Appendix A

Air Quality and Greenhouse Gas Analysis

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PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

MEMORANDUM

DATE: July 7, 2023

TO: James Pierson, Solano Landing, LLC

FROM: Amy Fischer, President
Cara Cunningham, Associate

SUBJECT: Air Quality and Greenhouse Gas Analysis for the proposed Solano Landing Project, Solano County, California

INTRODUCTION

LSA prepared this Air Quality and Greenhouse Gas Emissions Analysis for the proposed Solano Landing Project (project) in Solano County, California using methods and assumptions recommended by the Bay Area Air Quality Management District (BAAQMD) (2023). This analysis includes a description of the proposed project, the existing regulatory framework, an assessment of project construction and operation-period air quality and greenhouse gas (GHG) emissions, an assessment of potential health risks, and an evaluation of the project's compliance with adopted plans related to the reduction of clean air and GHG emissions.

PROJECT DESCRIPTION

The 24.42-acre project site is located at 2316 Rockville Road, (Assessor's Parcel Number 0027-200-150), in Solano County, California. The project site is currently undeveloped and is accessible via Suisun Valley Road and Rockville Road (Figure 1, Regional Project Location, and Figure 2, Site Plan; all figures provided as Attachment B).

The proposed project would include the construction of a total of 32,141 square feet (sf) of commercial development. The development of the property would include the following.

- Boutique Market: The market would be known as the "Icehouse Market". The market would help to preserve some of the history of the property through its name as well as the iconic red building that has been known as the "Icehouse". The market would be 5,496 sf and would sell locally grown products grown in the Suisun Valley and promoted on the property. The market would help celebrate and further the Suisun Valley's agricultural traditions and help satisfy the local regional demand for fresh, locally grown food. The market would have a deli with a custom lunch menu including sandwiches, meats, salads and other items. The market would also have a barista and assortment of coffee-related items. The hours of operation for the market would be Monday through Sunday, 7:00 a.m. to 8:00 p.m.

- Tasting Rooms: There would be six stand-alone tasting rooms with 1,500 sf each. Three of the six tasting rooms would feature wines from wineries and/or breweries that are locally grown or brewed in Solano County. The remaining three tasting rooms would have high-quality wines from outside Solano County that would only enhance the Suisun Valley wines. Grapes would be locally sourced from on-site, in Solano County and bordering counties. Food and wine pairings are proposed in the tasting rooms, consistent with approval of similar requests and during agricultural promotional events. The hours of operation for the tasting rooms would be Thursday through Sunday, 10:00 a.m. to 5:00 p.m.

- Multi-Purpose/Dining Hall: The Multi-Purpose/Dining Hall would be 3,655 sf. This facility would host no more than 24 events per year and would host a maximum of 300 guests at one time. The Multi-Purpose/Dining Hall would support the hotel and other property-related events and educational seminars related to agriculture, vineyards, and safety. The hours of operation of this facility would be event specific and no event would go past 10:00 p.m.

- Restaurant: The restaurant would be 7,462 sf. Its menu would feature local produce, meats, and poultry. The restaurant would have a beer and wine license. The hours of operation for the restaurant would be Wednesday through Monday (closed on Tuesday), 10:00 a.m. to 3:00 p.m. for lunch and 5:30 p.m. – 10:00 p.m. for dinner.

- Hotel Concierge: The hotel concierge building would consist of 1,728 sf. This building would be used for administering the daily needs of the Boutique Hotel. The hours of operation for the hotel concierge would be Monday through Sunday, 24 hours per day.

- Boutique Hotel: The Boutique hotel would consist of 10 prefabricated, standalone cottages with approximate square footage of 480 per unit for a total of 4,800 sf. The hotel would be owner-operated by the current landowners. The hours of operation for the hotel would be Monday through Sunday, 24 hours per day.

The proposed project would include a total of 192 parking spaces and would include a shuttle service from the project site to designated spots within the Suisun Valley. The proposed project is expected to generate 1,179 average daily trips. In addition, the proposed project would include three natural gas, 350-kilowatt (kW) generators with a runtime of 4 hours per month for testing, plus any emergency events, and three annual events with run times of 72 hours each.

Construction is expected to begin in 2024 and would be completed by 2025. Construction would include grading, site preparation, building, paving, and architectural coating (painting) activities. The project site would be balanced, with no import or export activities.

EXISTING SENSITIVE RECEPTORS IN THE PROJECT AREA

For the purposes of this analysis, sensitive receptors are areas of population that have an increased sensitivity to air pollution or environmental contaminants. Sensitive receptor locations include residences, schools, day care centers, hospitals, parks, and similar uses which are sensitive to air quality. Impacts on sensitive receptors are of particular concern because they are the population most vulnerable to the effects of air pollution. The project site is surrounded by existing single-

family residential uses, commercial uses, and undeveloped land. The closest sensitive receptors to the project site include single-family homes immediately adjacent to the project site boundary, approximately 5 feet away.

ENVIRONMENTAL SETTING

Air Quality Background

Air quality is primarily a function of both local climate, local sources of air pollution and regional pollution transport. The amount of a given pollutant in the atmosphere is determined by the amount of the pollutant released and the atmosphere's ability to transport and dilute the pollutant. The major determinants of transport and dilution are wind, atmospheric stability, terrain, and for photochemical pollutants, sunshine.

A region's topographic features have a direct correlation with air pollution flow and, therefore, are used to determine the boundary of air basins. Solano County is within the San Francisco Bay Area Air Basin (Air Basin), a large shallow air basin ringed by hills that taper into a number of sheltered valleys around the perimeter. Two primary atmospheric outlets exist. One is through the strait known as the Golden Gate, a direct outlet to the Pacific Ocean. The second extends to the northeast, along the west delta region of the Sacramento and San Joaquin rivers.

Solano County is within the jurisdiction of the BAAQMD, which regulates air quality in the Bay Area. Air quality conditions in the Bay Area have improved significantly since the BAAQMD was created in 1955. Ambient concentrations of air pollutants and the number of days during which the region exceeds air quality standards have fallen dramatically. Neither State nor national ambient air quality standards of the following chemicals have been violated in recent decades: nitrogen dioxide, sulfur dioxide, sulfates, lead, hydrogen sulfide, and vinyl chloride. Those exceedances of air quality standards that do occur primarily happen during meteorological conditions conducive to high pollution levels, such as cold, windless nights or hot, sunny summer afternoons.

Both State and federal governments have established health-based Ambient Air Quality Standards for six criteria air pollutants: carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and suspended particulate matter. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. Two criteria pollutants, O_3 and NO_2, are considered regional pollutants because they (or their precursors) affect air quality on a regional scale. Pollutants such as CO, SO_2, and Pb are considered local pollutants that tend to accumulate in the air locally. The BAAQMD is under State nonattainment status for O_3 and particulate matter standards. The BAAQMD is classified as nonattainment for the federal O_3 8-hour standard and nonattainment for the federal $PM_{2.5}$ 24-hour standard. As such, the primary pollutants of concern in the project area are O_3, CO, and $PM_{2.5}$.

Because of the conservative nature of the significance thresholds, and the basin-wide context of individual development project emissions, there is no direct correlation between a single project and localized air quality-related health effects. One individual project that generates emissions exceeding a threshold does not necessarily result in adverse health effects for residents in the project vicinity. This condition is especially true when the criteria pollutants exceeding thresholds

are those with regional effects, such as O_3 precursors like nitrogen oxides (NO_x) and reactive organic gases (ROG).

Further, by its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to by itself result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant. In developing thresholds of significance for air pollutants, the air districts have considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

Occupants of facilities such as schools, daycare centers, parks and playgrounds, hospitals, and nursing and convalescent homes are considered to be more sensitive than the general public to air pollutants because these population groups have increased susceptibility to respiratory disease. Persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality. Residential areas are considered more sensitive to air quality conditions, compared to commercial and industrial areas, because people generally spend longer periods of time at their residences, with greater associated exposure to ambient air quality conditions. Recreational uses are also considered sensitive compared to commercial and industrial uses due to greater exposure to ambient air quality conditions associated with exercise. These populations are referred to as sensitive receptors.

Greenhouse Gas and Global Climate Change Background

GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change are:

- Carbon dioxide (CO_2);
- Methane (CH_4);
- Nitrous oxide (N_2O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulfur Hexafluoride (SF_6).

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere and enhancing the natural greenhouse effect, which is believed to be causing global warming. While manmade GHGs include naturally occurring GHGs such as CO_2, CH_4, and N_2O, some gases, like HFCs, PFCs, and SF_6 are completely new to the atmosphere.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs above because it is short-lived in the atmosphere and its

atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

These gases vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to CO_2, the most abundant GHG; the definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2e).

REGULATORY FRAMEWORK

This section provides regulatory background information for air quality and GHGs.

Air Quality

Federal Regulations

The 1970 federal Clean Air Act (CAA) authorized the establishment of national health-based air quality standards and set deadlines for their attainment. The CAA Amendments of 1990 changed deadlines for attaining national standards as well as the remedial actions required for areas of the nation that exceed the standards. Under the CAA, State and local agencies in areas that exceed the national standards are required to develop State Implementation Plans to demonstrate how they will achieve the national standards by specified dates.

State Regulations

In 1988, the California Clean Air Act (CCAA) required that all air districts in the State endeavor to achieve and maintain California Ambient Air Quality Standards (CAAQS) for CO, O_3, sulfur dioxide (SO_2), and nitrogen dioxide (NO_2) by the earliest practical date. The CCAA provides districts with authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emission sources. Each nonattainment district is required to adopt a plan to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. A Clean Air Plan shows how a district would reduce emissions to achieve air quality standards. Generally, the State standards for these pollutants are more stringent than the national standards.

The California Air Resources Board (CARB) is the State's "clean air agency." The CARB's goals are to attain and maintain healthy air quality, protect the public from exposure to toxic air contaminants, and oversee compliance with air pollution rules and regulations.

Regional Regulations

The BAAQMD seeks to attain and maintain air quality conditions in the Air Basin through a comprehensive program of planning, regulation, enforcement, technical innovation, and education.

The clean air strategy includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. The BAAQMD also inspects stationary sources and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by law.

Clean Air Plan. The Clean Air Plan guides the region's air quality planning efforts to attain the CAAQS (BAAQMD 2017). The BAAQMD 2017 Clean Air Plan, adopted on April 19, 2017, by the BAAQMD Board of Directors, is the current Clean Air Plan that contains district-wide control measures to reduce ozone precursor emissions (e.g., ROG and NO_x), particulate matter and GHG emissions.

The Bay Area 2017 Clean Air Plan:

- Describes the BAAQMD plan towards attaining all State and federal air quality standards and eliminating health risk disparities from exposure to air pollution among Bay Area communities
- Defines a vision for transitioning the region to a post-carbon economy needed to achieve ambitious GHG reduction targets for 2030 and 2050.
- Provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve GHG reduction targets.
- Includes a wide range of control measures designed to decrease emissions of air pollutants that are most harmful to Bay Area residents, such as particulate matter, O_3, and toxic air contaminants; to reduce emissions of methane and other "Super-GHGs" that are potent climate pollutants in the near term; and to decrease emissions of CO_2 by reducing fossil fuel combustion.

BAAQMD CEQA Guidelines. The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area (BAAQMD 2023). The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. They also include recommended assessment methodologies for air toxics, odors, and GHG emissions.

In 2023, the BAAQMD published an updated version of the CEQA Guidelines. The BAAQMD CEQA Guidelines include thresholds to evaluate project impacts to protectively evaluate the potential effects of the project on air quality. These protective thresholds are appropriate in the context of the size, scale, and location of the proposed project.

Local Regulations

The Public Health and Safety Chapter of the *Solano County General Plan* (County of Solano 2008) includes air quality policies and implementation programs that work to improve air quality in Solano County. The following policies are applicable to the proposed project.

- **Policy HS.P-43:** Support land use, transportation management, infrastructure and environmental planning programs that reduce vehicle emissions and improve air quality.

- **Policy HS.P-44:** Minimize health impacts from sources of toxic air contaminants, both stationary (e.g., refineries, manufacturing plants) as well as mobile sources (e.g., freeways, rail yards, commercial trucking operations).

- **Policy HS.P-45:** Promote consistency and cooperation in air quality planning efforts.

Greenhouse Gas Emissions

This section describes regulations related to global climate change at the federal, State, and local level.

Federal Regulations

The United States has historically had a voluntary approach to reducing GHG emissions. However, on April 2, 2007, the United States Supreme Court ruled that the United States Environmental Protection Agency (EPA) has the authority to regulate CO_2 emissions under the CAA.

While there currently are no adopted federal regulations for the control or reduction of GHG emissions, the EPA commenced several actions in 2009 to implement a regulatory approach to global climate change, including the 2009 EPA final rule for mandatory reporting of GHGs from large GHG emission sources in the United States. Additionally, the EPA Administrator signed an endangerment finding action in 2009 under the CAA, finding that seven GHGs (CO_2, CH_4, N_2O, HFCs, nitrogen trifluoride [NF_3], PFCs, and SF_6) constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to global climate change, leading to national GHG emission standards.

