extension [s]	0.0	0.2	0.0	2.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	0	0	10	0	0	10	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.3	0.0	2.0	3.3	0.0	0.0	2.6	0.0	0.0	0.0	0.0
Minimum Recall		Yes		No	Yes			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R	
C, Cycle Length [s]	84	84	84	84	84	84	
L, Total Lost Time per Cycle [s]	5.30	5.30	4.00	5.30	4.60	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.30	3.30	2.00	3.30	2.60	2.60	
g_i, Effective Green Time [s]	30	30	21	55	20	20	
g / C, Green / Cycle	0.36	0.36	0.24	0.65	0.24	0.24	
(v / s)_i Volume / Saturation Flow Rate	0.78	0.08	0.22	0.86	0.28	0.39	
s, saturation flow rate [veh/h]	1629	1373	1577	1683	1616	1373	
c, Capacity [veh/h]	578	488	384	1087	382	325	
d1, Uniform Delay [s]	27.24	19.14	31.06	14.95	32.24	32.24	
k, delay calibration	0.50	0.04	0.12	0.50	0.50	0.50	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	544.45	0.09	9.26	156.83	113.61	302.77	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	2.20	0.23	0.91	1.33	1.20	1.64	
d, Delay for Lane Group [s/veh]	571.69	19.23	40.32	171.78	145.86	335.01	
Lane Group LOS	F	B	D	F	F	F	
Critical Lane Group	Yes	No	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	98.46	1.52	7.68	64.03	19.60	33.73	
50th-Percentile Queue Length [ft/ln]	2461.44	37.98	191.90	1600.66	489.91	843.35	
95th-Percentile Queue Length [veh/ln]	157.69	2.73	12.22	95.41	29.60	53.51	
95th-Percentile Queue Length [ft/ln]	3942.37	68.36	305.49	2385.33	739.98	1337.77	

Movement, Approach, & Intersection Results

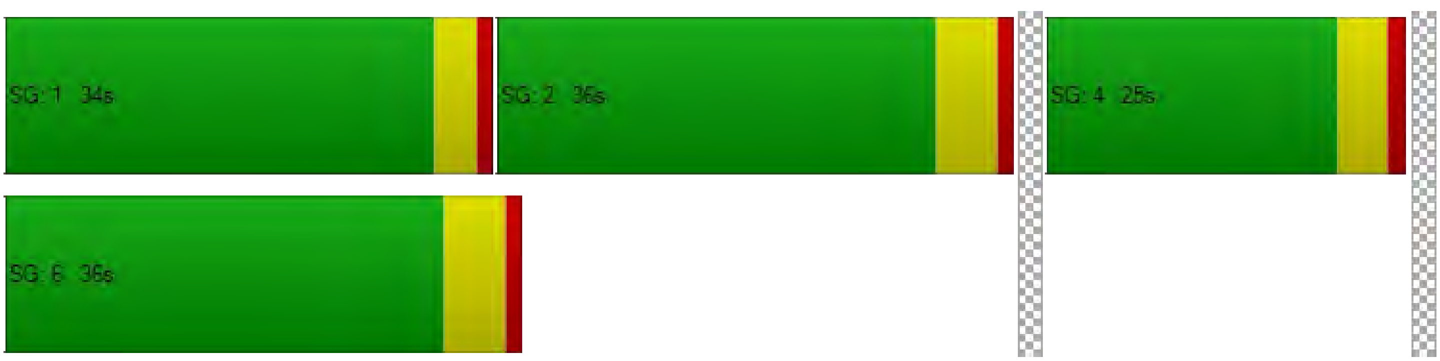
d_M, Delay for Movement [s/veh]	0.00	571.6	19.23	40.32	171.7	0.00	145.8	145.8	335.0	0.00	0.00	0.00
Movement LOS		F	B	D	F		F	F	F			
d_A, Approach Delay [s/veh]	526.58			146.23			247.48			0.00		
Approach LOS	F			F			F			A		
d_I, Intersection Delay [s/veh]	296.28											
Intersection LOS	F											
Intersection V/C	1.391											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	727	727	483	0
d_b, Bicycle Delay [s]	17.10	17.15	24.29	42.22
I_b,int, Bicycle LOS Score for Intersection	3.843	4.531	1.560	4.132
Bicycle LOS	D	E	A	D

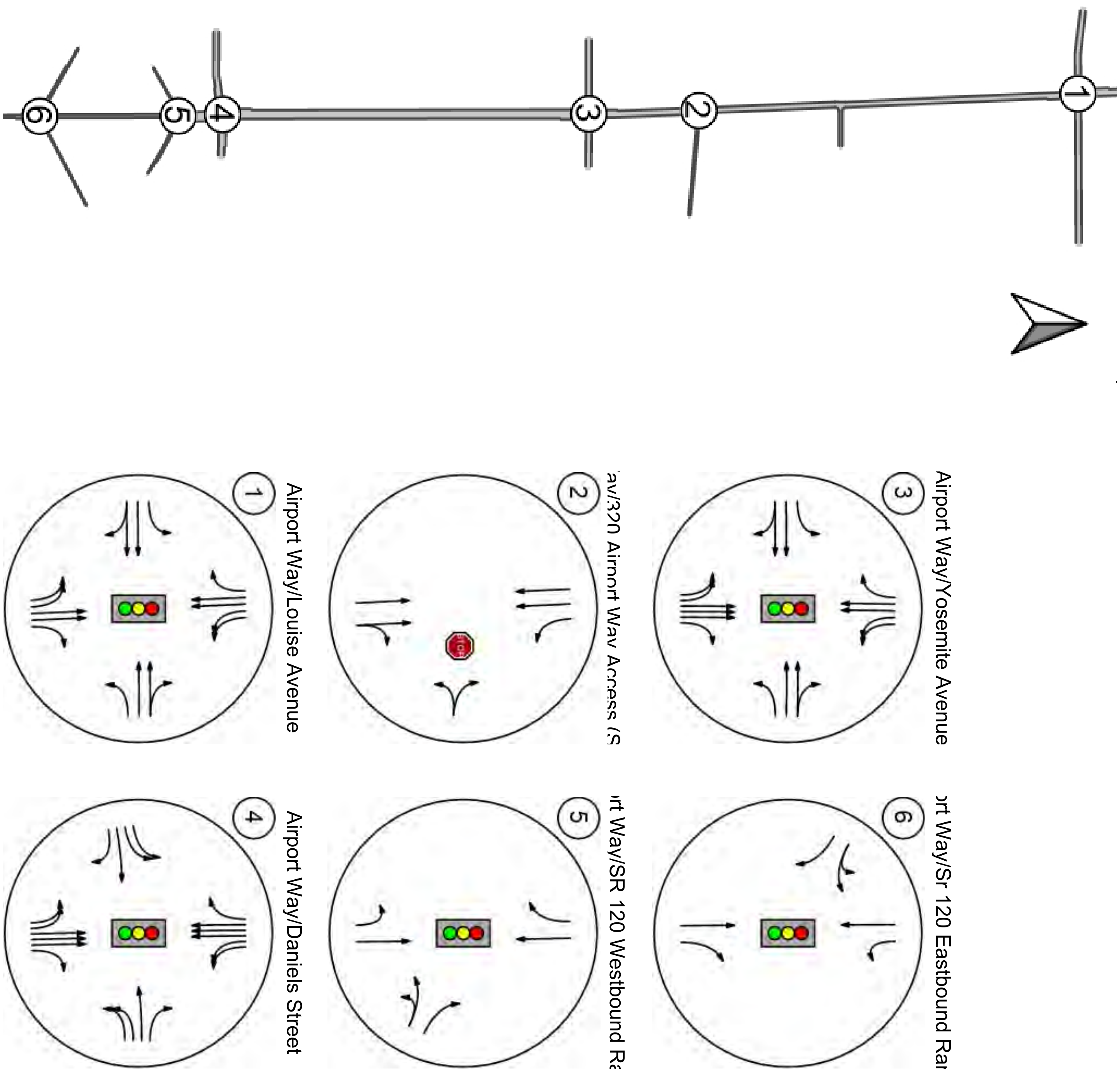
Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