State Regulations

The CARB is the lead agency for implementing climate change regulations in the State. Since its formation, the CARB has worked with the public, the business sector, and local governments to find solutions to California's air pollution problems. Key efforts by the State are described below.

Assembly Bill 32 (2006), California Global Warming Solutions Act. California's major initiative for reducing GHG emissions is Assembly Bill (AB) 32, passed by the State legislature on August 31, 2006. This effort set a GHG emission reduction target to reduce GHG emissions to 1990 levels by 2020. The CARB has established the level of GHG emissions in 1990 at 427 million metric tons (MMT) CO_2e. The emissions target of 427 MMT requires the reduction of 169 MMT from the State's projected business-as-usual 2020 emissions of 596 MMT. AB 32 requires the CARB to prepare a Scoping Plan that outlines the main State strategies for meeting the 2020 deadline and to reduce GHGs that contribute to global climate change. The CARB approved the Scoping Plan on December 11, 2008. It contains the main strategies California will implement to achieve the reduction of 169 MMT of CO_2e, or approximately 30 percent, from the State's projected 2020 emission level of 596 MMT of CO_2e under a business-as-usual scenario (this is a reduction of 42 MMT CO_2e, or almost 10 percent from 2002–2004 average emissions). The Scoping Plan also includes CARB-recommended GHG reductions

for each emissions sector of the State's GHG inventory. The Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- Improved emissions standards for light-duty vehicles (estimated reduction of 31.7 MMT CO_2e)
- The Low-Carbon Fuel Standard (15.0 MMT CO_2e)
- Energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO_2e)
- A renewable portfolio standard for electricity production (21.3 MMT CO_2e)

The Scoping Plan identifies 18 emission reduction measures that address cap-and-trade programs, vehicle gas standards, energy efficiency, low carbon fuel standards, renewable energy, regional transportation-related GHG targets, vehicle efficiency measures, goods movement, solar roof programs, industrial emissions, high-speed rail, green building strategies, recycling, sustainable forests, water, and air. The measures would result in a total reduction of 174 MMT CO_2e by 2020.

On August 24, 2011, the CARB unanimously approved both the new supplemental assessment and reapproved its Scoping Plan, which provides the overall roadmap and rule measures to carry out AB 32. The CARB also approved a more robust California Environmental Quality Act (CEQA) equivalent document supporting the supplemental analysis of the cap-and-trade program. The cap-and-trade took effect on January 1, 2012, with an enforceable compliance obligation that began January 1, 2013.

The CARB approved the First Update to the Climate Change Scoping Plan on May 22, 2014. The First Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The First Update defines CARB climate change priorities until 2020 and sets the groundwork to reach long-term goals set forth in Executive Orders (EO) S-3-05 and B-16-2012. The Update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals as defined in the initial Scoping Plan. It also evaluates how to align the State's "longer-term" GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use. The CARB released a second update to the Scoping Plan, the 2017 Scoping Plan (CARB 2017), to reflect the 2030 target set by EO B-30-15 and codified by Senate Bill (SB) 32.

The 2022 Scoping Plan (CARB 2022) was approved in December 2022 and assesses progress toward the statutory 2030 target, while laying out a path to achieving carbon neutrality no later than 2045. The 2022 Scoping Plan Update focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

Senate Bill 375 (2008). Signed into law on October 1, 2008, SB 375 supplements GHG reductions from new vehicle technology and fuel standards with reductions from more efficient land use patterns and improved transportation. Under the law, the CARB approved GHG reduction targets in

February 2011 for California's 18 federally designated regional planning bodies, known as Metropolitan Planning Organizations (MPO). The CARB may update the targets every 4 years and must update them every 8 years. MPOs, in turn, must demonstrate how their plans, policies and transportation investments meet the targets set by the CARB through Sustainable Community Strategies (SCS). The SCSs are included with the Regional Transportation Plan, a report required by State law. However, if an MPO finds that its SCS will not meet the GHG reduction target, it may prepare an Alternative Planning Strategy (APS). The APS identifies the impediments to achieving the targets.

Executive Order B-30-15 (2015). Governor Jerry Brown signed EO B-30-15 on April 29, 2015, which added the immediate target of:

- GHG emissions should be reduced to 40 percent below 1990 levels by 2030.

All State agencies with jurisdiction over sources of GHG emissions were directed to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 targets. The CARB was directed to update the AB 32 Scoping Plan to reflect the 2030 target, and, therefore, is moving forward with the update process. The mid-term target is critical to help frame the suite of policy measures, regulations, planning efforts, and investments in clean technologies and infrastructure needed to continue reducing emissions.

Senate Bill 350 (2015) Clean Energy and Pollution Reduction Act. SB 350, signed by Governor Jerry Brown on October 7, 2015, updates and enhances AB 32 by introducing the following set of objectives in clean energy, clean air, and pollution reduction for 2030:

- Raise California's renewable portfolio standard from 33 percent to 50 percent; and
- Increase energy efficiency in buildings by 50 percent by the year 2030.

The 50 percent renewable energy standard will be implemented by the California Public Utilities Commission for the private utilities and by the California Energy Commission (CEC) for municipal utilities. Each utility must submit a procurement plan showing it will purchase clean energy to displace other nonrenewable resources. The 50 percent increase in energy efficiency in buildings must be achieved through the use of existing energy efficiency retrofit funding and regulatory tools already available to State energy agencies under existing law. The addition made by this legislation requires State energy agencies to plan for and implement those programs in a manner that achieves the energy efficiency target.

Senate Bill 32, California Global Warming Solutions Act of 2016, and Assembly Bill 197. In summer 2016, the Legislature passed and the Governor signed SB 32 and AB 197. SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in Governor Brown's April 2015 EO B-30-15. SB 32 builds on AB 32 and keeps us on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels, consistent with an Intergovernmental Panel on Climate Change analysis of the emission trajectory that would stabilize atmospheric GHG concentrations at 450 parts per million CO_2e and reduce the likelihood of catastrophic impacts from climate change.

The companion bill to SB 32, AB 197, provides additional direction to the CARB related to the adoption of strategies to reduce GHG emissions. Additional direction in AB 197 meant to provide easier public access to air pollutant emissions data that are collected by the CARB was posted in December 2016.

Senate Bill 100. On September 10, 2018, Governor Brown signed SB 100, which raises California's renewable portfolio standard requirements to 60 percent by 2030, with interim targets, and 100 percent by 2045. The bill also establishes a State policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all State agencies by December 31, 2045. Under the bill, the State cannot increase carbon emissions elsewhere in the Western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Executive Order B-55-18. EO B-55-18, signed September 10, 2018, sets a goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." EO B-55-18 directs the CARB to work with relevant State agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other statewide goals, meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions be offset by equivalent net removals of CO_2e from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.

Regional Regulations

The BAAQMD is the regional government agency that regulates sources of air pollution within the nine Bay Area counties.

BAAQMD CEQA Guidelines. The BAAQMD's CEQA Guidelines identify applicable GHG significance thresholds. The BAAQMD recommends these thresholds of significance for use in determining whether a proposed project will have a significant impact related to climate change. These thresholds evaluate a project based on its effect on California's efforts to meet the State's long-term climate goals. Applying this approach, the BAAQMD identifies and provides supporting documentation outlining the requirements that new land use development projects must comply with to achieve California's long-term climate goal of carbon neutrality by 2045. Based on this research, the BAAQMD has determined that new land use development projects need to incorporate design elements to contribute the "fair share" towards implementation of the goal of carbon neutrality by 2045. If a project is designed and built to incorporate the identified design elements, then it will contribute its portion of what is necessary to achieve California's long-term climate goals—its "fair share"—and an agency reviewing the project under CEQA can conclude that the project will not make a cumulatively considerable contribution to global climate change.

Local Regulations

The County of Solano (County) has developed a Climate Action Plan (CAP) (2011) to address GHG emissions at the local level. The CAP recommends measures and implementing actions that the community can take to reduce both emissions and communitywide contributions to global climate

change. In addition, the CAP establishes a communitywide GHG emissions reduction goal of 20 percent below 2005 levels by 2020.

METHODOLOGY

Construction Emissions

Construction activities can generate a substantial amount of air pollution. Construction activities are considered temporary; however, short-term impacts can contribute to exceedances of air quality standards. Construction activities include demolition, site preparation, earthmoving, and general construction. The emissions generated from these common construction activities include fugitive dust from soil disturbance, fuel combustion from mobile heavy-duty diesel- and gasoline-powered equipment, portable auxiliary equipment, and worker commute trips. The California Emissions Estimator Model (CalEEMod) Version 2022.1 computer program was used to calculate emissions from on-site construction equipment and emissions from worker and vehicle trips to the site. This analysis assumes construction would begin in 2024 and would be completed by 2025. Construction would include grading, site preparation, building, paving, and architectural coating (painting) activities. This analysis assumes that the project site would be balanced with no import or export activities and use of Tier 2 construction equipment, which was also included in CalEEMod. Other detailed construction information is currently unavailable; therefore, this analysis uses CalEEMod default assumptions.

Construction Health Risk Assessment

A construction health risk assessment (HRA), which evaluates construction-period health risk to off-site receptors, was performed for the proposed project, and the analysis is presented below. To estimate the potential cancer risk associated with construction of the proposed project from equipment exhaust (including diesel particulate matter), a dispersion model was used to translate an emission rate from the source location to a concentration at the receptor location of interest (i.e., a nearby residence and worksites). Dispersion modeling varies from a simpler, more conservative screening-level analysis to a more complex and refined detailed analysis. This refined assessment was conducted using the CARB exposure methodology with the air dispersion modeling performed using the EPA dispersion model AERMOD. The model provides a detailed estimate of exhaust concentrations based on site and source geometry, source emissions strength, distance from the source to the receptor, and meteorological data.

Operational Emissions

This air quality analysis includes estimating emissions associated with long-term operation of the project. Indirect emissions of criteria pollutants with regional impacts would be emitted by project-generated vehicle trips. In addition, localized air quality impacts (i.e., higher CO concentrations or "hot-spots") near intersections or roadway segments in the project vicinity would also potentially occur due to project-generated vehicle trips.

Consistent with BAAQMD's guidance for estimating emissions, the CalEEMod computer program was used to calculate the long-term operational emissions associated with the project. The analysis was conducted using land use codes *Supermarket, Quality Restaurant, Hotel,* and *Parking Lot.* The

proposed project is expected to generate 1,179 average daily trips, which was included in CalEEMod. In addition, the proposed project would include three natural gas 350 kW generators with a run time of 4 hours per month for testing, plus any emergency events, and 3 annual events with run times of 72 hours each. Where project-specific data were not available, default assumptions (e.g., energy usage, water usage, and solid waste generation) from CalEEMod were used to estimate project emissions. CalEEMod output sheets are included in Attachment C.

Greenhouse Gas Emissions

GHG emissions associated with the project would occur over the short-term from construction activities, consisting primarily of emissions from equipment exhaust. There would also be long-term GHG emissions associated with project-related area sources, energy consumption, water conveyance and treatment, and waste generation.

THRESHOLDS OF SIGNIFICANCE

The *State CEQA Guidelines* indicate that a project would normally have a significant adverse air quality impact if project-generated pollutant emissions would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project is nonattainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

According to the BAAQMD CEQA Guidelines, to meet air quality standards for criteria air pollutant and air precursor impacts, the proposed project must not:

- Contribute to CO concentrations exceeding the State ambient air quality standards;
- Generate average daily construction emissions of ROG, NO_x or $PM_{2.5}$ (exhaust) greater than 54 pounds per day or PM_{10} [particulate matter 10 microns or less in diameter] exhaust emissions greater than 82 pounds per day;
- Generate operational emissions of ROG, NO_x or $PM_{2.5}$ of greater than 10 tons per year or 54 pounds per day or PM_{10} emissions greater than 15 tons per year or 82 pounds per day; or
- Exceed a cancer risk level of more than 10 in one million, a non-cancer risk (i.e., chronic or acute) hazard index greater than 1.0, or result in incremental increase of greater than 0.3 micrograms per cubic meter annual average $PM_{2.5}$.

The *State CEQA Guidelines* indicate that a project would normally have a significant adverse GHG emission impact if the project would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

- Conflict with an applicable plan, policy or regulation adopted for the purpose of reduction the emissions of greenhouse gases.

Solano County, as the Lead Agency for this project, applies a qualitative significance threshold for the determination of significance for GHG emissions and has determined that a project's GHG emissions would not be considered a significant impact if the project would be consistent with the County's CAP.

PROJECT IMPACTS

The sections below describe the proposed project's consistency with applicable air quality plans, estimated project emissions, and the significance of impacts for both air quality and GHG emissions with respect to BAAQMD and County thresholds.

Air Quality

Consistency with Applicable Air Quality Plans

The applicable air quality plan is the BAAQMD 2017 Clean Air Plan, which defines control strategies to reduce emissions and ambient concentrations of air pollutants; safeguard public health by reducing exposure to air pollutants that pose the greatest heath risk, with an emphasis on protecting the communities most heavily affected by air pollution; and reduce GHG emissions to protect the climate. Consistency with the Clean Air Plan can be determined if the project (1) supports the goals of the Clean Air Plan, (2) includes applicable control measures from the Clean Air Plan, and (3) would not disrupt or hinder implementation of any control measures from the Clean Air Plan.

Clean Air Plan Goals. The primary goals of the Bay Area Clean Air Plan are to attain air quality standards, reduce population exposure and protect public health in the Bay Area, and reduce GHG emissions and protect the climate.

The BAAQMD has established significance thresholds for project construction and operational impacts at a level at which the cumulative impact of exceeding these thresholds would have an adverse impact on the region's attainment of air quality standards. The health and hazards thresholds were established to help protect public health. As discussed below, construction and operation of the proposed project would not result in the generation of criteria air pollutants that would exceed BAAQMD thresholds of significance. Therefore, the proposed project would not conflict with the Clean Air Plan goals.

Clean Air Plan Control Measures. The control strategies of the Clean Air Plan include measures in the following categories: Stationary Source Measures, Transportation Measures, Energy Measures,

Building Measures, Agriculture Measures, Natural and Working Lands Measures, Waste Management Measures, Water Measures, and Super-GHG Pollutants Measures. The proposed project's compliance with each of these control measures is discussed below.

Stationary Source Control Measures. The Stationary Source Control Measures, which are designed to reduce emissions from stationary sources such as metal melting facilities, cement kilns, refineries, and glass furnaces, are incorporated into rules adopted by the BAAQMD and then enforced by the BAAQMD Permit and Inspection programs. Since the proposed project would not include any of these stationary sources, the Stationary Source Control Measures of the Clean Air Plan are not applicable to the proposed project.

Transportation Control Measures. The BAAQMD identifies Transportation Control Measures as part of the Clean Air Plan to decrease emissions of criteria pollutants, toxic air contaminants (TAC), and GHGs by reducing demand for motor vehicle travel, promoting efficient vehicles and transit service, decarbonizing transportation fuels, and electrifying motor vehicles and equipment. The proposed project would include a boutique market, tasting rooms, multi-purpose/dining hall, restaurant, and hotel within the County's Agriculture Tourist Center Zone. In addition, the project site includes a supermarket and restaurant that would provide residents with local shopping and dining destinations, which would increase opportunities for these uses closer to the trip origins and would decrease overall vehicle miles traveled (VMT) by substituting short trips for longer ones. By having a consolidation of wineries, visitors to the region are likely to visit this location rather than driving between wineries farther north and west of the project site. Further, the proposed project provides residents with local shopping and dining options, which would provide more local services. The project site also provides a proximate location relative to customers living in the area and customers visiting this geographic area. In addition, the proposed project would include a shuttle service from the project site to designated spots within the Suisun Valley, reducing the demand for travel by single-occupancy vehicles and VMT. Therefore, the proposed project would not conflict with the identified Transportation and Mobile Source Control Measures of the Clean Air Plan.

Energy Control Measures. The Clean Air Plan also includes Energy Control Measures, which are designed to reduce emissions of criteria air pollutants, TACs, and GHGs by decreasing the amount of electricity consumed in the Bay Area and decreasing the carbon intensity of the electricity used by switching to less GHG-intensive fuel sources for electricity generation. Since these measures apply to electrical utility providers and local government agencies (and not individual projects), the energy control measures of the Clean Air Plan are not applicable to the proposed project.

Building Control Measures. The BAAQMD has authority to regulate emissions from certain sources in buildings such as boilers and water heaters but has limited authority to regulate buildings themselves. Therefore, the strategies in the control measures for this sector focus on working with local governments that do have authority over local building codes, to facilitate adoption of best GHG control practices and policies. The proposed project would be required to comply with the latest Title 24 standards of the California Code of Regulations regarding energy conservation and green building standards. Therefore, the proposed project would not conflict with any of the Building Control Measures.

Agriculture Control Measures. The Agriculture Control Measures are designed to primarily reduce emissions of methane associated with emissions from animal waste in the form of enteric fermentation and manure management. The proposed project would include landscaping and vineyards to preserve the site's agricultural character; however, the Agriculture Control Measures of the Clean Air Plan are not applicable to the proposed project.

Natural and Working Lands Control Measures. The Natural and Working Lands Control Measures focus on increasing carbon sequestration on rangelands and wetlands and encouraging local governments to adopt ordinances that promote urban tree plantings. Since the proposed project does not include the disturbance of any rangelands or wetlands, the Natural and Working Lands Control Measures of the Clean Air Plan are not applicable to the proposed project.

Waste Management Control Measures. The Waste Management Control Measures focus on reducing or capturing methane emissions from landfills and composting facilities, diverting organic materials away from landfills, and increasing waste diversion rates through efforts to reduce, reuse, and recycle. The proposed project would comply with local requirements for waste management (e.g., recycling and composting services). Therefore, the proposed project would be consistent with the Waste Management Control Measures of the Clean Air Plan.

Water Control Measures. The Water Control Measures focus on reducing emissions of criteria pollutants, TACs, and GHGs by encouraging water conservation, limiting GHG emissions from publicly owned treatment works (POTW), and promoting the use of biogas recovery systems. Since these measures apply to POTWs and local government agencies (and not individual projects), the Water Control Measures are not applicable to the proposed project.

Super GHG Control Measures. The Super-GHG Control Measures are designed to facilitate the adoption of best GHG control practices and policies through the BAAQMD and local government agencies. Since these measures do not apply to individual projects, the Super-GHG Control Measures are not applicable to the proposed project.

Clean Air Plan Implementation. As discussed above, the proposed project would generally implement the applicable measures outlined in the Clean Air Plan, including Transportation Control Measures. Therefore, the project would not disrupt or hinder implementation of a control measure from the Clean Air Plan.

Criteria Pollutant Analysis

The BAAQMD is currently designated as a nonattainment area for State and national O_3 standards and national particulate matter ambient air quality standards. The BAAQMD's nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the

cumulative impact is considerable, then the project's impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary. The following analysis assesses the potential project-level construction- and operation-related air quality impacts.

Short-Term Construction Emissions. During construction, short-term degradation of air quality may occur due to the release of particulate emissions generated by demolition, grading, building, paving, and other activities. Emissions from construction equipment are also anticipated and would include CO, NO_x, ROG, directly emitted particulate matter ($PM_{2.5}$ and PM_{10}), and TACs such as diesel exhaust particulate matter.

Project construction activities would include demolition, site preparation, grading, building, paving, and architectural coating (painting). Construction-related effects on air quality from the proposed project would be greatest during the site preparation phase due to the disturbance of soils. If not properly controlled, these activities would temporarily generate particulate emissions. Sources of fugitive dust would include disturbed soils at the construction site. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of operating equipment. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Water or other soil stabilizers can be used to control dust, resulting in emission reductions of 50 percent or more. The BAAQMD has established standard measures for reducing fugitive dust emissions (PM_{10}). With the implementation of these Basic Construction Mitigation Measures, fugitive dust emissions from construction activities would not result in adverse air quality impacts.

In addition to dust-related PM_{10} emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NO_x, ROG, and some soot particulate ($PM_{2.5}$ and PM_{10}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles idle in traffic. These emissions would be temporary in nature and limited to the immediate area surrounding the construction site.

As discussed above, CalEEMod was used to calculate emissions from on-site construction equipment and emissions from worker and vehicle trips to the site. Construction-related emissions are presented in Table A, below.

Table A: Project Construction Emissions (in Pounds Per Day)

Project Construction	ROG	NO_X	Exhaust PM_{10}	Fugitive Dust PM_{10}	Exhaust $PM_{2.5}$	Fugitive Dust $PM_{2.5}$
Average Daily Emissions	1.1	14.5	0.5	0.5	0.5	0.2
BAAQMD Thresholds	54.0	54.0	82.0	BMP	54.0	BMP
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Compiled by LSA (March 2023).
BAAQMD = Bay Area Air Quality Management District
BMP = best management practices
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter
PM_{10} = particulate matter 10 microns or less in diameter
ROG = reactive organic gases

As shown in Table A, construction emissions associated with the project would not exceed the BAAQMD's thresholds for ROG, NO_x, CO, exhaust PM_{10}, and exhaust $PM_{2.5}$ emissions. In addition to the construction period thresholds of significance, the BAAQMD requires the implementation of Basic Construction Mitigation Measures to reduce construction fugitive dust impacts to a less than significant level. Implementation of Mitigation Measure AIR-1 would ensure that the proposed project incorporates the Basic Construction Mitigation Measures and ensures that short-term construction period air quality impacts would be less than significant.

Mitigation Measure AIR-1 Consistent with the Bay Area Air Quality Management District (BAAQMD) Basic Construction Mitigation Measures, the following controls are required to be included as specifications for the proposed project and implemented at the construction site:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off site shall be covered.
- All visible mud or dirt tracked-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible.
- Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

- All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

- A publicly visible sign shall be posted with the telephone number and person to contact at Solano County regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

As shown in Table A, construction emissions associated with the project would not exceed the significance criteria for ROG, NO_x, PM_{10}, or $PM_{2.5}$ emissions. Therefore, with implementation of Mitigation Measure AIR-1, construction of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under applicable federal or State ambient air quality standards.

Long-Term Operational Emissions. Long-term air pollutant emission impacts are those associated with mobile sources (e.g., vehicle trips), energy sources (e.g., natural gas), and area sources (e.g., architectural coatings and the use of landscape maintenance equipment) related to the proposed project.

PM_{10} emissions result from running exhaust, tire and brake wear, and the entrainment of dust into the atmosphere from vehicles traveling on paved roadways. Entrainment of PM_{10} occurs when vehicle tires pulverize small rocks and pavement, and the vehicle wakes generate airborne dust. The contribution of tire and brake wear is small compared to the other PM emission processes. Gasoline-powered engines have small rates of particulate matter emissions compared with diesel-powered vehicles.

Energy source emissions result from activities in buildings that use natural gas. The quantity of emissions is the product of usage intensity (i.e., the amount of natural gas) and the emission factor of the fuel source. Major sources of energy demand for the proposed project could include building mechanical systems, such as heating and air conditioning and lighting. Greater building or appliance efficiency reduces the amount of energy for a given activity and thus lowers the resultant emissions. The emission factor is determined by the fuel source, with cleaner energy sources, like renewable energy, producing fewer emissions than conventional sources.

Area source emissions associated with the project would include emissions from the use of landscaping equipment.

Emission estimates for operation of the project were calculated using CalEEMod. The primary emissions associated with the project are regional in nature, meaning that air pollutants are rapidly dispersed on release or, in the case of vehicle emissions associated with the project, emissions are released in other areas of the Air Basin. The daily and annual emissions associated with project operational trip generation, energy, and area sources are identified in Table B for ROG, NO_x, PM_{10}, and $PM_{2.5}$.

The results shown in Table B indicate the project would not exceed the significance criteria for daily or annual ROG, NO_x, PM_{10}, and $PM_{2.5}$ emissions; therefore, operation of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under applicable federal or State ambient air quality standards.

Table B: Project Operational Emissions

	ROG	NO_x	PM_{10}	$PM_{2.5}$
Pounds per Day				
Mobile Source Emissions	4.9	4.8	3.0	0.6
Area Source Emissions	0.8	<0.1	<0.1	<0.1
Energy Source Emissions	<0.1	0.7	<0.1	0.1
Stationary Source Emissions	9.0	0.9	0.1	0.1
Total Emissions	**14.8**	**6.3**	**3.1**	**0.7**
BAAQMD Thresholds	54.0	54.0	82.0	54.0
Exceeds Threshold?	**No**	**No**	**No**	**No**
Tons per Year				
Mobile Source Emissions	0.9	0.9	0.6	0.1
Area Source Emissions	0.2	<0.1	<0.1	<0.1
Energy Source Emissions	<0.1	0.1	<0.1	<0.1
Stationary Source Emissions	1.6	0.2	<0.1	<0.1
Total Emissions	**2.7**	**1.2**	**0.6**	**0.1**
BAAQMD Thresholds	10.0	10.0	15.0	10.0
Exceeds Threshold?	**No**	**No**	**No**	**No**

Source: Compiled by LSA (March 2023).
BAAQMD = Bay Area Air Quality Management District
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter
PM_{10} = particulate matter 10 microns or less in diameter
ROG = reactive organic gases

Localized CO Impacts. Emissions and ambient concentrations of CO have decreased dramatically in the Bay Area with the introduction of the catalytic converter in 1975. No exceedances of the State or federal CO standards have been recorded at Bay Area monitoring stations since 1991. The BAAQMD's 2023 CEQA Guidelines include recommended methodologies for quantifying concentrations of localized CO levels for proposed transportation projects. A screening level analysis using guidance from the BAAQMD CEQA Guidelines was performed to determine the impacts of the project. The screening methodology provides a conservative indication of whether the

implementation of a proposed project would result in significant CO emissions. According to the BAAQMD's CEQA Guidelines, a proposed project would result in a less than significant impact to localized CO concentrations if the following screening criteria are met:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, and the regional transportation plan and local congestion management agency plans.
- Project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The project would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, or below-grade roadway).