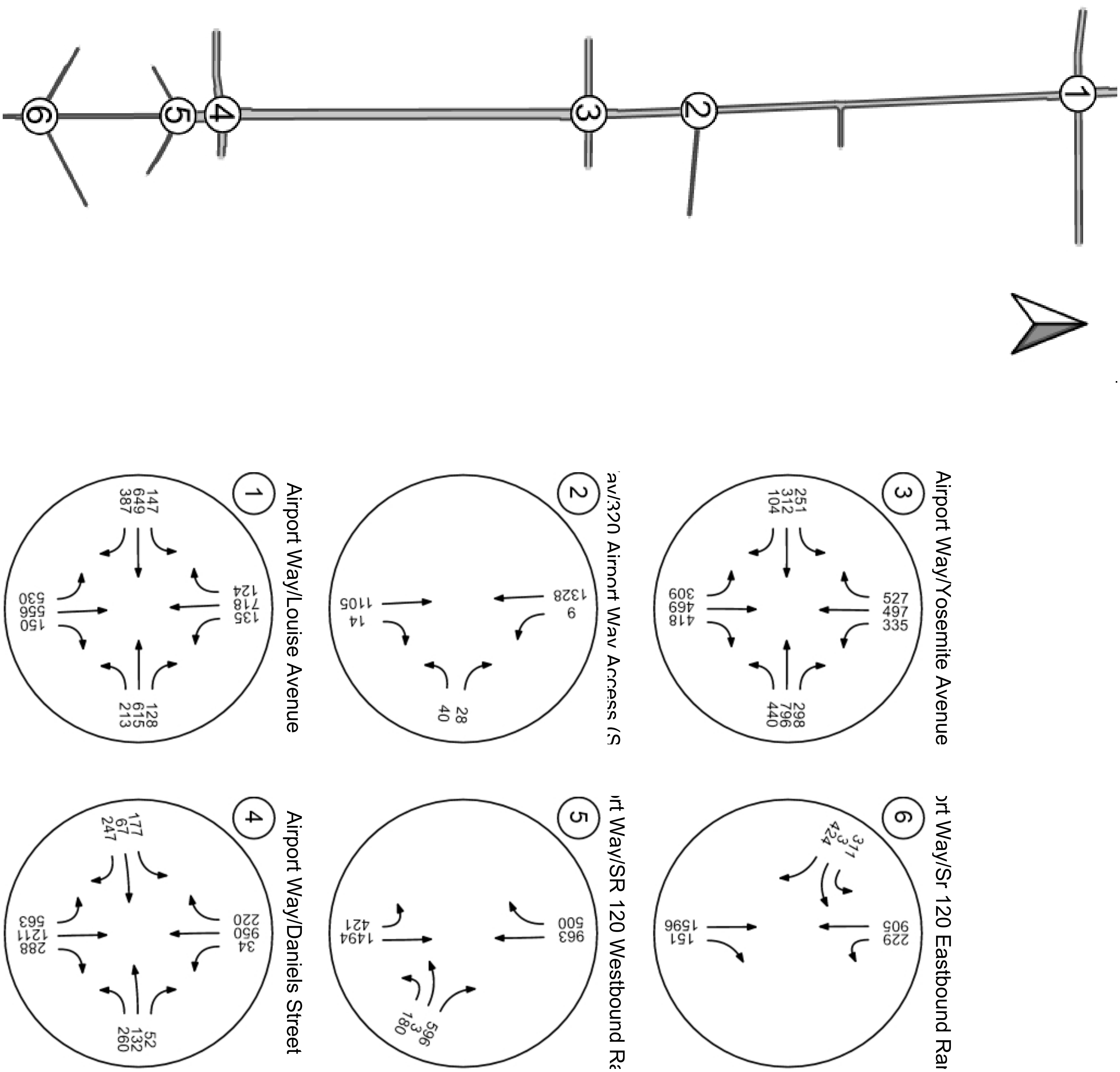


CUMULATIVE PLUS PROJECT

Report Figure 1: Lane Configuration and Traffic Control



Report Figure 2a: Traffic Volume - Base Volume



Intersection Level Of Service Report
Intersection 1: Airport Way/Louise Avenue

Control Type:	Signalized	Delay (sec / veh):	152.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.133

Intersection Setup

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	250.0	100.0	250.0	250.0	100.0	250.0	350.0	100.0	100.0	300.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Base Volume Input [veh/h]	530	556	150	135	718	124	147	649	387	213	615	128
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	6.00	14.00	3.00	2.00	9.00	30.00	42.00	4.00	10.00	4.00	4.00	11.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	530	556	150	135	718	124	147	649	387	213	615	128
Peak Hour Factor	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	149	156	42	38	202	35	41	182	109	60	173	36
Total Analysis Volume [veh/h]	596	625	169	152	807	139	165	729	435	239	691	144
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	137
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	7
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	10	0	6	10	0	6	10	0	6	10	6
Maximum Green [s]	20	40	0	20	40	0	25	30	0	25	30	20
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	3.5
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	25	46	0	25	46	0	30	36	0	30	36	25
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	7	7	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	25	0	22	22	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	2.5
Minimum Recall	Yes	Yes		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.50	5.70	5.70	4.50	5.70	5.70	4.50	5.70	5.70	4.50	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.70	3.70	2.50	3.70	3.70	2.50	3.70	3.70	2.50	3.70	3.70
g_i, Effective Green Time [s]	20	50	50	9	38	38	22	30	30	22	30	30
g / C, Green / Cycle	0.15	0.38	0.38	0.07	0.29	0.29	0.17	0.23	0.23	0.17	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.20	0.22	0.12	0.05	0.27	0.13	0.15	0.37	0.38	0.15	0.26	0.26
s, saturation flow rate [veh/h]	3013	2896	1419	3113	3024	1109	1088	1656	1453	1577	1656	1558
c, Capacity [veh/h]	462	1101	540	207	887	325	180	381	334	263	382	360
d1, Uniform Delay [s]	55.15	31.90	28.40	59.70	44.38	37.20	53.45	50.15	50.15	53.35	50.11	50.11
k, delay calibration	0.17	0.23	0.23	0.11	0.23	0.23	0.28	0.50	0.50	0.28	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	135.5	0.99	0.70	5.01	7.92	1.90	32.44	288.0	301.5	24.27	84.31	85.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.29	0.57	0.31	0.74	0.91	0.43	0.91	1.61	1.64	0.91	1.12	1.13
d, Delay for Lane Group [s/veh]	190.6	32.89	29.10	64.70	52.31	39.10	85.89	338.2	351.6	77.63	134.4	135.9
Lane Group LOS	F	C	C	E	D	D	F	F	F	E	F	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	16.28	7.93	3.85	2.61	13.46	3.78	6.93	42.87	38.85	9.45	21.35	20.25
50th-Percentile Queue Length [ft/ln]	406.9	198.1	96.19	65.33	336.4	94.40	173.3	1071.	971.3	236.3	533.7	506.1
95th-Percentile Queue Length [veh/ln]	25.49	12.54	6.93	4.70	19.48	6.80	11.25	66.22	60.76	14.50	30.89	29.50
95th-Percentile Queue Length [ft/ln]	637.3	313.5	173.1	117.5	486.9	169.9	281.3	1655.	1518.	362.3	772.2	737.3

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	190.6	32.89	29.10	64.70	52.31	39.10	85.89	340.3	351.6	77.63	135.0	135.9
Movement LOS	F	C	C	E	D	D	F	F	F	E	F	F
d_A, Approach Delay [s/veh]	100.07			52.35			312.45			122.37		
Approach LOS	F			D			F			F		
d_I, Intersection Delay [s/veh]	151.96											
Intersection LOS	F											
Intersection V/C	1.133											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.57	54.57	54.57	54.57
I_p,int, Pedestrian LOS Score for Intersection	3.011	2.895	2.855	2.732
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	619	619	465	465
d_b, Bicycle Delay [s]	31.04	31.04	38.33	38.33
I_b,int, Bicycle LOS Score for Intersection	2.706	2.465	2.656	2.446
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 2: Airport Way/320 Airport Way Access (Street "B")

Control Type:	Two-way stop	Delay (sec / veh):	96.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.553

Intersection Setup

Name	Airport Way		Airport Way		Street "B"	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Airport Way		Airport Way		Street "B"	
Base Volume Input [veh/h]	1105	14	9	1328	40	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1105	14	9	1328	40	28
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	276	4	2	332	10	7
Total Analysis Volume [veh/h]	1105	14	9	1328	40	28
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.55	0.06
d_M, Delay for Movement [s/veh]	0.00	0.00	10.78	0.00	96.03	53.81
Movement LOS	A	A	B	A	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.04	0.00	3.03	3.03
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.08	0.00	75.68	75.68
d_A, Approach Delay [s/veh]	0.00		0.07		78.65	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	2.16					
Intersection LOS	F					

Intersection Level Of Service Report

Intersection 3: Airport Way/Yosemite Avenue

Control Type:	Signalized	Delay (sec / veh):	104.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.096