Implementation of the proposed project would not conflict with the Solano Transportation Authority. The proposed project would generate approximately 211 Friday PM peak-hour trips, 293 Saturday peak-hour inbound special event trips, and 289 Saturday peak-hour, outbound, special-event trips (KD Anderson & Associates, Inc. 2022). As such, the project's contribution to peak-hour traffic volumes at intersections in the vicinity of the project site would be well below 44,000 vehicles per hour. Therefore, the proposed project would not result in localized CO concentrations that exceed State or federal standards.

Health Risk on Nearby Sensitive Receptors

Sensitive receptors are defined as residential uses, schools, daycare centers, nursing homes, and medical centers. Individuals particularly vulnerable to diesel particulate matter are children, whose lung tissue is still developing, and the elderly, who may have serious health problems that can be aggravated by exposure to diesel particulate matter. Exposure from diesel exhaust associated with construction activity contributes to both cancer and chronic non-cancer health risks.

The project site is surrounded by existing single-family residential uses, commercial uses, and undeveloped land. The closest sensitive receptors to the project site include single-family homes immediately adjacent to the project site boundary, approximately 5 feet away. The following sections describe the potential impacts on sensitive receptors from construction and operation of the proposed project.

LSA performed a construction HRA, which evaluates construction-period health risk to off-site receptors, for the proposed project. The analysis is presented below. Table C, below, identifies the results of the analysis assuming the use of Tier 2 construction equipment, as proposed by the project, at the maximally exposed individual (MEI), which is the nearest sensitive receptor. Model snapshots of the sources and results are shown in Attachment D.

Table C: Unmitigated Inhalation Health Risks from Project Construction to Off-Site Receptors

	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index	Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)
Maximally Exposed Individual	76.41	0.096	0.000	0.479
Threshold	**10.0**	**1.0**	**1.0**	**0.3**
Exceeds Threshold?	**Yes**	**No**	**No**	**Yes**

Source: Compiled by LSA (March 2023).
$\mu g/m^3$ = micrograms per cubic meter
$PM_{2.5}$ = particulate matter less than 2.5 microns in size

As shown in Table C, the risk associated with project construction at the MEI would be 76.41 in one million, which would exceed the BAAQMD cancer risk threshold of 10 in one million. The total chronic hazard index would be 0.096, which is below the threshold of 1.0. In addition, the total acute hazard index would be nominal (0.0), which would also not exceed the threshold of 1.0. The results of the analysis indicate that the total $PM_{2.5}$ concentration would be 0.479 micrograms per cubic meter ($\mu g/m^3$), which would also exceed the BAAQMD significance threshold of 0.3 $\mu g/m^3$. Therefore, since cancer risk and $PM_{2.5}$ concentrations would exceed the BAAQMD's threshold, implementation of Mitigation Measure AIR-2 would be required to reduce substantial pollutant concentrations during project construction.

Mitigation Measure AIR-2 During construction of the proposed project, the project contractor shall ensure all off-road diesel-powered construction equipment of 50 horsepower or more used for the project construction at a minimum meets the California Air Resources Board Tier 4 emissions standards or equivalent.

Table D identifies the results of the analysis with implementation of Mitigation Measure AIR-2.

Table D: Mitigated Inhalation Health Risks from Project Construction to Off-Site Receptors

	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index	Acute Inhalation Hazard Index	Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)
Maximally Exposed Individual	5.07	0.006	0.000	0.032
Threshold	**10.0**	**1.0**	**1.0**	**0.3**
Exceeds Threshold?	**No**	**No**	**No**	**No**

Source: Compiled by LSA (March 2023).
$\mu g/m^3$ = micrograms per cubic meter
$PM_{2.5}$ = particulate matter less than 2.5 microns in size

As shown in Table D, the mitigated cancer risk at the MEI would be 5.07 in one million, which would not exceed the BAAQMD cancer risk of 10 in one million. In addition, the mitigated total $PM_{2.5}$ concentration would be 0.032 µg/m^3, which would also be below the BAAQMD significance threshold of 0.3 µg/m^3. Therefore, with implementation of Mitigation Measure AIR-2, construction of the proposed project would not exceed BAAQMD thresholds and would not expose nearby sensitive receptors to substantial pollutant concentrations.

Once the proposed project is constructed, the proposed project would not be a source of substantial emissions. Therefore, implementation of the proposed project would not result in new sources of TACs. Therefore, the project would not expose sensitive receptors to substantial levels of TACs.

Objectionable Odors

During construction, the various diesel-powered vehicles and equipment in use on site would create localized odors. These odors would be temporary and are not likely to be noticeable for extended periods of time beyond the project site. Additionally, the proposed uses that would be developed within the project site are not expected to produce any offensive odors that would result in frequent odor complaints.

Greenhouse Gas Emissions

Generate Greenhouse Gas Emissions

As discussed above, a project would have a less than significant impact related to GHG emissions if it would be consistent with the County's CAP which is designed to streamline environmental review of future development projects in Solano County consistent with *State CEQA Guidelines* Section 15183.5(b). Therefore, this section evaluates the proposed project's consistency with the County's CAP.

The CAP includes reduction measures in the following categories: Agriculture, Transportation and Land Use, Energy Use and Efficiency, Water use and Efficiency, and Waste Reduction and Recycling. The project's consistency with the CAP reduction measures are evaluated in Table E below.

Table E: Proposed Project Consistency with the CAP

CAP Measure	Consistency
Agriculture	
AG-1: Develop a program that provides outreach, technical assistance, and incentives to promote soil management techniques that reduce nitrous oxide emissions and increase carbon sequestration within agricultural operations.	***Consistent.*** The project site is in an agricultural area and is composed of an undeveloped vegetated field. The project would include a "Hotel Resort" comprised of 6 tasting rooms, a restaurant that would serve alcoholic beverages, a boutique market, a multi-purpose facility, 10 cottages that would make up the boutique hotel, a hotel concierge building, and accompanying landscaping and vineyards. With implementation of the proposed project, the project would include 9.1 acres of Agricultural Tourist Center (ATC) development and 10.5 acres of planted vineyards. The remaining acreage would be retained as agricultural land. The existing Ice House

Table E: Proposed Project Consistency with the CAP

CAP Measure	Consistency
	and Fruit Stand buildings within the northernmost point of the project site immediately south of Rockville Road would be retained. Implementation of the proposed project is not expected to increase nitrous oxide emissions and would increase carbon sequestration.
AG-2: Develop an outreach program aimed at reducing field equipment emissions and fuel costs.	***Not Applicable.*** This measure applies to the County, not individual development projects.
AG-3: Encourage confined livestock operations within the County to develop biogas control systems and biogas power-generation systems.	***Not Applicable.*** The proposed project would not include livestock operations.
AG-4: Encourage the use of alternatives to the fumigant and potent greenhouse gas Methyl Bromide and other fumigants with high global warming potential.	***Consistent.*** As described above, 10.5 acres of the project site would consist of planted vineyards. It is not expected that implementation of the proposed project would increase the use of fumigants.
AG-5: Assist agricultural producers and processors in efforts to increase the sale of locally grown-products to local/regional markets.	***Consistent.*** As discussed in the Project Description, the proposed project would include a market, which would sell locally grown products grown in the Suisun Valley and promoted on the property. The market would help celebrate and further the Suisun Valley's agricultural traditions and help satisfy the local regional demand for fresh, locally grown food.
AG-6: Allocate financial resources towards the position of a County Agricultural Ombudsman.	***Not Applicable.*** This measure applies to the County, not individual development projects.
Energy and Efficiency	
E-1: Investigate the potential to establish a countywide community choice aggregation program and increase the community's use of locally produced renewable energy	***Not Applicable.*** This measure applies to the County, not individual development projects. Pacific Gas and Electric services would be utilized for gas and electricity for the property. However, future tenants may elect to join a community choice provider.
E-2: Develop a comprehensive renewable energy program that provides outreach, financing, and other forms of assistance to residential, commercial, agricultural, and industrial uses.	***Not Applicable.*** This measure applies to the County, not individual development projects. However, the proposed project would be required to comply with the latest Title 24 standards of the California Code of Regulations regarding energy conservation and green building standards.
E-3: Develop a comprehensive energy efficiency program that provides outreach, financing, and other forms of assistance to residential, commercial, agricultural, and industrial uses.	***Not Applicable.*** This measure applies to the County, not individual development projects. However, the proposed project would be required to comply with the latest Title 24 standards of the California Code of Regulations regarding energy conservation and green building standards.
E-4: Adopt green building and energy efficiency ordinances to require green building practices, programs and design elements.	***Not Applicable.*** This measure applies to the County, not individual development projects. However, the proposed project would be required to comply with the latest Title 24 standards of the California Code of Regulations regarding energy conservation and green building standards.
E-5: Work with Cal Recycle, Bay Area waste agencies, other jurisdictions, and interested private sector parties to develop an agricultural and food waste-to-energy biomass facility in Solano County.	***Not Applicable.*** This measure applies to the County, not individual development projects.

Table E: Proposed Project Consistency with the CAP

CAP Measure	Consistency
E-6: Partner with Solano Economic Development Corporation, Pacific Gas & Electric, and agricultural processing and industrial energy businesses to increase building and process energy efficiency.	***Not Applicable.*** This measure applies to the County, not individual development projects. However, the proposed project would be required to comply with the latest Title 24 standards of the California Code of Regulations regarding energy conservation and green building standards.
E-7: Work with Solano Economic Development Corporation and cities to establish an eco-agriculture and food processing park that incorporates industrial ecology, renewable energy generation, and zero-waste practices.	***Not Applicable.*** This measure applies to the County, not individual development projects.
E-M1: Reduce total energy consumption in County facilities cost-effectively by 20% by 2020.	***Not Applicable.*** This measure applies to the County, not individual development projects.
E-M2: Increase the use of renewable energy in County operations.	***Not Applicable.*** This measure applies to the County, not individual development projects.
Transportation and Land Use	
TC-1: Solano County will work with STA to enhance countywide rideshare infrastructure and services.	***Consistent.*** The proposed project would include a shuttle service from the project site to designated spots within the Suisun Valley.
TC-2: Work with STA to increase public transit ridership by expanding express bus service and improving transit stop amenities and transit connections.	***Consistent.*** The proposed project would include a shuttle service from the project site to designated spots within the Suisun Valley.
TC-3: Work with cities and STA to improve bicycle and pedestrian connectivity in the county.	***Consistent.*** The proposed project would include a boutique market, tasting rooms, multi-purpose/dining hall, restaurant, and hotel within the County's Agriculture Tourist Center Zone. In addition, the project site includes a supermarket and restaurant that would provide residents with local shopping and dining destinations, which would increase opportunities for these uses closer to the trip origins and would decrease overall VMT by substituting short trips for longer ones. By having a consolidation of wineries, visitors to the region are likely to visit this location rather than driving between wineries farther north and west of the project site. Further, the proposed project provides residents with local shopping and dining options, which would provide more local services. The project site also provides a proximate location relative to customers living in the area and customers visiting this geographic area.
TC-4: Educate residents and businesses about options to reduce motor vehicle emissions.	***Not Applicable.*** This measure applies to the County, not individual development projects.
TC-M1: Replace County vehicles with fuel efficient, electric, or alternative fuel vehicle models as the existing fleet is retired. (Emergency Vehicles are exempt, unless appropriate alternative vehicle options become available.)	***Not Applicable.*** This measure applies to the County, not individual development projects.
LU-1: Update the zoning ordinance to allow live-work uses in residential zones as long as such uses are compatible with existing community character.	***Not Applicable.*** This measure applies to the County, not individual development projects.
LU-2: Protect and preserve forested areas, agricultural lands, wildlife habitat, and wetlands that provide carbon sequestration.	***Consistent.*** The project site is in an agricultural area and is composed of an undeveloped vegetated field. The project would include a "Hotel Resort" comprised of 6

Table E: Proposed Project Consistency with the CAP

CAP Measure	Consistency
	tasting rooms, a restaurant that would serve alcoholic beverages, a boutique market, a multi-purpose facility, 10 cottages that would make up the boutique hotel, a hotel concierge building, and accompanying landscaping and vineyards. With implementation of the proposed project, the project would include 9.1 acres of ATC development and 10.5 acres of planted vineyards. The remaining acreage would be retained as agricultural land. The existing Ice House and Fruit Stand buildings within the northernmost point of the project site immediately south of Rockville Road would be retained. Implementation of the proposed project would maintain agricultural use on a portion of the project site.
LU-3: Protect oak woodlands and heritage trees and encourage the planting of native tree species in new developments and along road rights-of-way. Require the planting of shade and roadside trees in development projects.	***Consistent.*** The proposed project would include landscaping and vineyards to preserve the site's agricultural character.
Waste Reduction and Recycling	
W-1: Work with the Local Task Force and other organizations to create a zero-waste plan and provide public education regarding zero-waste strategies and implementation.	***Not Applicable.*** This measure applies to the County, not individual development projects.
W-2: Adopt a Construction and Demolition Ordinance to require 65% of construction and demolition debris to be recycled or reused by 2020.	***Not Applicable.*** This measure applies to the County, not individual development projects.
W-3: Work with State agencies to provide free audits to commercial generators and recommend strategies to reduce waste and increase recycling and composting.	***Not Applicable.*** This measure applies to the County, not individual development projects. However, solid waste generated by the proposed project would not be substantial. As described above, both of the landfills that serve Solano County have sufficient capacity to accommodate the solid waste generated as a result of the proposed project.
W-4: Facilitate CalRecycle and the State Air Resources Board's (ARB) implementation of the Landfill Methane Capture Strategy by requiring landfills to capture methane to the greatest extent feasible.	***Consistent.*** The proposed project would increase the diversion of solid waste to 75 percent as required under AB 341.
Water Conservation	
WC-1: Work with the Agricultural Water Conservation Committee of the Solano Water Advisory Commission to promote efficient irrigation and agricultural water management.	***Not Applicable.*** This measure applies to the County, not individual development projects. However, the proposed project would be required to comply with the latest Title 24 standards, which include a variety of different measures, including reduction of wastewater and water use. In addition, the proposed project would be required to comply with the California Model Water Efficient Landscape Ordinance.
WC-2: Work with Solano County water providers, including representatives for well users that share water with their neighbors for residential water use, to expand and promote outreach programs and incentives for water conservation.	***Not Applicable.*** This measure applies to the County, not individual development projects. However, the proposed project would be required to comply with the latest Title 24 standards, which include a variety of different measures, including reduction of wastewater and water

Table E: Proposed Project Consistency with the CAP

CAP Measure	Consistency
	use. In addition, the proposed project would be required to comply with the California Model Water Efficient Landscape Ordinance.
WC-3: Increase water-efficiency requirements for major (>2,500 square feet) landscape projects in new construction and remodels.	***Not Applicable.*** This measure applies to the County, not individual development projects. However, the proposed project would be required to comply with the latest Title 24 standards, which include a variety of different measures, including reduction of wastewater and water use. In addition, the proposed project would be required to comply with the California Model Water Efficient Landscape Ordinance.
WC-M1: Reduce water use in County buildings and landscape irrigation.	***Not Applicable.*** This measure applies to the County, not individual development projects.

Source: Compiled by LSA (July 2023).
Note: Not applicable refers to measures that are not relevant to new development and measures not within the project applicant's control.

As shown in Table E, the proposed project is consistent with the applicable measures included in the Solano County CAP. Because many aspects of the project's emissions inventory would benefit from further regulatory and technological advancements, the project is not expected to obstruct the attainment of the State's long-term GHG reduction goal for 2045. Therefore, the proposed project would be consistent with the County's CAP and would not generate GHG emissions that may have a significant effect on the environment.

Consistency with Greenhouse Gas Reduction Plans

The following discussion evaluates the proposed project according to the goals of the 2022 Scoping Plan, EO B-30-15, SB 32, and AB 197.

EO B-30-15 added the immediate target of reducing GHG emissions to 40 percent below 1990 levels by 2030. CARB released a second update to the Scoping Plan, the 2017 Scoping Plan (CARB 2017), to reflect the 2030 target set by EO B-30-15 and codified by SB 32. SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in EO B-30-15. SB 32 builds on AB 32 and keeps us on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels. The companion bill to SB 32, AB 197, provides additional direction to the CARB related to the adoption of strategies to reduce GHG emissions. Additional direction in AB 197 intended to provide easier public access to air emissions data that are collected by CARB was posted in December 2016.

In addition, the 2022 Scoping Plan (CARB 2022) assesses progress toward the statutory 2030 target, while laying out a path to achieving carbon neutrality no later than 2045. The 2022 Scoping Plan focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the State's long-

term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

The 2022 Scoping Plan focuses on building clean energy production and distribution infrastructure for a carbon-neutral future, including transitioning existing energy production and transmission infrastructure to produce zero-carbon electricity and hydrogen, and utilizing biogas resulting from wildfire management or landfill and dairy operations, among other substitutes. The 2022 Scoping Plan states that in almost all sectors, electrification will play an important role. The 2022 Scoping Plan evaluates clean energy and technology options and the transition away from fossil fuels, including adding four times the solar and wind capacity by 2045 and about 1,700 times the amount of current hydrogen supply. As discussed in the 2022 Scoping Plan, EO N-79-20 requires that all new passenger vehicles sold in California will be zero-emission by 2035, and all other fleets will have transitioned to zero-emission as fully possible by 2045, which will reduce the percentage of fossil fuel combustion vehicles.

Energy efficient measures are intended to maximize energy efficiency building and appliance standards, pursue additional efficiency efforts including new technologies and new policy and implementation mechanisms, and pursue comparable investment in energy efficiency from all retail providers of electricity in California. In addition, these measures are designed to expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings. As discussed above, the proposed project would comply with the CALGreen Code, regarding energy conservation and green building standards. Therefore, the proposed project would comply with applicable energy measures.

Water conservation and efficiency measures are intended to continue efficiency programs and use cleaner energy sources to move and treat water. Increasing the efficiency of water transport and reducing water use would reduce GHG emissions. As noted above, the project would comply with the CALGreen Code, which includes a variety of different measures, including the reduction of wastewater and water use. In addition, the proposed project would be required to comply with the California Model Water Efficient Landscape Ordinance. Therefore, the proposed project would not conflict with any of the water conservation and efficiency measures.

The goal of transportation and motor vehicle measures is to develop regional GHG emissions reduction targets for passenger vehicles. Specific regional emission targets for transportation emissions would not directly apply to the proposed project. The second phase of Pavley standards will reduce GHG emissions from new cars by 34 percent from 2016 levels by 2025, resulting in a 3 percent decrease in average vehicle emissions for all vehicles by 2020. Vehicles traveling to the project site would comply with the Pavley II (LEV III) Advanced Clean Cars Program. Therefore, the proposed project would not conflict with the identified transportation and motor vehicle measures.

The proposed project would comply with existing State regulations adopted to achieve the overall GHG emissions reduction goals identified in SB 32 and EO B-30-15. In addition, as demonstrated above, the proposed project would not conflict with the County's CAP. Therefore, the proposed project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the GHG emissions.

CONCLUSION

Based on the analysis presented above, with implementation of Mitigation Measure AIR-1, construction of the proposed project would not result in the generation of criteria air pollutants that would exceed BAAQMD thresholds of significance. Operational emissions associated with the proposed project would also not exceed BAAQMD established significance thresholds. With implementation of Mitigation Measure AIR-2, the proposed project is not expected to expose sensitive receptors to substantial pollutant concentrations. The proposed project would also not result in objectionable odors affecting a substantial number of people. In addition, the proposed project would be consistent with the County's CAP and therefore would not result in the emission of substantial GHG emissions. Additionally, the project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the GHG emissions. Therefore, the proposed project's incremental contribution to cumulative GHG emissions would not be cumulatively considerable.

Attachments: A: References
B: Figures
Figure 1—Project Location
Figure 2—Site Plan
C: CalEEMod Output Sheets
D: HRA Model Snapshots and Input Assumptions

ATTACHMENT A

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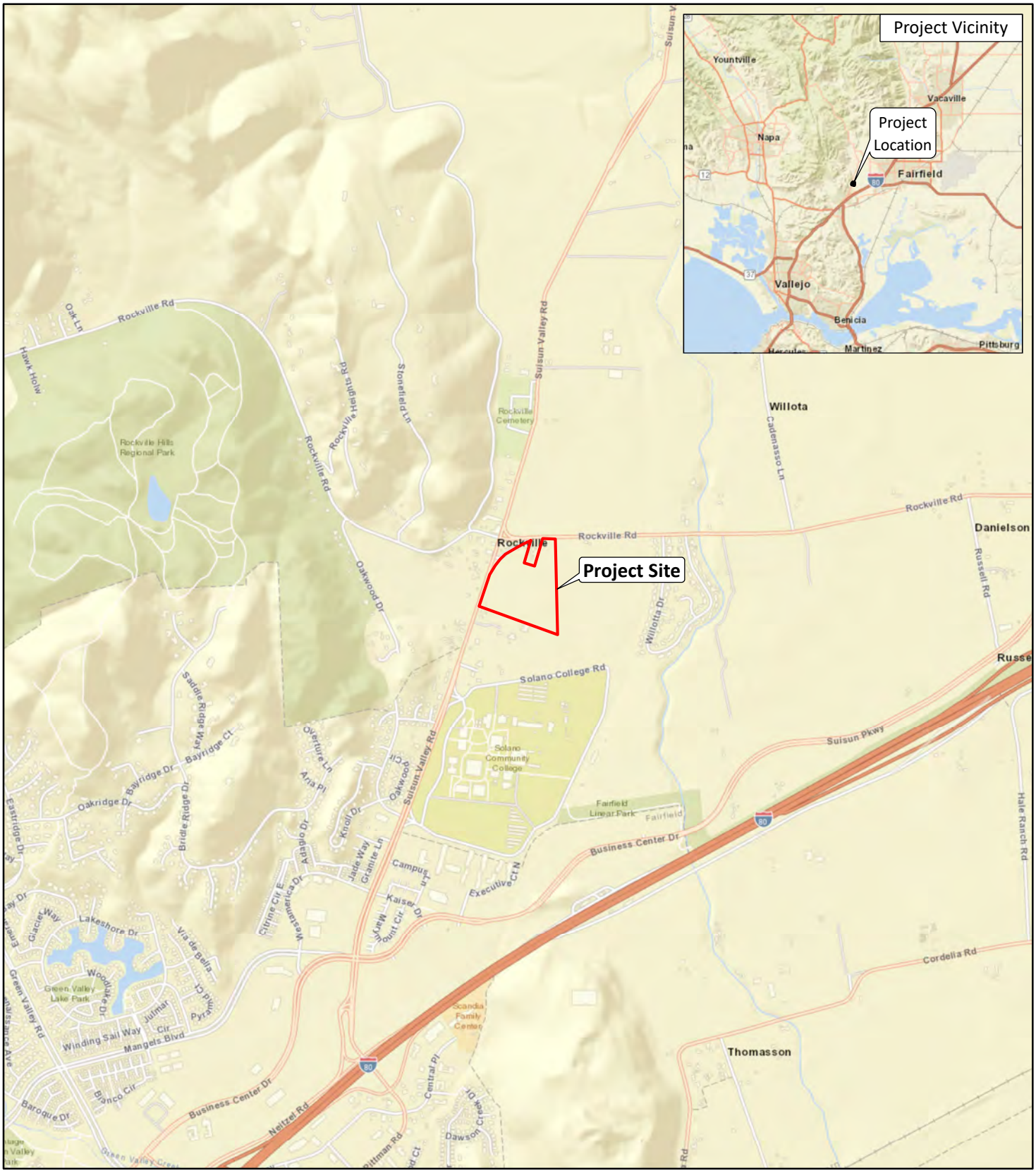
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ATTACHMENT B

FIGURES



LSA

LEGEND

Project Site

FIGURE 1

N

0 1000 2000

FEET

Solano Landing Project
Fairfield, Solano County, California

Project Location

SOURCE: Esri World Street Map (2023).

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LSA

FIGURE 2

N

0 75 150

FEET

SOURCE: Cleaver Design Associates

I:\20230890\G\Site_Plan.ai (3/7/2023)

Solano Landing Project
Fairfield, Solano County, California

Site Plan

ATTACHMENT C

CALEEMOD OUTPUT SHEETS

Solano Landing Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

1.2. Land Use Types

1.3. User-Selected Emission Reduction Measures by Emissions Sector

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

2.2. Construction Emissions by Year, Unmitigated

2.3. Construction Emissions by Year, Mitigated

2.4. Operations Emissions Compared Against Thresholds

2.5. Operations Emissions by Sector, Unmitigated

2.6. Operations Emissions by Sector, Mitigated

3. Construction Emissions Details

3.1. Site Preparation (2024) - Unmitigated

3.2. Site Preparation (2024) - Mitigated

3.3. Grading (2024) - Unmitigated

3.4. Grading (2024) - Mitigated

3.5. Building Construction (2024) - Unmitigated

3.6. Building Construction (2024) - Mitigated

3.7. Paving (2024) - Unmitigated

3.8. Paving (2024) - Mitigated

3.9. Paving (2025) - Unmitigated

3.10. Paving (2025) - Mitigated

3.11. Architectural Coating (2025) - Unmitigated

3.12. Architectural Coating (2025) - Mitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.1.2. Mitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.2. Electricity Emissions By Land Use - Mitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.2.4. Natural Gas Emissions By Land Use - Mitigated

4.3. Area Emissions by Source

4.3.2. Unmitigated

4.3.1. Mitigated

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

4.4.1. Mitigated

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

4.5.1. Mitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.6.2. Mitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.7.2. Mitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.8.2. Mitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.9.2. Mitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.2.2. Mitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.3.2. Mitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.9.2. Mitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.10.4. Landscape Equipment - Mitigated

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.11.2. Mitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.12.2. Mitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.13.2. Mitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.14.2. Mitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.15.2. Mitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.1.2. Mitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

5.18.2.2. Mitigated

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Solano Landing
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.60
Precipitation (days)	37.6
Location	2316 Rockville Rd, Fairfield, CA 94534, USA
County	Solano-San Francisco
City	Unincorporated
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	857
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Supermarket	5.50	1000sqft	1.00	5,496	10,000	—	—	—
Quality Restaurant	16.5	1000sqft	1.00	16,462	10,000	—	—	—
Hotel	10.0	Room	1.00	10,183	10,000	—	—	—