Intersection Setup

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	250.0	100.0	250.0	250.0	100.0	250.0	170.0	100.0	100.0	175.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Base Volume Input [veh/h]	309	469	418	335	497	527	251	312	104	440	796	298
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	17.00	7.00	2.00	3.00	10.00	20.00	28.00	8.00	39.00	5.00	6.00	8.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	309	469	418	335	497	527	251	312	104	440	796	298
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	81	123	110	88	131	139	66	82	27	116	209	78
Total Analysis Volume [veh/h]	325	494	440	353	523	555	264	328	109	463	838	314
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			2			2		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	164
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	5	7	4	1	1	6	0	5	2	0
Auxiliary Signal Groups			5,8			1,4						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	35	30	30	35	30	30	50	0	30	40	0
Amber [s]	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	40	34	34	40	34	34	56	0	34	46	0
Vehicle Extension [s]	1.0	6.5	1.0	1.0	6.5	1.0	1.0	7.0	0.0	1.0	7.0	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	2.0	2.0	3.0	2.0	2.0	3.4	0.0	2.0	3.4	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	137	137	137	137	137	137	137	137	137	137	137	137
L, Total Lost Time per Cycle [s]	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.40	5.40	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.00	0.00	2.00	3.00	0.00	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	18	31	66	18	31	66	30	40	40	30	40	40
g / C, Green / Cycle	0.13	0.23	0.48	0.13	0.22	0.48	0.22	0.29	0.29	0.22	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.12	0.11	0.31	0.11	0.17	0.45	0.21	0.14	0.14	0.30	0.36	0.38
s, saturation flow rate [veh/h]	2738	4400	1421	3088	2999	1224	1268	1602	1456	1564	1629	1470
c, Capacity [veh/h]	365	1004	686	398	671	585	277	466	424	341	474	428
d1, Uniform Delay [s]	58.62	46.17	26.60	58.91	50.20	34.26	53.10	40.28	40.38	53.78	48.76	48.76
k, delay calibration	0.04	0.52	0.50	0.04	0.52	0.50	0.40	0.69	0.69	0.50	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.02	1.80	4.58	2.68	9.08	26.42	38.30	4.99	5.62	178.7	133.6	160.6
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.49	0.64	0.89	0.78	0.95	0.95	0.49	0.49	1.36	1.25	1.31
d, Delay for Lane Group [s/veh]	61.64	47.97	31.18	61.59	59.28	60.68	91.40	45.27	46.00	232.5	182.3	209.3
Lane Group LOS	E	D	C	E	E	E	F	D	D	F	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.72	5.10	11.59	6.20	9.32	21.59	11.93	7.05	6.58	28.70	33.76	33.68
50th-Percentile Queue Length [ft/ln]	143.0	127.4	289.6	155.0	232.9	539.6	298.1	176.2	164.4	717.4	844.0	842.0
95th-Percentile Queue Length [veh/ln]	9.65	8.80	17.17	10.28	14.33	29.21	17.59	11.40	10.79	43.47	49.22	50.19
95th-Percentile Queue Length [ft/ln]	241.1	220.0	429.2	257.1	358.1	730.1	439.7	285.0	269.6	1086.	1230.	1254.

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.64	47.97	31.18	61.59	59.28	60.68	91.40	45.49	46.00	232.5	190.3	209.3
Movement LOS	E	D	C	E	E	E	F	D	D	F	F	F
d_A, Approach Delay [s/veh]		45.63			60.39			62.86			206.12	
Approach LOS		D			E			E			F	
d_I, Intersection Delay [s/veh]						104.04						
Intersection LOS						F						
Intersection V/C						1.096						

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	57.22	57.22	57.22	57.22
I_p,int, Pedestrian LOS Score for Intersection	3.124	3.050	2.791	2.853
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	509	509	737	591
d_b, Bicycle Delay [s]	38.17	38.15	27.44	34.13
I_b,int, Bicycle LOS Score for Intersection	2.252	2.740	2.138	2.892
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Airport Way/Daniels Street

Control Type:	Signalized	Delay (sec / veh):	47.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.877

Intersection Setup

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	1	2	0	1
Entry Pocket Length [ft]	280.0	100.0	300.0	250.0	100.0	250.0	215.0	100.0	215.0	155.0	100.0	250.0
No. of Lanes in Exit Pocket	0	0	2	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Base Volume Input [veh/h]	563	1211	288	34	950	220	177	67	247	260	132	52
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	1.00	6.00	5.00	7.00	13.00	4.00	2.00	2.00	4.00	3.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	563	1211	288	34	950	220	177	67	247	260	132	52
Peak Hour Factor	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860	0.860
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	164	352	84	10	276	64	51	19	72	76	38	15
Total Analysis Volume [veh/h]	655	1408	335	40	1105	256	206	78	287	302	153	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			4			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	162
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	8	0
Maximum Green [s]	30	50	0	20	50	0	30	36	0	20	36	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	54	0	24	54	0	34	40	0	24	40	0
Vehicle Extension [s]	3.0	7.0	0.0	3.0	7.0	0.0	2.0	7.0	0.0	2.0	7.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	30	0	0	39	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	142	142	142	142	142	142	142	142	142	142	142	142
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	71	71	6	48	48	12	32	32	16	36	36
g / C, Green / Cycle	0.21	0.50	0.50	0.05	0.34	0.34	0.08	0.23	0.23	0.11	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.21	0.32	0.23	0.01	0.26	0.18	0.07	0.05	0.21	0.10	0.09	0.04
s, saturation flow rate [veh/h]	3138	4437	1452	2988	4180	1387	3113	1683	1385	3088	1710	1454
c, Capacity [veh/h]	663	2233	731	135	1409	468	254	381	313	347	439	374
d1, Uniform Delay [s]	55.79	25.65	22.76	65.57	42.38	38.11	64.09	44.55	53.37	61.97	43.03	40.87
k, delay calibration	0.11	0.69	0.69	0.11	0.69	0.69	0.04	0.69	0.69	0.04	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.61	1.89	2.86	1.20	6.05	6.26	2.35	1.68	41.38	2.66	3.00	1.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.99	0.63	0.46	0.30	0.78	0.55	0.81	0.20	0.92	0.87	0.35	0.16
d, Delay for Lane Group [s/veh]	69.40	27.53	25.62	66.78	48.43	44.37	66.44	46.23	94.75	64.62	46.03	42.14
Lane Group LOS	E	C	C	E	D	D	E	D	F	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	12.91	11.84	7.83	0.73	12.41	8.08	3.75	2.43	13.55	5.50	4.80	1.78
50th-Percentile Queue Length [ft/ln]	322.7	295.9	195.7	18.16	310.2	201.9	93.87	60.87	338.7	137.4	119.9	44.58
95th-Percentile Queue Length [veh/ln]	18.80	17.48	12.42	1.31	18.19	12.74	6.76	4.38	19.59	9.34	8.39	3.21
95th-Percentile Queue Length [ft/ln]	470.0	436.9	310.5	32.69	454.7	318.4	168.9	109.5	489.7	233.5	209.8	80.25

Movement, Approach, & Intersection Results

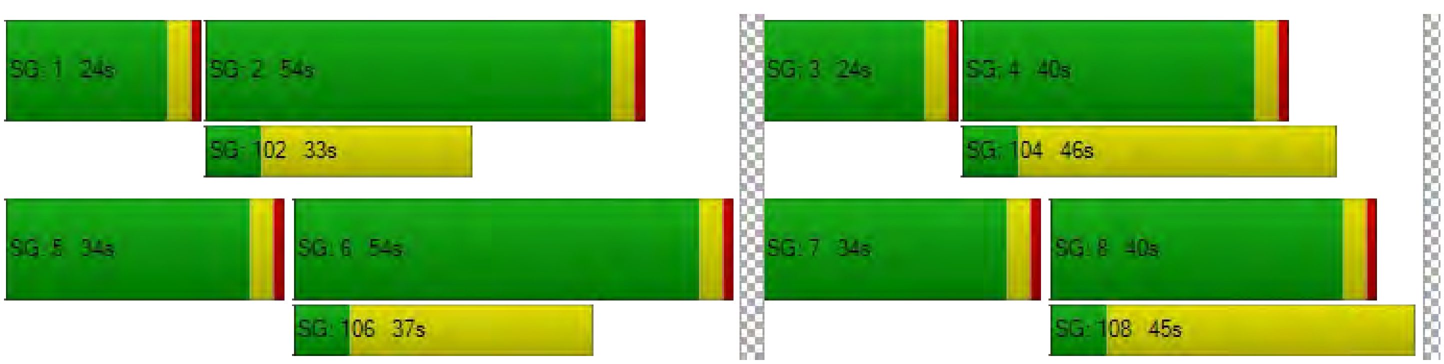
d_M, Delay for Movement [s/veh]	69.40	27.53	25.62	66.78	48.43	44.37	66.44	46.23	94.75	64.62	46.03	42.14
Movement LOS	E	C	C	E	D	D	E	D	F	E	D	D
d_A, Approach Delay [s/veh]	38.70			48.22			77.91			56.48		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	47.89											
Intersection LOS	D											
Intersection V/C	0.877											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.31	60.31	60.31	60.31
I_p,int, Pedestrian LOS Score for Intersection	3.314	3.204	2.740	2.632
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	705	705	508	508
d_b, Bicycle Delay [s]	29.70	29.76	39.53	39.45
I_b,int, Bicycle LOS Score for Intersection	2.879	2.330	2.502	2.409
Bicycle LOS	C	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Airport Way/SR 120 Westbound Ramps

Control Type:	Signalized	Delay (sec / veh):	288.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.744