Parking Lot	192	Space	4.00	0.00	35,000	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.68	19.1	14.9	0.02	0.69	0.14	0.83	0.64	0.04	0.68	—	2,659	2,659	0.10	0.05	2,676
Mit.	0.29	2.26	14.9	0.02	0.05	0.14	0.19	0.05	0.04	0.08	—	2,659	2,659	0.10	0.05	2,676
% Reduced	57%	88%	—	—	93%	—	77%	93%	—	88%	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	19.2	39.9	29.0	0.05	1.12	7.81	8.93	1.02	3.97	4.99	—	5,443	5,443	0.22	0.05	5,464
Mit.	19.2	2.66	29.0	0.05	0.10	7.81	7.91	0.10	3.97	4.07	—	5,443	5,443	0.22	0.05	5,464
% Reduced	< 0.5%	93%	—	—	91%	—	11%	90%	—	18%	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.11	14.5	11.2	0.02	0.51	0.46	0.97	0.47	0.21	0.68	—	1,995	1,995	0.08	0.03	2,007

Mit.	1.09	1.63	11.2	0.02	0.03	0.46	0.50	0.03	0.21	0.24	—	1,995	1,995	0.08	0.03	2,007
% Reduced	2%	89%	—	—	93%	—	49%	93%	—	65%	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.20	2.64	2.05	< 0.005	0.09	0.08	0.18	0.09	0.04	0.12	—	330	330	0.01	0.01	332
Mit.	0.20	0.30	2.05	< 0.005	0.01	0.08	0.09	0.01	0.04	0.04	—	330	330	0.01	0.01	332
% Reduced	2%	89%	—	—	93%	—	49%	93%	—	65%	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.68	19.1	14.9	0.02	0.69	0.14	0.83	0.64	0.04	0.68	—	2,659	2,659	0.10	0.05	2,676
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.14	39.9	29.0	0.05	1.12	7.81	8.93	1.02	3.97	4.99	—	5,443	5,443	0.22	0.05	5,464
2025	19.2	13.4	11.1	0.01	0.58	0.12	0.70	0.54	0.03	0.57	—	1,636	1,636	0.06	0.02	1,642
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.50	14.5	11.2	0.02	0.51	0.46	0.97	0.47	0.21	0.68	—	1,995	1,995	0.08	0.03	2,007
2025	1.11	0.69	0.58	< 0.005	0.03	0.01	0.04	0.03	< 0.005	0.03	—	85.4	85.4	< 0.005	< 0.005	85.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.09	2.64	2.05	< 0.005	0.09	0.08	0.18	0.09	0.04	0.12	—	330	330	0.01	0.01	332
2025	0.20	0.13	0.11	< 0.005	0.01	< 0.005	0.01	0.01	< 0.005	0.01	—	14.1	14.1	< 0.005	< 0.005	14.2

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.29	2.26	14.9	0.02	0.05	0.14	0.19	0.05	0.04	0.08	—	2,659	2,659	0.10	0.05	2,676
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.74	2.66	29.0	0.05	0.10	7.81	7.91	0.10	3.97	4.07	—	5,443	5,443	0.22	0.05	5,464
2025	19.2	1.98	11.1	0.01	0.03	0.12	0.15	0.03	0.03	0.06	—	1,636	1,636	0.06	0.02	1,642
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.22	1.63	11.2	0.02	0.03	0.46	0.50	0.03	0.21	0.24	—	1,995	1,995	0.08	0.03	2,007
2025	1.09	0.13	0.58	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	85.4	85.4	< 0.005	< 0.005	85.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.04	0.30	2.05	< 0.005	0.01	0.08	0.09	0.01	0.04	0.04	—	330	330	0.01	0.01	332
2025	0.20	0.02	0.11	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.1	14.1	< 0.005	< 0.005	14.2

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	18.7	6.24	72.9	0.10	0.19	2.97	3.16	0.19	0.52	0.71	39.1	11,491	11,530	6.18	0.45	13,036
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	18.2	6.98	70.6	0.09	0.19	2.97	3.16	0.18	0.52	0.70	39.1	10,946	10,985	6.25	0.49	12,470
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	14.8	6.32	60.3	0.09	0.17	2.97	3.14	0.17	0.52	0.69	39.1	10,808	10,847	5.75	0.47	12,329
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.71	1.15	11.0	0.02	0.03	0.54	0.57	0.03	0.09	0.13	6.48	1,789	1,796	0.95	0.08	2,041

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	5.26	4.36	38.7	0.09	0.07	2.97	3.04	0.06	0.52	0.58	—	9,221	9,221	0.41	0.41	9,389
Area	1.04	0.01	1.40	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.75	5.75	< 0.005	< 0.005	5.77
Energy	0.04	0.67	0.56	< 0.005	0.05	—	0.05	0.05	—	0.05	—	1,447	1,447	0.18	0.01	1,456
Water	—	—	—	—	—	—	—	—	—	—	11.4	23.6	35.0	1.17	0.03	72.6
Waste	—	—	—	—	—	—	—	—	—	—	27.8	0.00	27.8	2.77	0.00	97.1
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,181
Stationary	12.4	1.19	32.3	< 0.005	0.07	—	0.07	0.07	—	0.07	—	793	793	1.66	0.00	834
Total	18.7	6.24	72.9	0.10	0.19	2.97	3.16	0.19	0.52	0.71	39.1	11,491	11,530	6.18	0.45	13,036
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.96	5.12	37.7	0.09	0.07	2.97	3.04	0.06	0.52	0.58	—	8,682	8,682	0.47	0.45	8,829
Area	0.81	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.04	0.67	0.56	< 0.005	0.05	—	0.05	0.05	—	0.05	—	1,447	1,447	0.18	0.01	1,456
Water	—	—	—	—	—	—	—	—	—	—	11.4	23.6	35.0	1.17	0.03	72.6

Waste	—	—	—	—	—	—	—	—	—	—	27.8	0.00	27.8	2.77	0.00	97.1
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,181
Stationary	12.4	1.19	32.3	< 0.005	0.07	—	0.07	0.07	—	0.07	—	793	793	1.66	0.00	834
Total	18.2	6.98	70.6	0.09	0.19	2.97	3.16	0.18	0.52	0.70	39.1	10,946	10,985	6.25	0.49	12,470
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.91	4.78	35.7	0.09	0.07	2.97	3.04	0.06	0.52	0.58	—	8,761	8,761	0.44	0.43	8,916
Area	0.92	0.01	0.69	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.83	2.83	< 0.005	< 0.005	2.85
Energy	0.04	0.67	0.56	< 0.005	0.05	—	0.05	0.05	—	0.05	—	1,447	1,447	0.18	0.01	1,456
Water	—	—	—	—	—	—	—	—	—	—	11.4	23.6	35.0	1.17	0.03	72.6
Waste	—	—	—	—	—	—	—	—	—	—	27.8	0.00	27.8	2.77	0.00	97.1
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,181
Stationary	8.97	0.86	23.4	< 0.005	0.05	—	0.05	0.05	—	0.05	—	573	573	1.20	0.00	603
Total	14.8	6.32	60.3	0.09	0.17	2.97	3.14	0.17	0.52	0.69	39.1	10,808	10,847	5.75	0.47	12,329
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.90	0.87	6.51	0.02	0.01	0.54	0.55	0.01	0.09	0.11	—	1,450	1,450	0.07	0.07	1,476
Area	0.17	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.47	0.47	< 0.005	< 0.005	0.47
Energy	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	240	240	0.03	< 0.005	241
Water	—	—	—	—	—	—	—	—	—	—	1.88	3.91	5.80	0.19	< 0.005	12.0
Waste	—	—	—	—	—	—	—	—	—	—	4.59	0.00	4.59	0.46	0.00	16.1
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	196
Stationary	1.64	0.16	4.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	94.9	94.9	0.20	0.00	99.9
Total	2.71	1.15	11.0	0.02	0.03	0.54	0.57	0.03	0.09	0.13	6.48	1,789	1,796	0.95	0.08	2,041

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	5.26	4.36	38.7	0.09	0.07	2.97	3.04	0.06	0.52	0.58	—	9,221	9,221	0.41	0.41	9,389
Area	1.04	0.01	1.40	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.75	5.75	< 0.005	< 0.005	5.77
Energy	0.04	0.67	0.56	< 0.005	0.05	—	0.05	0.05	—	0.05	—	1,447	1,447	0.18	0.01	1,456
Water	—	—	—	—	—	—	—	—	—	—	11.4	23.6	35.0	1.17	0.03	72.6
Waste	—	—	—	—	—	—	—	—	—	—	27.8	0.00	27.8	2.77	0.00	97.1
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,181
Stationary	12.4	1.19	32.3	< 0.005	0.07	—	0.07	0.07	—	0.07	—	793	793	1.66	0.00	834
Total	18.7	6.24	72.9	0.10	0.19	2.97	3.16	0.19	0.52	0.71	39.1	11,491	11,530	6.18	0.45	13,036
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.96	5.12	37.7	0.09	0.07	2.97	3.04	0.06	0.52	0.58	—	8,682	8,682	0.47	0.45	8,829
Area	0.81	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.04	0.67	0.56	< 0.005	0.05	—	0.05	0.05	—	0.05	—	1,447	1,447	0.18	0.01	1,456
Water	—	—	—	—	—	—	—	—	—	—	11.4	23.6	35.0	1.17	0.03	72.6
Waste	—	—	—	—	—	—	—	—	—	—	27.8	0.00	27.8	2.77	0.00	97.1
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,181
Stationary	12.4	1.19	32.3	< 0.005	0.07	—	0.07	0.07	—	0.07	—	793	793	1.66	0.00	834
Total	18.2	6.98	70.6	0.09	0.19	2.97	3.16	0.18	0.52	0.70	39.1	10,946	10,985	6.25	0.49	12,470
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.91	4.78	35.7	0.09	0.07	2.97	3.04	0.06	0.52	0.58	—	8,761	8,761	0.44	0.43	8,916
Area	0.92	0.01	0.69	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.83	2.83	< 0.005	< 0.005	2.85
Energy	0.04	0.67	0.56	< 0.005	0.05	—	0.05	0.05	—	0.05	—	1,447	1,447	0.18	0.01	1,456
Water	—	—	—	—	—	—	—	—	—	—	11.4	23.6	35.0	1.17	0.03	72.6
Waste	—	—	—	—	—	—	—	—	—	—	27.8	0.00	27.8	2.77	0.00	97.1

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,181
Stationary	8.97	0.86	23.4	< 0.005	0.05	—	0.05	0.05	—	0.05	—	573	573	1.20	0.00	603
Total	14.8	6.32	60.3	0.09	0.17	2.97	3.14	0.17	0.52	0.69	39.1	10,808	10,847	5.75	0.47	12,329
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.90	0.87	6.51	0.02	0.01	0.54	0.55	0.01	0.09	0.11	—	1,450	1,450	0.07	0.07	1,476
Area	0.17	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.47	0.47	< 0.005	< 0.005	0.47
Energy	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	240	240	0.03	< 0.005	241
Water	—	—	—	—	—	—	—	—	—	—	1.88	3.91	5.80	0.19	< 0.005	12.0
Waste	—	—	—	—	—	—	—	—	—	—	4.59	0.00	4.59	0.46	0.00	16.1
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	196
Stationary	1.64	0.16	4.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	94.9	94.9	0.20	0.00	99.9
Total	2.71	1.15	11.0	0.02	0.03	0.54	0.57	0.03	0.09	0.13	6.48	1,789	1,796	0.95	0.08	2,041

3. Construction Emissions Details

3.1. Site Preparation (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	39.9	28.3	0.05	1.12	—	1.12	1.02	—	1.02	—	5,296	5,296	0.21	0.04	5,314
Dust From Material Movement	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—

Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	1.09	0.78	< 0.005	0.03	—	0.03	0.03	—	0.03	—	145	145	0.01	< 0.005	146
Dust From Material Movement	—	—	—	—	—	0.21	0.21	—	0.11	0.11	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.20	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.0	24.0	< 0.005	< 0.005	24.1
Dust From Material Movement	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.68	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	148	148	< 0.005	0.01	150
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.09	4.09	< 0.005	< 0.005	4.16
Vendor	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

Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.68	0.68	< 0.005	< 0.005	0.69
Vendor	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
Hauling	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

3.2. Site Preparation (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	2.59	28.3	0.05	0.10	—	0.10	0.10	—	0.10	—	5,296	5,296	0.21	0.04	5,314
Dust From Material Movement	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.07	0.78	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	145	145	0.01	< 0.005	146
Dust From Material Movement	—	—	—	—	—	0.21	0.21	—	0.11	0.11	—	—	—	—	—	—
Onsite truck	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

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.14	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	24.0	24.0	< 0.005	< 0.005	24.1
Dust From Material Movement	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.68	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	148	148	< 0.005	0.01	150
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.09	4.09	< 0.005	< 0.005	4.16
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.68	0.68	< 0.005	< 0.005	0.69
Vendor	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
Hauling	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