Intersection Setup

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	280.0	100.0	100.0	100.0	100.0	400.0	100.0	100.0	100.0	100.0	100.0	500.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Base Volume Input [veh/h]	421	1494	0	0	963	500	0	0	0	180	3	596
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	14.00	3.00	2.00	2.00	8.00	6.00	2.00	2.00	2.00	8.00	0.00	7.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	421	1494	0	0	963	500	0	0	0	180	3	596
Peak Hour Factor	0.910	0.910	1.000	1.000	0.910	0.910	1.000	1.000	1.000	0.910	0.910	0.910
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	116	410	0	0	265	137	0	0	0	49	1	164
Total Analysis Volume [veh/h]	463	1642	0	0	1058	549	0	0	0	198	3	655
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			5			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	5	2	0	0	6	0	0	0	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	Lead	-
Minimum Green [s]	5	8	0	0	8	0	0	0	0	0	5	0
Maximum Green [s]	15	30	0	0	30	0	0	0	0	0	15	0
Amber [s]	3.0	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	3.6	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	19	36	0	0	36	0	0	0	0	0	20	0
Vehicle Extension [s]	3.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Walk [s]	0	10	0	0	10	0	0	0	0	0	10	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	Yes			Yes						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	R
C, Cycle Length [s]	74	74	74	74		74	74
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	5.30		4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	3.30		2.60	2.60
g_i, Effective Green Time [s]	15	49	30	30		15	15
g / C, Green / Cycle	0.20	0.66	0.41	0.41		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.32	0.98	0.66	0.41		0.13	0.48
s, saturation flow rate [veh/h]	1448	1669	1602	1351		1527	1373
c, Capacity [veh/h]	294	1107	650	548		310	279
d1, Uniform Delay [s]	29.45	12.45	21.95	21.59		27.03	29.45
k, delay calibration	0.50	0.50	0.50	0.41		0.09	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	274.48	222.39	289.12	35.12		1.87	618.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	1.57	1.48	1.63	1.00		0.65	2.35
d, Delay for Lane Group [s/veh]	303.93	234.84	311.07	56.71		28.90	648.03
Lane Group LOS	F	F	F	F		C	F
Critical Lane Group	No	Yes	No	No		No	Yes
50th-Percentile Queue Length [veh/ln]	27.39	81.63	62.42	13.80		3.28	52.60
50th-Percentile Queue Length [ft/ln]	684.67	2040.72	1560.49	345.00		82.01	1315.09
95th-Percentile Queue Length [veh/ln]	43.44	126.29	97.76	19.91		5.91	84.09
95th-Percentile Queue Length [ft/ln]	1085.98	3157.20	2443.95	497.77		147.63	2102.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	303.9	234.8	0.00	0.00	311.0	56.71	0.00	0.00	0.00	28.90	28.90	648.0
Movement LOS	F	F			F	F				C	C	F
d_A, Approach Delay [s/veh]	250.03			224.17			0.00			502.65		
Approach LOS	F			F			A			F		
d_I, Intersection Delay [s/veh]	288.27											
Intersection LOS	F											
Intersection V/C	1.744											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	831	831	0	417
d_b, Bicycle Delay [s]	12.63	12.66	36.95	23.15
I_b,int, Bicycle LOS Score for Intersection	5.033	4.211	4.132	1.560
Bicycle LOS	F	D	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 6: Aiport Way/Sr 120 Eastbound Ramps

Control Type:	Signalized	Delay (sec / veh):	409.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.860

Intersection Setup

Name				Airport Way								
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left2	Left	Right	Left	Right	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	225.0	300.0	100.0	100.0	100.0	100.0	575.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name				Airport Way								
Base Volume Input [veh/h]	0	1596	151	229	905	0	311	3	424	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	6.00	5.00	16.00	4.00	2.00	2.00	5.00	14.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1596	151	229	905	0	311	3	424	0	0	0
Peak Hour Factor	1.000	0.930	0.930	0.930	0.930	1.000	0.930	0.930	0.930	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	429	41	62	243	0	84	1	114	0	0	0
Total Analysis Volume [veh/h]	0	1716	162	246	973	0	334	3	456	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			6			0			0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	2	0	1	6	0	0	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	Lead	-	-	-	-
Minimum Green [s]	0	8	0	5	8	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	20	0	0	0	0
Amber [s]	0.0	4.3	0.0	3.0	4.3	0.0	0.0	3.6	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	36	0	34	36	0	0	25	0	0	0	0
Vehicle Extension [s]	0.0	0.2	0.0	2.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	0	0	10	0	0	10	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.3	0.0	2.0	3.3	0.0	0.0	2.6	0.0	0.0	0.0	0.0
Minimum Recall		Yes		No	Yes			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R	
C, Cycle Length [s]	79	79	79	79	79	79	
L, Total Lost Time per Cycle [s]	5.30	5.30	4.00	5.30	4.60	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.30	3.30	2.00	3.30	2.60	2.60	
g_i, Effective Green Time [s]	30	30	16	50	20	20	
g / C, Green / Cycle	0.38	0.38	0.20	0.62	0.25	0.25	
(v / s)_i Volume / Saturation Flow Rate	1.05	0.12	0.17	0.59	0.21	0.35	
s, saturation flow rate [veh/h]	1629	1396	1423	1656	1602	1293	
c, Capacity [veh/h]	614	527	280	1033	403	325	
d1, Uniform Delay [s]	24.77	17.45	31.04	13.63	28.21	29.77	
k, delay calibration	0.50	0.04	0.04	0.50	0.26	0.50	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	811.26	0.12	3.55	17.03	10.43	198.79	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	2.79	0.31	0.88	0.94	0.84	1.40	
d, Delay for Lane Group [s/veh]	836.02	17.57	34.58	30.66	38.64	228.55	
Lane Group LOS	F	B	C	C	D	F	
Critical Lane Group	Yes	No	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	149.18	2.01	4.70	17.68	6.99	23.87	
50th-Percentile Queue Length [ft/ln]	3729.51	50.19	117.42	441.98	174.65	596.83	
95th-Percentile Queue Length [veh/ln]	240.27	3.61	8.25	24.57	11.32	37.54	
95th-Percentile Queue Length [ft/ln]	6006.65	90.35	206.28	614.37	283.02	938.62	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	836.0	17.57	34.58	30.66	0.00	38.64	38.64	228.5	0.00	0.00	0.00
Movement LOS		F	B	C	C		D	D	F			
d_A, Approach Delay [s/veh]	765.42			31.45			147.85			0.00		
Approach LOS	F			C			F			A		
d_I, Intersection Delay [s/veh]	409.52											
Intersection LOS	F											
Intersection V/C	1.860											

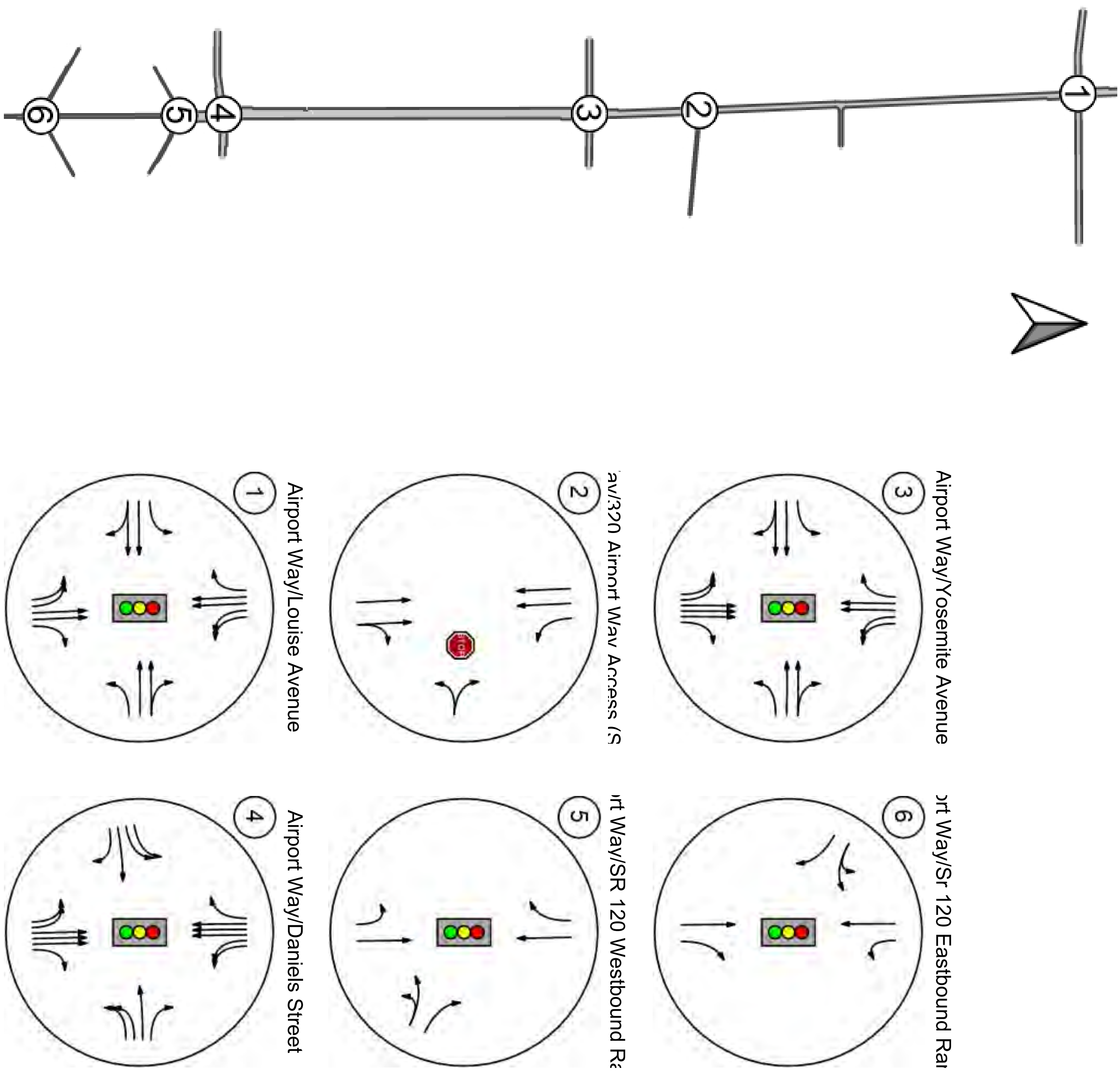
Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	773	773	513	0
d_b, Bicycle Delay [s]	14.97	15.01	21.95	39.74
I_b,int, Bicycle LOS Score for Intersection	4.658	3.571	1.560	4.132
Bicycle LOS	E	D	A	D

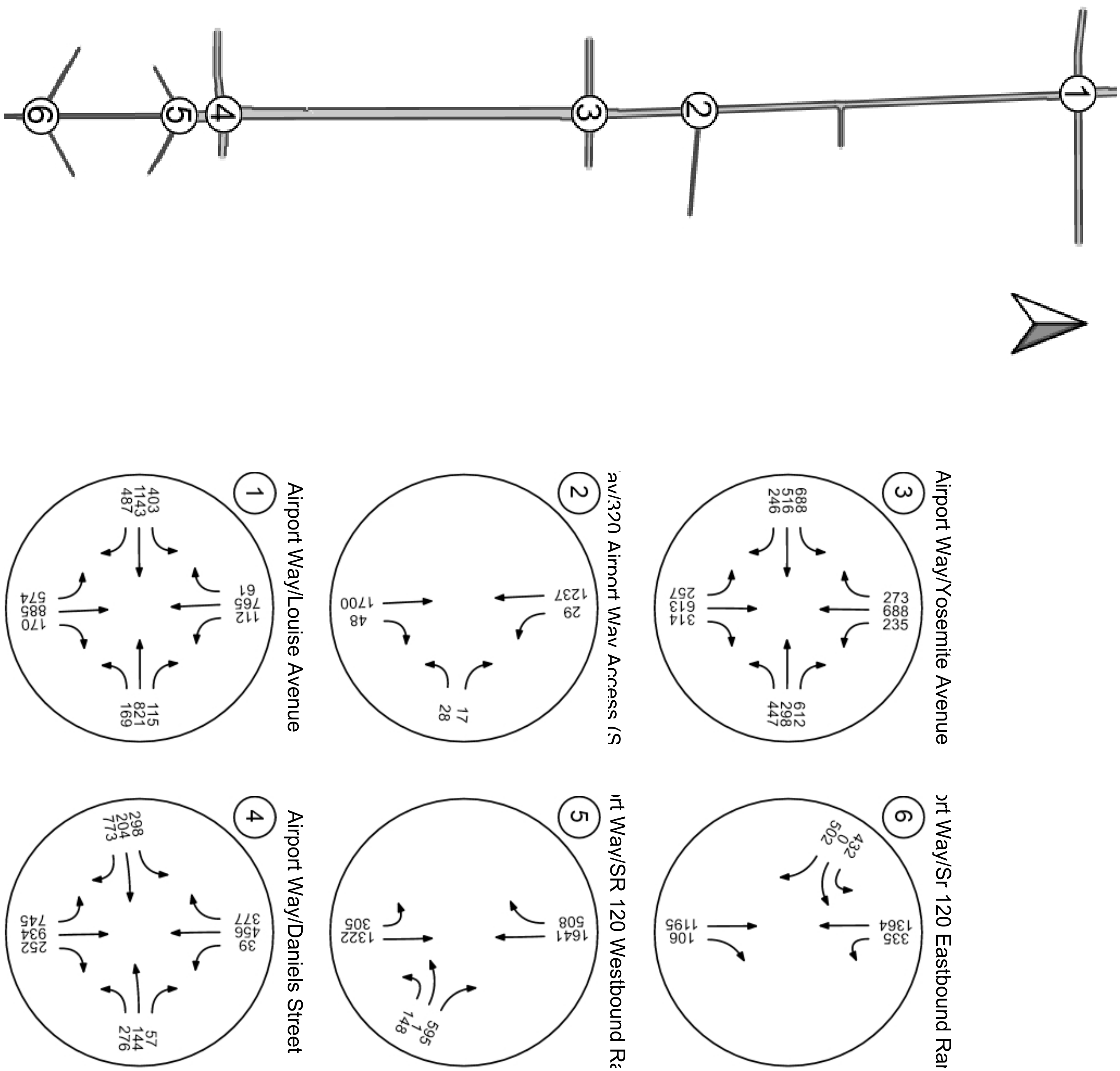
Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Report Figure 1: Lane Configuration and Traffic Control



Report Figure 2a: Traffic Volume - Base Volume



Intersection Level Of Service Report

Intersection 1: Airport Way/Louise Avenue

Control Type:	Signalized	Delay (sec / veh):	208.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.258

Intersection Setup

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	250.0	100.0	250.0	250.0	100.0	250.0	350.0	100.0	100.0	300.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Louise Avenue			Louise Avenue		
Base Volume Input [veh/h]	574	885	170	112	765	61	403	1143	487	169	821	115
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	7.00	5.00	2.00	1.00	6.00	16.00	11.00	1.00	4.00	0.00	1.00	8.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	574	885	170	112	765	61	403	1143	487	169	821	115
Peak Hour Factor	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	148	228	44	29	197	16	104	295	126	44	212	30
Total Analysis Volume [veh/h]	592	912	175	115	789	63	415	1178	502	174	846	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	137
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lagging Force-Off
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	0	7	4	0	5	2	0	1	6	7
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	10	0	6	10	0	6	10	0	6	10	6
Maximum Green [s]	20	40	0	20	40	0	25	30	0	25	30	20
Amber [s]	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	0.0	3.5	4.7	3.5
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	25	46	0	25	46	0	30	36	0	30	36	25
Vehicle Extension [s]	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	7	7	0
Pedestrian Clearance [s]	0	22	0	0	22	0	0	25	0	22	22	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	0.0	2.5	3.7	2.5
Minimum Recall	Yes	Yes		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	133	133	133	133	133	133	133	133	133	133	133	133
L, Total Lost Time per Cycle [s]	4.50	5.70	5.70	4.50	5.70	5.70	4.50	5.70	5.70	4.50	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.70	3.70	2.50	3.70	3.70	2.50	3.70	3.70	2.50	3.70	3.70
g_i, Effective Green Time [s]	20	50	50	7	37	37	25	39	39	16	30	30
g / C, Green / Cycle	0.15	0.38	0.38	0.05	0.28	0.28	0.19	0.29	0.29	0.12	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.20	0.29	0.12	0.04	0.25	0.05	0.28	0.50	0.55	0.11	0.29	0.29
s, saturation flow rate [veh/h]	2988	3127	1431	3138	3102	1270	1487	1696	1535	1629	1696	1624
c, Capacity [veh/h]	450	1185	542	167	873	358	280	495	448	199	383	367
d1, Uniform Delay [s]	56.40	36.15	29.17	61.79	45.96	36.05	53.90	47.03	47.03	57.26	51.40	51.40
k, delay calibration	0.17	0.23	0.23	0.11	0.23	0.23	0.50	0.50	0.50	0.12	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	147.6	2.29	0.73	4.98	7.58	0.50	235.3	322.2	402.5	12.33	147.0	148.3
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.32	0.77	0.32	0.69	0.90	0.18	1.48	1.70	1.88	0.87	1.29	1.29
d, Delay for Lane Group [s/veh]	204.0	38.44	29.90	66.77	53.54	36.55	289.2	369.2	449.5	69.60	198.4	199.7
Lane Group LOS	F	D	C	E	D	D	F	F	F	E	F	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	16.76	13.25	4.10	2.03	13.41	1.61	27.63	60.54	64.76	6.43	28.36	27.29
50th-Percentile Queue Length [ft/ln]	419.0	331.2	102.4	50.73	335.3	40.37	690.7	1513.	1618.	160.7	708.9	682.2
95th-Percentile Queue Length [veh/ln]	26.31	19.22	7.38	3.65	19.42	2.91	42.91	93.79	102.0	10.59	42.19	40.79
95th-Percentile Queue Length [ft/ln]	657.8	480.5	184.3	91.31	485.5	72.67	1072.	2344.	2551.	264.7	1054.	1019.