3.3. Grading (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.73	23.2	17.8	0.03	0.75	—	0.75	0.69	—	0.69	—	2,958	2,958	0.12	0.02	2,969
Dust From Material Movement	—	—	—	—	—	2.76	2.76	—	1.34	1.34	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	1.27	0.97	< 0.005	0.04	—	0.04	0.04	—	0.04	—	162	162	0.01	< 0.005	163
Dust From Material Movement	—	—	—	—	—	0.15	0.15	—	0.07	0.07	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.23	0.18	< 0.005	0.01	—	0.01	0.01	—	0.01	—	26.8	26.8	< 0.005	< 0.005	26.9
Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.59	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	127	127	< 0.005	0.01	128
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.02	7.02	< 0.005	< 0.005	7.12
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.16	1.16	< 0.005	< 0.005	1.18
Vendor	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
Hauling	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

3.4. Grading (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.29	2.04	17.8	0.03	0.06	—	0.06	0.06	—	0.06	—	2,958	2,958	0.12	0.02	2,969

Dust From Material Movement	—	—	—	—	—	2.76	2.76	—	1.34	1.34	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.11	0.97	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	162	162	0.01	< 0.005	163
Dust From Material Movement	—	—	—	—	—	0.15	0.15	—	0.07	0.07	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.18	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	26.8	26.8	< 0.005	< 0.005	26.9
Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.59	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	127	127	< 0.005	0.01	128
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.02	7.02	< 0.005	< 0.005	7.12
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.16	1.16	< 0.005	< 0.005	1.18
Vendor	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
Hauling	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

3.5. Building Construction (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	18.9	14.3	0.02	0.69	—	0.69	0.64	—	0.64	—	2,398	2,398	0.10	0.02	2,406
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	18.9	14.3	0.02	0.69	—	0.69	0.64	—	0.64	—	2,398	2,398	0.10	0.02	2,406
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.39	11.9	9.01	0.01	0.43	—	0.43	0.40	—	0.40	—	1,511	1,511	0.06	0.01	1,516

Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	2.17	1.64	< 0.005	0.08	—	0.08	0.07	—	0.07	—	250	250	0.01	< 0.005	251
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.57	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	118	118	< 0.005	< 0.005	120
Vendor	0.01	0.19	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	143	143	< 0.005	0.02	150
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.51	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	109	109	< 0.005	< 0.005	111
Vendor	0.01	0.20	0.08	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	143	143	< 0.005	0.02	150
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.31	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	69.7	69.7	< 0.005	< 0.005	70.7
Vendor	< 0.005	0.12	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	90.1	90.1	< 0.005	0.01	94.3
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.5	11.5	< 0.005	< 0.005	11.7
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.9	14.9	< 0.005	< 0.005	15.6
Hauling	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

3.6. Building Construction (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	2.03	14.3	0.02	0.04	—	0.04	0.04	—	0.04	—	2,398	2,398	0.10	0.02	2,406
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	2.03	14.3	0.02	0.04	—	0.04	0.04	—	0.04	—	2,398	2,398	0.10	0.02	2,406
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	1.28	9.01	0.01	0.03	—	0.03	0.03	—	0.03	—	1,511	1,511	0.06	0.01	1,516
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.23	1.64	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	250	250	0.01	< 0.005	251
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.57	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	118	118	< 0.005	< 0.005	120
Vendor	0.01	0.19	0.07	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	143	143	< 0.005	0.02	150
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.51	0.00	0.00	0.11	0.11	0.00	0.03	0.03	—	109	109	< 0.005	< 0.005	111
Vendor	0.01	0.20	0.08	< 0.005	< 0.005	0.04	0.04	< 0.005	0.01	0.01	—	143	143	< 0.005	0.02	150
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.31	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	69.7	69.7	< 0.005	< 0.005	70.7
Vendor	< 0.005	0.12	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	90.1	90.1	< 0.005	0.01	94.3
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.5	11.5	< 0.005	< 0.005	11.7
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.9	14.9	< 0.005	< 0.005	15.6
Hauling	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

3.7. Paving (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	13.3	10.6	0.01	0.58	—	0.58	0.54	—	0.54	—	1,512	1,512	0.06	0.01	1,517
Paving	0.52	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.92	5.92	< 0.005	< 0.005	5.94
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.98	0.98	< 0.005	< 0.005	0.98
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.59	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	127	127	< 0.005	0.01	128
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.50	0.50	< 0.005	< 0.005	0.51
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.08	0.08	< 0.005	< 0.005	0.08
Vendor	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
Hauling	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

3.8. Paving (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	1.93	10.6	0.01	0.03	—	0.03	0.03	—	0.03	—	1,512	1,512	0.06	0.01	1,517
Paving	0.52	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.92	5.92	< 0.005	< 0.005	5.94
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.98	0.98	< 0.005	< 0.005	0.98
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.59	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	127	127	< 0.005	0.01	128
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.50	0.50	< 0.005	< 0.005	0.51
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.08	0.08	< 0.005	< 0.005	0.08
Vendor	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
Hauling	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

3.9. Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	13.3	10.6	0.01	0.58	—	0.58	0.54	—	0.54	—	1,511	1,511	0.06	0.01	1,517
Paving	0.52	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.62	0.50	< 0.005	0.03	—	0.03	0.03	—	0.03	—	71.0	71.0	< 0.005	< 0.005	71.2
Paving	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.11	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.8	11.8	< 0.005	< 0.005	11.8
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.54	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	124	124	< 0.005	0.01	126
Vendor	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

Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.90	5.90	< 0.005	< 0.005	5.99
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.98	0.98	< 0.005	< 0.005	0.99
Vendor	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
Hauling	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

3.10. Paving (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16	1.93	10.6	0.01	0.03	—	0.03	0.03	—	0.03	—	1,511	1,511	0.06	0.01	1,517
Paving	0.52	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.09	0.50	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	71.0	71.0	< 0.005	< 0.005	71.2

Paving	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.8	11.8	< 0.005	< 0.005	11.8
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.54	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	124	124	< 0.005	0.01	126
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.90	5.90	< 0.005	< 0.005	5.99
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.98	0.98	< 0.005	< 0.005	0.99
Vendor	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
Hauling	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

3.11. Architectural Coating (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	1.09	0.96	< 0.005	0.07	—	0.07	0.06	—	0.06	—	134	134	0.01	< 0.005	134
Architectural Coatings	19.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.06	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.32	7.32	< 0.005	< 0.005	7.34
Architectural Coatings	1.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.21	1.21	< 0.005	< 0.005	1.22
Architectural Coatings	0.19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	21.4	21.4	< 0.005	< 0.005	21.7
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.19	1.19	< 0.005	< 0.005	1.21
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.20	0.20	< 0.005	< 0.005	0.20
Vendor	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
Hauling	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

3.12. Architectural Coating (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.65	0.96	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	134	134	0.01	< 0.005	134

Architectu Coatings	19.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.32	7.32	< 0.005	< 0.005	7.34
Architectu ral Coatings	1.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.21	1.21	< 0.005	< 0.005	1.22
Architectu ral Coatings	0.19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	21.4	21.4	< 0.005	< 0.005	21.7
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.19	1.19	< 0.005	< 0.005	1.21
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.20	0.20	< 0.005	< 0.005	0.20
Vendor	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
Hauling	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

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	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
Quality Restaurant	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
Hotel	5.26	4.36	38.7	0.09	0.07	2.97	3.04	0.06	0.52	0.58	—	9,221	9,221	0.41	0.41	9,389
Parking Lot	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
Total	5.26	4.36	38.7	0.09	0.07	2.97	3.04	0.06	0.52	0.58	—	9,221	9,221	0.41	0.41	9,389
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Supermarket	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
Quality Restaurant	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
Hotel	4.96	5.12	37.7	0.09	0.07	2.97	3.04	0.06	0.52	0.58	—	8,682	8,682	0.47	0.45	8,829
Parking Lot	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
Total	4.96	5.12	37.7	0.09	0.07	2.97	3.04	0.06	0.52	0.58	—	8,682	8,682	0.47	0.45	8,829
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	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
Quality Restaurant	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
Hotel	0.90	0.87	6.51	0.02	0.01	0.54	0.55	0.01	0.09	0.11	—	1,450	1,450	0.07	0.07	1,476
Parking Lot	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
Total	0.90	0.87	6.51	0.02	0.01	0.54	0.55	0.01	0.09	0.11	—	1,450	1,450	0.07	0.07	1,476

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	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
Quality Restaurant	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
Hotel	5.26	4.36	38.7	0.09	0.07	2.97	3.04	0.06	0.52	0.58	—	9,221	9,221	0.41	0.41	9,389
Parking Lot	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

Total	5.26	4.36	38.7	0.09	0.07	2.97	3.04	0.06	0.52	0.58	—	9,221	9,221	0.41	0.41	9,389
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	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
Quality Restaurant	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
Hotel	4.96	5.12	37.7	0.09	0.07	2.97	3.04	0.06	0.52	0.58	—	8,682	8,682	0.47	0.45	8,829
Parking Lot	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
Total	4.96	5.12	37.7	0.09	0.07	2.97	3.04	0.06	0.52	0.58	—	8,682	8,682	0.47	0.45	8,829
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	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
Quality Restaurant	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
Hotel	0.90	0.87	6.51	0.02	0.01	0.54	0.55	0.01	0.09	0.11	—	1,450	1,450	0.07	0.07	1,476
Parking Lot	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
Total	0.90	0.87	6.51	0.02	0.01	0.54	0.55	0.01	0.09	0.11	—	1,450	1,450	0.07	0.07	1,476

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	157	157	0.03	< 0.005	159

Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	369	369	0.06	0.01	373
Hotel	—	—	—	—	—	—	—	—	—	—	—	34.9	34.9	0.01	< 0.005	35.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	85.3	85.3	0.01	< 0.005	86.1
Total	—	—	—	—	—	—	—	—	—	—	—	647	647	0.10	0.01	653
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	157	157	0.03	< 0.005	159
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	369	369	0.06	0.01	373
Hotel	—	—	—	—	—	—	—	—	—	—	—	34.9	34.9	0.01	< 0.005	35.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	85.3	85.3	0.01	< 0.005	86.1
Total	—	—	—	—	—	—	—	—	—	—	—	647	647	0.10	0.01	653
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	26.0	26.0	< 0.005	< 0.005	26.3
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	61.2	61.2	0.01	< 0.005	61.8
Hotel	—	—	—	—	—	—	—	—	—	—	—	5.77	5.77	< 0.005	< 0.005	5.83
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	14.1	14.1	< 0.005	< 0.005	14.3
Total	—	—	—	—	—	—	—	—	—	—	—	107	107	0.02	< 0.005	108

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	157	157	0.03	< 0.005	159
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	369	369	0.06	0.01	373
Hotel	—	—	—	—	—	—	—	—	—	—	—	34.9	34.9	0.01	< 0.005	35.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	85.3	85.3	0.01	< 0.005	86.1
Total	—	—	—	—	—	—	—	—	—	—	—	647	647	0.10	0.01	653
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	157	157	0.03	< 0.005	159
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	369	369	0.06	0.01	373
Hotel	—	—	—	—	—	—	—	—	—	—	—	34.9	34.9	0.01	< 0.005	35.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	85.3	85.3	0.01	< 0.005	86.1
Total	—	—	—	—	—	—	—	—	—	—	—	647	647	0.10	0.01	653
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	26.0	26.0	< 0.005	< 0.005	26.3
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	61.2	61.2	0.01	< 0.005	61.8
Hotel	—	—	—	—	—	—	—	—	—	—	—	5.77	5.77	< 0.005	< 0.005	5.83
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	14.1	14.1	< 0.005	< 0.005	14.3
Total	—	—	—	—	—	—	—	—	—	—	—	107	107	0.02	< 0.005	108

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	< 0.005	0.04	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	53.3	53.3	< 0.005	< 0.005	53.4
Quality Restaurant	0.03	0.54	0.45	< 0.005	0.04	—	0.04	0.04	—	0.04	—	643	643	0.06	< 0.005	645
Hotel	< 0.005	0.09	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	104	104	0.01	< 0.005	105
Parking Lot	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
Total	0.04	0.67	0.56	< 0.005	0.05	—	0.05	0.05	—	0.05	—	800	800	0.07	< 0.005	803
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	< 0.005	0.04	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	53.3	53.3	< 0.005	< 0.005	53.4
Quality Restaurant	0.03	0.54	0.45	< 0.005	0.04	—	0.04	0.04	—	0.04	—	643	643	0.06	< 0.005	645
Hotel	< 0.005	0.09	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	104	104	0.01	< 0.005	105
Parking Lot	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
Total	0.04	0.67	0.56	< 0.005	0.05	—	0.05	0.05	—	0.05	—	800	800	0.07	< 0.005	803
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.82	8.82	< 0.005	< 0.005	8.84
Quality Restaurant	0.01	0.10	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	106	106	0.01	< 0.005	107
Hotel	< 0.005	0.02	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	17.3	17.3	< 0.005	< 0.005	17.3

Parking Lot	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
Total	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	133