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	204.0	38.44	29.90	66.77	53.54	36.55	289.2	392.2	449.5	69.60	198.9	199.7
Movement LOS	F	D	C	E	D	D	F	F	F	E	F	F
d_A, Approach Delay [s/veh]	95.94			54.00			385.59			179.30		
Approach LOS	F			D			F			F		
d_I, Intersection Delay [s/veh]	208.39											
Intersection LOS	F											
Intersection V/C	1.258											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	55.85	55.85	55.85	55.85
I_p,int, Pedestrian LOS Score for Intersection	3.050	2.949	3.020	2.827
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	607	607	456	456
d_b, Bicycle Delay [s]	32.21	32.21	39.55	39.55
I_b,int, Bicycle LOS Score for Intersection	2.945	2.357	3.288	2.499
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 2: Airport Way/320 Airport Way Access (Street "B")

Control Type:	Two-way stop	Delay (sec / veh):	384.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.066

Intersection Setup

Name	Airport Way		Airport Way		Street "B"	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Airport Way		Airport Way		Street "B"	
Base Volume Input [veh/h]	1700	48	29	1237	28	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1700	48	29	1237	28	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	425	12	7	309	7	4
Total Analysis Volume [veh/h]	1700	48	29	1237	28	17
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.08	0.01	1.07	0.06
d_M, Delay for Movement [s/veh]	0.00	0.00	15.75	0.00	384.89	259.91
Movement LOS	A	A	C	A	F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.26	0.00	4.43	4.43
95th-Percentile Queue Length [ft/ln]	0.00	0.00	6.46	0.00	110.72	110.72
d_A, Approach Delay [s/veh]	0.00		0.36		337.68	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	5.12					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Airport Way/Yosemite Avenue

Control Type:	Signalized	Delay (sec / veh):	173.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.408

Intersection Setup

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	2	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	250.0	100.0	250.0	250.0	100.0	250.0	170.0	100.0	100.0	175.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.0	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Yosemite Avenue			Yosemite Avemue		
Base Volume Input [veh/h]	257	613	314	235	688	273	688	516	246	447	298	612
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	10.00	5.00	2.00	4.00	2.00	19.00	6.00	3.00	7.00	2.00	4.00	3.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	257	613	314	235	688	273	688	516	246	447	298	612
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	68	161	83	62	181	72	181	136	65	118	78	161
Total Analysis Volume [veh/h]	271	645	331	247	724	287	724	543	259	471	314	644
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			2			2		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	164
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Overla	Protec	Permi	Overla	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	3	8	5	7	4	1	1	6	0	5	2	0
Auxiliary Signal Groups			5,8			1,4						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	35	30	30	35	30	30	50	0	30	40	0
Amber [s]	3.0	4.0	3.0	3.0	4.0	3.0	3.0	4.4	0.0	3.0	4.4	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	40	34	34	40	34	34	56	0	34	46	0
Vehicle Extension [s]	1.0	6.5	1.0	1.0	6.5	1.0	1.0	7.0	0.0	1.0	7.0	0.0
Walk [s]	0	8	0	0	8	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	13	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.0	2.0	2.0	3.0	2.0	2.0	3.4	0.0	2.0	3.4	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	142	142	142	142	142	142	142	142	142	142	142	142
L, Total Lost Time per Cycle [s]	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.40	5.40	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.00	0.00	2.00	3.00	0.00	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	15	36	71	13	35	70	30	44	44	30	44	44
g / C, Green / Cycle	0.11	0.26	0.50	0.09	0.24	0.49	0.21	0.31	0.31	0.21	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.09	0.14	0.23	0.08	0.23	0.23	0.47	0.25	0.26	0.29	0.19	0.46
s, saturation flow rate [veh/h]	2913	4474	1421	3063	3204	1235	1551	1669	1478	1603	1656	1389
c, Capacity [veh/h]	312	1143	712	291	779	605	327	516	457	338	512	429
d1, Uniform Delay [s]	62.45	46.04	22.96	63.32	52.60	24.14	56.07	45.20	45.89	56.07	41.86	49.10
k, delay calibration	0.04	0.52	0.50	0.04	0.52	0.50	0.50	0.69	0.69	0.50	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.88	2.11	2.17	2.69	19.64	2.66	554.8	16.92	22.36	193.7	7.42	241.3
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.56	0.46	0.85	0.93	0.47	2.21	0.81	0.84	1.39	0.61	1.50
d, Delay for Lane Group [s/veh]	65.33	48.15	25.13	66.01	72.24	26.80	610.9	62.12	68.25	249.7	49.28	290.4
Lane Group LOS	E	D	C	E	E	C	F	E	E	F	D	F
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.95	6.87	7.64	4.52	14.73	6.89	62.18	15.95	15.55	30.30	10.50	43.92
50th-Percentile Queue Length [ft/ln]	123.8	171.8	191.1	112.9	368.3	172.2	1554.	398.6	388.6	757.5	262.3	1097.
95th-Percentile Queue Length [veh/ln]	8.61	11.17	12.18	8.00	21.03	11.20	98.03	22.49	22.01	45.99	15.81	67.52
95th-Percentile Queue Length [ft/ln]	215.1	279.3	304.4	200.0	525.7	279.9	2450.	562.3	550.2	1149.	395.2	1688.

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.33	48.15	25.13	66.01	72.24	26.80	610.9	63.55	68.25	249.7	49.28	290.4
Movement LOS	E	D	C	E	E	C	F	E	E	F	D	F
d_A, Approach Delay [s/veh]	45.77			60.65			324.04			224.06		
Approach LOS	D			E			F			F		
d_I, Intersection Delay [s/veh]	173.63											
Intersection LOS	F											
Intersection V/C	1.408											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.48	59.48	59.48	59.48
I_p,int, Pedestrian LOS Score for Intersection	3.251	3.145	2.789	2.818
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	493	493	713	572
d_b, Bicycle Delay [s]	40.31	40.29	29.42	36.22
I_b,int, Bicycle LOS Score for Intersection	2.245	2.597	2.819	2.739
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Airport Way/Daniels Street

Control Type:	Signalized	Delay (sec / veh):	161.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.341

Intersection Setup

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	20.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	2	0	1	1	0	1	1	0	1	2	0	1
Entry Pocket Length [ft]	280.0	100.0	300.0	250.0	100.0	250.0	215.0	100.0	215.0	155.0	100.0	250.0
No. of Lanes in Exit Pocket	0	0	2	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Airport Way			Airport Way			Daniels Street			Daniels Street		
Base Volume Input [veh/h]	745	934	252	39	456	377	298	204	773	276	144	57
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	6.00	0.00	0.00	5.00	0.00	0.00	1.00	1.00	0.00	1.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	745	934	252	39	456	377	298	204	773	276	144	57
Peak Hour Factor	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	196	246	66	10	120	99	78	54	203	73	38	15
Total Analysis Volume [veh/h]	784	983	265	41	480	397	314	215	814	291	152	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			4			4			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	162
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi	Protec	Permi	Permi
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	8	0
Maximum Green [s]	30	50	0	20	50	0	30	36	0	20	36	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	54	0	24	54	0	34	40	0	24	40	0
Vehicle Extension [s]	3.0	7.0	0.0	3.0	7.0	0.0	2.0	7.0	0.0	2.0	7.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	30	0	0	39	0	0	38	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	143	143	143	143	143	143	143	143	143	143	143	143
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	69	69	6	46	46	16	36	36	15	35	35
g / C, Green / Cycle	0.21	0.48	0.48	0.05	0.32	0.32	0.11	0.25	0.25	0.11	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.25	0.22	0.18	0.01	0.11	0.28	0.10	0.13	0.57	0.09	0.09	0.04
s, saturation flow rate [veh/h]	3163	4437	1512	3163	4474	1432	3163	1696	1420	3163	1696	1431
c, Capacity [veh/h]	664	2147	731	144	1429	457	364	428	358	337	414	349
d1, Uniform Delay [s]	56.46	24.46	23.09	65.96	37.08	45.54	62.14	45.76	53.16	62.82	44.88	42.59
k, delay calibration	0.15	0.69	0.69	0.11	0.69	0.69	0.04	0.69	0.69	0.04	0.69	0.69
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	86.42	0.98	1.93	1.07	0.88	25.20	2.42	5.75	585.4	2.60	3.46	1.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.18	0.46	0.36	0.29	0.34	0.87	0.86	0.50	2.27	0.86	0.37	0.17
d, Delay for Lane Group [s/veh]	142.8	25.44	25.01	67.04	37.96	70.74	64.57	51.51	638.5	65.41	48.35	44.01
Lane Group LOS	F	C	C	E	D	E	E	D	F	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	19.92	7.59	6.04	0.75	4.44	16.37	5.74	7.27	70.96	5.34	4.92	1.78
50th-Percentile Queue Length [ft/ln]	497.9	189.8	151.0	18.70	110.9	409.3	143.5	181.8	1774.	133.4	123.0	44.40
95th-Percentile Queue Length [veh/ln]	29.68	12.11	10.07	1.35	7.89	23.01	9.67	11.70	112.8	9.13	8.56	3.20
95th-Percentile Queue Length [ft/ln]	742.0	302.8	251.7	33.66	197.3	575.2	241.7	292.4	2820.	228.2	214.0	79.93

Movement, Approach, & Intersection Results

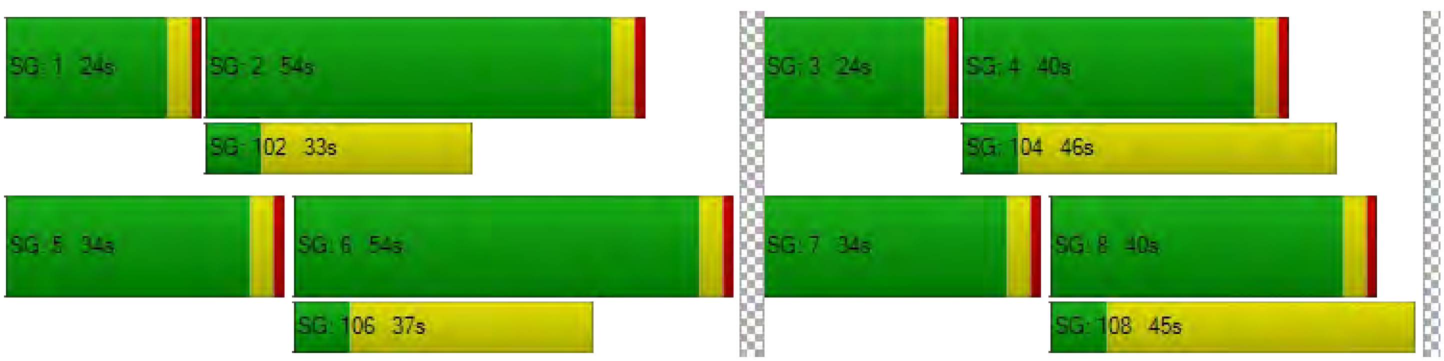
d_M, Delay for Movement [s/veh]	142.8	25.44	25.01	67.04	37.96	70.74	64.57	51.51	638.5	65.41	48.35	44.01
Movement LOS	F	C	C	E	D	E	E	D	F	E	D	D
d_A, Approach Delay [s/veh]	70.69			53.44			410.38			57.76		
Approach LOS	E			D			F			E		
d_I, Intersection Delay [s/veh]	161.20											
Intersection LOS	F											
Intersection V/C	1.341											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.82	60.82	60.82	60.82
I_p,int, Pedestrian LOS Score for Intersection	3.263	3.117	2.910	2.641
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	700	504	504
d_b, Bicycle Delay [s]	30.15	30.21	40.01	39.93
I_b,int, Bicycle LOS Score for Intersection	2.677	2.065	3.776	2.386
Bicycle LOS	B	B	D	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Airport Way/SR 120 Westbound Ramps

Control Type:	Signalized	Delay (sec / veh):	379.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.012

Intersection Setup

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	280.0	100.0	100.0	100.0	100.0	400.0	100.0	100.0	100.0	100.0	100.0	500.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			No			No		

Volumes

Name	Airport Way			Airport Way			SR 120 WB Ramp			SR 120 WB Ramp		
Base Volume Input [veh/h]	305	1322	0	0	1641	508	0	0	0	148	1	595
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	19.00	2.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00	4.00	0.00	4.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	305	1322	0	0	1641	508	0	0	0	148	1	595
Peak Hour Factor	0.960	0.960	1.000	1.000	0.960	0.960	1.000	1.000	1.000	0.970	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	79	344	0	0	427	132	0	0	0	38	0	155
Total Analysis Volume [veh/h]	318	1377	0	0	1709	529	0	0	0	153	1	620
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			5			0			0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	5	2	0	0	6	0	0	0	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	Lead	-
Minimum Green [s]	5	8	0	0	8	0	0	0	0	0	5	0
Maximum Green [s]	15	30	0	0	30	0	0	0	0	0	15	0
Amber [s]	3.0	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	3.6	0.0
All red [s]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	19	36	0	0	36	0	0	0	0	0	20	0
Vehicle Extension [s]	3.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Walk [s]	0	10	0	0	10	0	0	0	0	0	10	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.3	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	2.6	0.0
Minimum Recall	No	Yes			Yes						No	
Maximum Recall	No	No			No						No	
Pedestrian Recall	No	No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R		L	R
C, Cycle Length [s]	74	74	74	74		74	74
L, Total Lost Time per Cycle [s]	4.00	5.30	5.30	5.30		4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.30	3.30	3.30		2.60	2.60
g_i, Effective Green Time [s]	15	49	30	30		15	15
g / C, Green / Cycle	0.20	0.66	0.41	0.41		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.23	0.82	1.02	0.38		0.10	0.44
s, saturation flow rate [veh/h]	1384	1683	1683	1407		1577	1408
c, Capacity [veh/h]	281	1116	683	571		320	286
d1, Uniform Delay [s]	29.45	12.45	21.95	20.59		26.01	29.45
k, delay calibration	0.50	0.50	0.50	0.35		0.04	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	94.00	113.20	680.00	17.92		0.42	537.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	1.13	1.23	2.50	0.93		0.48	2.17
d, Delay for Lane Group [s/veh]	123.45	125.65	701.95	38.51		26.43	567.42
Lane Group LOS	F	F	F	D		C	F
Critical Lane Group	Yes	No	Yes	No		No	Yes
50th-Percentile Queue Length [veh/ln]	12.09	48.44	139.76	10.62		2.34	47.53
50th-Percentile Queue Length [ft/ln]	302.16	1211.09	3493.97	265.52		58.42	1188.14
95th-Percentile Queue Length [veh/ln]	18.91	70.54	225.79	15.97		4.21	75.98
95th-Percentile Queue Length [ft/ln]	472.66	1763.46	5644.82	399.13		105.16	1899.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	123.4	125.6	0.00	0.00	701.9	38.51	0.00	0.00	0.00	26.43	26.43	567.4
Movement LOS	F	F			F	D				C	C	F
d_A, Approach Delay [s/veh]	125.23			545.13			0.00			459.78		
Approach LOS	F			F			A			F		
d_I, Intersection Delay [s/veh]	379.89											
Intersection LOS	F											
Intersection V/C	2.012											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	831	831	0	417
d_b, Bicycle Delay [s]	12.63	12.66	36.95	23.15
I_b,int, Bicycle LOS Score for Intersection	4.356	5.252	4.132	1.560
Bicycle LOS	E	F	D	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Aiport Way/Sr 120 Eastbound Ramps

Control Type:	Signalized	Delay (sec / veh):	297.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.395

Intersection Setup

Name				Airport Way								
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left2	Left	Right	Left	Right	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.0	100.0	225.0	300.0	100.0	100.0	100.0	100.0	575.0	100.0	100.0	100.0
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name				Airport Way								
Base Volume Input [veh/h]	0	1195	106	335	1364	0	432	0	502	0	0	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	6.00	7.00	4.00	2.00	2.00	1.00	0.00	7.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1195	106	335	1364	0	432	0	502	0	0	0
Peak Hour Factor	1.000	0.940	0.940	0.940	0.940	1.000	0.940	0.940	0.940	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	318	28	89	363	0	115	0	134	0	0	0
Total Analysis Volume [veh/h]	0	1271	113	356	1451	0	460	0	534	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			6			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Permi	Permi	Protec	Permi	Permi	Permi	Permi	Permi	Permi	Permi	Permi
Signal Group	0	2	0	1	6	0	0	4	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	Lead	-	-	-	-
Minimum Green [s]	0	8	0	5	8	0	0	5	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	20	0	0	0	0
Amber [s]	0.0	4.3	0.0	3.0	4.3	0.0	0.0	3.6	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	36	0	34	36	0	0	25	0	0	0	0
Vehicle Extension [s]	0.0	0.2	0.0	2.0	0.2	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	0	0	10	0	0	10	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.3	0.0	2.0	3.3	0.0	0.0	2.6	0.0	0.0	0.0	0.0
Minimum Recall		Yes		No	Yes			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R	
C, Cycle Length [s]	85	85	85	85	85	85	
L, Total Lost Time per Cycle [s]	5.30	5.30	4.00	5.30	4.60	4.60	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.30	3.30	2.00	3.30	2.60	2.60	
g_i, Effective Green Time [s]	30	30	21	55	20	20	
g / C, Green / Cycle	0.35	0.35	0.25	0.65	0.24	0.24	
(v / s)_i Volume / Saturation Flow Rate	0.78	0.08	0.23	0.86	0.28	0.39	
s, saturation flow rate [veh/h]	1629	1373	1577	1683	1616	1373	
c, Capacity [veh/h]	576	485	390	1090	381	324	
d1, Uniform Delay [s]	27.44	19.34	31.06	14.95	32.44	32.44	
k, delay calibration	0.50	0.04	0.13	0.50	0.50	0.50	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	549.17	0.09	10.09	155.30	115.95	306.27	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	2.21	0.23	0.91	1.33	1.21	1.65	
d, Delay for Lane Group [s/veh]	576.61	19.43	41.15	170.25	148.40	338.71	
Lane Group LOS	F	B	D	F	F	F	
Critical Lane Group	Yes	No	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	98.82	1.53	7.93	63.81	19.80	33.93	
50th-Percentile Queue Length [ft/ln]	2470.41	38.33	198.20	1595.25	494.89	848.16	
95th-Percentile Queue Length [veh/ln]	158.26	2.76	12.55	95.00	29.92	53.83	
95th-Percentile Queue Length [ft/ln]	3956.54	68.99	313.65	2374.89	748.05	1345.85	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	576.6	19.43	41.15	170.2	0.00	148.4	148.4	338.7	0.00	0.00	0.00
Movement LOS		F	B	D	F		F	F	F			
d_A, Approach Delay [s/veh]	531.12			144.82			250.64			0.00		
Approach LOS	F			F			F			A		
d_I, Intersection Delay [s/veh]	297.70											
Intersection LOS	F											
Intersection V/C	1.395											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	724	724	481	0
d_b, Bicycle Delay [s]	17.28	17.33	24.48	42.43
I_b,int, Bicycle LOS Score for Intersection	3.843	4.541	1.560	4.132
Bicycle LOS	D	E	A	D

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SIGNAL WARRANTS

MUTCD SIGNAL WARRANT ANALYSIS

KITTELSON & ASSOCIATES, INC.
155 Grand Avenue, Suite 505
Oakland, CA 94612
Phone: (510) 839-1742

Project #: 26746
Project Name: Manteca 320 Airport Way
Analyst: MNA
Date: 11/18/2021
Intersection: Airport Way and Project Access
Scenario: Cumulative + Project AM

Input Assumptions	
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	Yes
Population < 10,000?	Yes

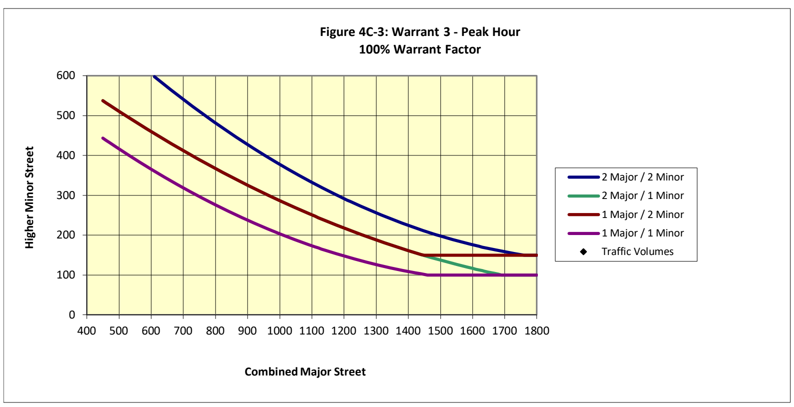
Analysis Volumes	
Major Street	
NB	1153
SB	1355
Minor Street	
EB	0
WB	68

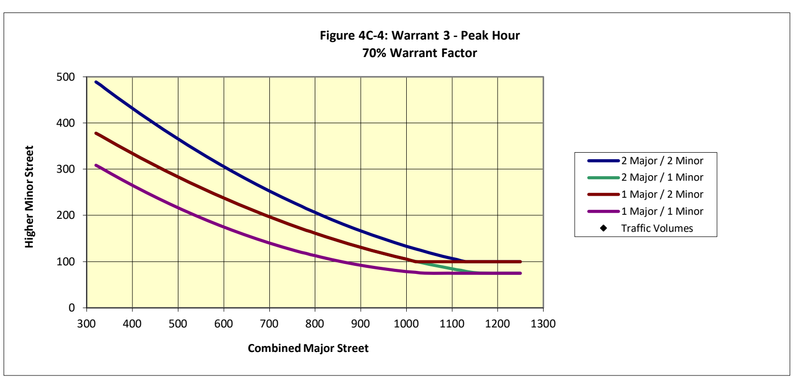
WARRANT 3 - Peak Hour **SATISFIED** No

PART A **SATISFIED** No

		EB	WB
1	Total Stopped Delay Per Vehicle On Minor Approach (sec)	0.0	91.5
	Number Of Lanes On Minor Street Approach	0	1
	Vehicle-Hours Of Stopped Delay On Minor Approach	0.00	1.73
	Satisfied	**No**	**No**
2	Volume on Minor Street Approach During Same Hour	0	68
	Satisfied	**No**	**No**
3	Total Entering Volume On All Approaches During Same Hour	2576	
	Number of Approaches to Intersection	4	
	Satisfied	**Yes**	

PART B **SATISFIED** No





File: H:\26\26746 - Manteca 320 Airport TIA\analysis\warrants\[26746_Signal_Warrant_Airport_Project_CumProj_AM.xlsm]SummaryPeak

MUTCD SIGNAL WARRANT ANALYSIS

KITTELSON & ASSOCIATES, INC.
155 Grand Avenue, Suite 505
Oakland, CA 94612
Phone: (510) 839-1742

Project #: 26746
Project Name: Manteca 320 Airport Way
Analyst: MNA
Date: 11/18/2021
Intersection: Airport Way and Project Access
Scenario: Cumulative + Project PM

Input Assumptions	
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	Yes
Population < 10,000?	Yes

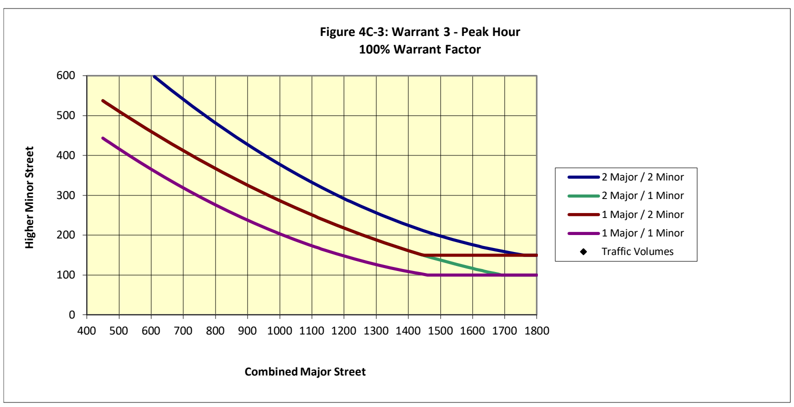
Analysis Volumes	
Major Street	
NB	1748
SB	1266
Minor Street	
EB	0
WB	45

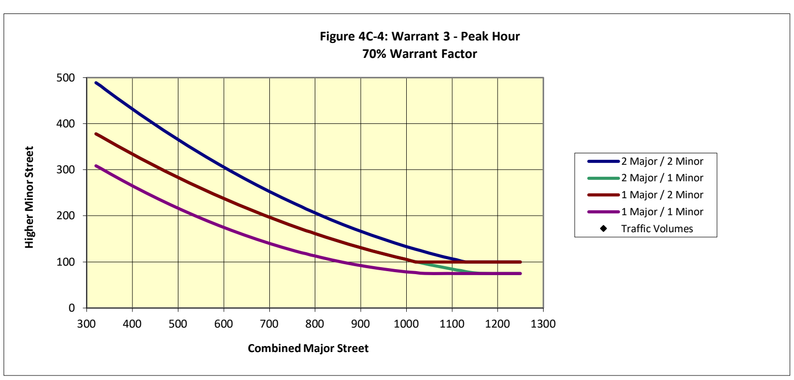
WARRANT 3 - Peak Hour **SATISFIED** No

PART A **SATISFIED** No

		EB	WB
1	Total Stopped Delay Per Vehicle On Minor Approach (sec)	0.0	384.9
	Number Of Lanes On Minor Street Approach	0	1
	Vehicle-Hours Of Stopped Delay On Minor Approach	0.00	4.81
	Satisfied	**No**	**Yes**
2	Volume on Minor Street Approach During Same Hour	0	45
	Satisfied	**No**	**No**
3	Total Entering Volume On All Approaches During Same Hour	3059	
	Number of Approaches to Intersection	4	
	Satisfied	**Yes**	

PART B **SATISFIED** No





File: H:\26\26746 - Manteca 320 Airport TIA\analysis\warrants\[26746_Signal_Warrant_Airport_Project_CumProj_PM.xlsm]SummaryPeak