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	< 0.005	0.04	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	53.3	53.3	< 0.005	< 0.005	53.4
Quality Restaurant	0.03	0.54	0.45	< 0.005	0.04	—	0.04	0.04	—	0.04	—	643	643	0.06	< 0.005	645
Hotel	< 0.005	0.09	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	104	104	0.01	< 0.005	105
Parking Lot	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
Total	0.04	0.67	0.56	< 0.005	0.05	—	0.05	0.05	—	0.05	—	800	800	0.07	< 0.005	803
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	< 0.005	0.04	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	53.3	53.3	< 0.005	< 0.005	53.4
Quality Restaurant	0.03	0.54	0.45	< 0.005	0.04	—	0.04	0.04	—	0.04	—	643	643	0.06	< 0.005	645
Hotel	< 0.005	0.09	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	104	104	0.01	< 0.005	105
Parking Lot	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
Total	0.04	0.67	0.56	< 0.005	0.05	—	0.05	0.05	—	0.05	—	800	800	0.07	< 0.005	803
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.82	8.82	< 0.005	< 0.005	8.84

Quality Restaurant	0.01	0.10	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	106	106	0.01	< 0.005	107
Hotel	< 0.005	0.02	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	17.3	17.3	< 0.005	< 0.005	17.3
Parking Lot	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
Total	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	133	133	0.01	< 0.005	133

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.23	0.01	1.40	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.75	5.75	< 0.005	< 0.005	5.77
Total	1.04	0.01	1.40	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.75	5.75	< 0.005	< 0.005	5.77
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	0.81	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.02	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.47	0.47	< 0.005	< 0.005	0.47
Total	0.17	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.47	0.47	< 0.005	< 0.005	0.47

4.3.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.23	0.01	1.40	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.75	5.75	< 0.005	< 0.005	5.77
Total	1.04	0.01	1.40	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.75	5.75	< 0.005	< 0.005	5.77
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.70	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectu Coatings	0.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.81	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectu ral Coatings	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscap e Equipmen t	0.02	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.47	0.47	< 0.005	< 0.005	0.47
Total	0.17	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.47	0.47	< 0.005	< 0.005	0.47

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermar ket	—	—	—	—	—	—	—	—	—	—	1.30	2.79	4.09	0.13	< 0.005	8.39
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	9.57	18.4	28.0	0.98	0.02	59.7
Hotel	—	—	—	—	—	—	—	—	—	—	0.49	1.26	1.74	0.05	< 0.005	3.35
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	1.18	1.18	< 0.005	< 0.005	1.19
Total	—	—	—	—	—	—	—	—	—	—	11.4	23.6	35.0	1.17	0.03	72.6

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	1.30	2.79	4.09	0.13	< 0.005	8.39
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	9.57	18.4	28.0	0.98	0.02	59.7
Hotel	—	—	—	—	—	—	—	—	—	—	0.49	1.26	1.74	0.05	< 0.005	3.35
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	1.18	1.18	< 0.005	< 0.005	1.19
Total	—	—	—	—	—	—	—	—	—	—	11.4	23.6	35.0	1.17	0.03	72.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	0.21	0.46	0.68	0.02	< 0.005	1.39
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	1.59	3.05	4.64	0.16	< 0.005	9.88
Hotel	—	—	—	—	—	—	—	—	—	—	0.08	0.21	0.29	0.01	< 0.005	0.56
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.20	0.20	< 0.005	< 0.005	0.20
Total	—	—	—	—	—	—	—	—	—	—	1.88	3.91	5.80	0.19	< 0.005	12.0

4.4.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	1.30	2.79	4.09	0.13	< 0.005	8.39
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	9.57	18.4	28.0	0.98	0.02	59.7
Hotel	—	—	—	—	—	—	—	—	—	—	0.49	1.26	1.74	0.05	< 0.005	3.35

Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	1.18	1.18	< 0.005	< 0.005	1.19
Total	—	—	—	—	—	—	—	—	—	—	11.4	23.6	35.0	1.17	0.03	72.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	1.30	2.79	4.09	0.13	< 0.005	8.39
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	9.57	18.4	28.0	0.98	0.02	59.7
Hotel	—	—	—	—	—	—	—	—	—	—	0.49	1.26	1.74	0.05	< 0.005	3.35
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	1.18	1.18	< 0.005	< 0.005	1.19
Total	—	—	—	—	—	—	—	—	—	—	11.4	23.6	35.0	1.17	0.03	72.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	0.21	0.46	0.68	0.02	< 0.005	1.39
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	1.59	3.05	4.64	0.16	< 0.005	9.88
Hotel	—	—	—	—	—	—	—	—	—	—	0.08	0.21	0.29	0.01	< 0.005	0.56
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.20	0.20	< 0.005	< 0.005	0.20
Total	—	—	—	—	—	—	—	—	—	—	1.88	3.91	5.80	0.19	< 0.005	12.0

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Supermar	—	—	—	—	—	—	—	—	—	—	16.7	0.00	16.7	1.67	0.00	58.4
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	8.10	0.00	8.10	0.81	0.00	28.3
Hotel	—	—	—	—	—	—	—	—	—	—	2.95	0.00	2.95	0.29	0.00	10.3
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	27.8	0.00	27.8	2.77	0.00	97.1
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermar ket	—	—	—	—	—	—	—	—	—	—	16.7	0.00	16.7	1.67	0.00	58.4
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	8.10	0.00	8.10	0.81	0.00	28.3
Hotel	—	—	—	—	—	—	—	—	—	—	2.95	0.00	2.95	0.29	0.00	10.3
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	27.8	0.00	27.8	2.77	0.00	97.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermar ket	—	—	—	—	—	—	—	—	—	—	2.77	0.00	2.77	0.28	0.00	9.68
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	1.34	0.00	1.34	0.13	0.00	4.69
Hotel	—	—	—	—	—	—	—	—	—	—	0.49	0.00	0.49	0.05	0.00	1.71
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	4.59	0.00	4.59	0.46	0.00	16.1

4.5.1. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	16.7	0.00	16.7	1.67	0.00	58.4
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	8.10	0.00	8.10	0.81	0.00	28.3
Hotel	—	—	—	—	—	—	—	—	—	—	2.95	0.00	2.95	0.29	0.00	10.3
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	27.8	0.00	27.8	2.77	0.00	97.1
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	16.7	0.00	16.7	1.67	0.00	58.4
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	8.10	0.00	8.10	0.81	0.00	28.3
Hotel	—	—	—	—	—	—	—	—	—	—	2.95	0.00	2.95	0.29	0.00	10.3
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	27.8	0.00	27.8	2.77	0.00	97.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	2.77	0.00	2.77	0.28	0.00	9.68
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	1.34	0.00	1.34	0.13	0.00	4.69
Hotel	—	—	—	—	—	—	—	—	—	—	0.49	0.00	0.49	0.05	0.00	1.71
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	4.59	0.00	4.59	0.46	0.00	16.1

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,139
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25.7
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15.9
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,181
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,139
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25.7
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15.9
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,181
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	189
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.26
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.64
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	196

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,139
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25.7
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15.9
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,181
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,139
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25.7
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15.9
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,181
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	189
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.26
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.64
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	196

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	12.4	1.19	32.3	< 0.005	0.07	—	0.07	0.07	—	0.07	—	793	793	1.66	0.00	834
Total	12.4	1.19	32.3	< 0.005	0.07	—	0.07	0.07	—	0.07	—	793	793	1.66	0.00	834
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	12.4	1.19	32.3	< 0.005	0.07	—	0.07	0.07	—	0.07	—	793	793	1.66	0.00	834
Total	12.4	1.19	32.3	< 0.005	0.07	—	0.07	0.07	—	0.07	—	793	793	1.66	0.00	834
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	1.64	0.16	4.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	94.9	94.9	0.20	0.00	99.9
Total	1.64	0.16	4.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	94.9	94.9	0.20	0.00	99.9

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	12.4	1.19	32.3	< 0.005	0.07	—	0.07	0.07	—	0.07	—	793	793	1.66	0.00	834
Total	12.4	1.19	32.3	< 0.005	0.07	—	0.07	0.07	—	0.07	—	793	793	1.66	0.00	834
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	12.4	1.19	32.3	< 0.005	0.07	—	0.07	0.07	—	0.07	—	793	793	1.66	0.00	834
Total	12.4	1.19	32.3	< 0.005	0.07	—	0.07	0.07	—	0.07	—	793	793	1.66	0.00	834
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	1.64	0.16	4.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	94.9	94.9	0.20	0.00	99.9
Total	1.64	0.16	4.27	< 0.005	0.01	—	0.01	0.01	—	0.01	—	94.9	94.9	0.20	0.00	99.9

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequester	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	1/1/2024	1/12/2024	5.00	10.0	—
Grading	Grading	1/15/2024	2/9/2024	5.00	20.0	—
Building Construction	Building Construction	2/12/2024	12/27/2024	5.00	230	—
Paving	Paving	12/30/2024	1/24/2025	5.00	20.0	—
Architectural Coating	Architectural Coating	1/27/2025	2/21/2025	5.00	20.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Tier 2	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Tier 2	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Tier 2	1.00	8.00	36.0	0.38
Grading	Graders	Diesel	Tier 2	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Tier 2	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 2	3.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Tier 2	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Tier 2	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Tier 2	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Tier 2	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Tier 2	1.00	8.00	46.0	0.45

Paving	Pavers	Diesel	Tier 2	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Tier 2	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Tier 2	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Tier 2	1.00	6.00	37.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Rubber Tired Dozers	Diesel	Tier 4 Final	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Tier 4 Final	1.00	8.00	36.0	0.38
Grading	Graders	Diesel	Tier 4 Final	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	3.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Tier 4 Final	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Tier 4 Final	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Tier 2	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Tier 4 Final	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Tier 4 Final	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Tier 4 Final	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Tier 4 Final	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Tier 4 Final	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	12.9	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	5.27	8.40	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	2.59	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	12.9	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	5.27	8.40	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	2.59	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%
Sweep paved roads once per month	9%	9%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	48,212	16,071	10,454

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Site Preparation	—	—	15.0	0.00	—
Grading	—	—	20.0	0.00	—
Paving	0.00	0.00	0.00	0.00	4.00

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Supermarket	0.00	0%
Quality Restaurant	0.00	0%
Hotel	0.00	0%
Parking Lot	4.00	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	204	0.03	< 0.005
2025	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Supermarket	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quality Restaurant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hotel	1,179	1,179	1,179	430,335	10,871	10,871	10,871	3,967,820
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Supermarket	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quality Restaurant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hotel	1,179	1,179	1,179	430,335	10,871	10,871	10,871	3,967,820

Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	48,212	16,071	10,454

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Supermarket	281,487	204	0.0330	0.0040	166,186
Quality Restaurant	661,009	204	0.0330	0.0040	2,005,909
Hotel	62,402	204	0.0330	0.0040	325,418
Parking Lot	152,634	204	0.0330	0.0040	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Supermarket	281,487	204	0.0330	0.0040	166,186
Quality Restaurant	661,009	204	0.0330	0.0040	2,005,909
Hotel	62,402	204	0.0330	0.0040	325,418
Parking Lot	152,634	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Supermarket	677,482	122,282
Quality Restaurant	4,996,772	122,282
Hotel	253,668	122,282
Parking Lot	0.00	427,987

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Supermarket	677,482	122,282

Quality Restaurant	4,996,772	122,282
Hotel	253,668	122,282
Parking Lot	0.00	427,987

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Supermarket	31.0	0.00
Quality Restaurant	15.0	0.00
Hotel	5.47	0.00
Parking Lot	0.00	0.00

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Supermarket	31.0	0.00
Quality Restaurant	15.0	0.00
Hotel	5.47	0.00
Parking Lot	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Supermarket	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0

Supermarket	Supermarket refrigeration and condensing units	R-404A	3,922	26.5	16.5	16.5	18.0
Quality Restaurant	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Quality Restaurant	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Quality Restaurant	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Hotel	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Hotel	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Hotel	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Supermarket	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Supermarket	Supermarket refrigeration and condensing units	R-404A	3,922	26.5	16.5	16.5	18.0
Quality Restaurant	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Quality Restaurant	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Quality Restaurant	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Hotel	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Hotel	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0

Hotel	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Emergency Generator	CNG	3.00	1.00	264	470	0.73

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

8. User Changes to Default Data

Screen	Justification
Land Use	Supermarket includes Boutique Market (5,495 sf). Quality Restaurant includes Tasting Rooms (9,000 sf) and Restaurant (7,462 sf). Hotel includes Boutique Hotel Concierge (1,728 sf), Boutique Hotel Cottages (4,800 sf), and Multi-Purpose/Dining Hall Event Space (3,655 sf). Total additional developed project site acreage is 7.4 acres. The project site would include 65,000 acres of landscaped area.
Construction: Construction Phases	Default construction schedule except for removal of the demolition phase.
Construction: Off-Road Equipment	Assuming the use of Tier 2 construction equipment.
Operations: Emergency Generators and Fire Pumps	The project would include three natural gas 350kW generators with a runtime of 4 hours a month for testing, plus any emergency events, and 3 annual events with run times of 72 hours each.
Operations: Vehicle Data	The proposed project would generate approximately 1,179 daily trips.

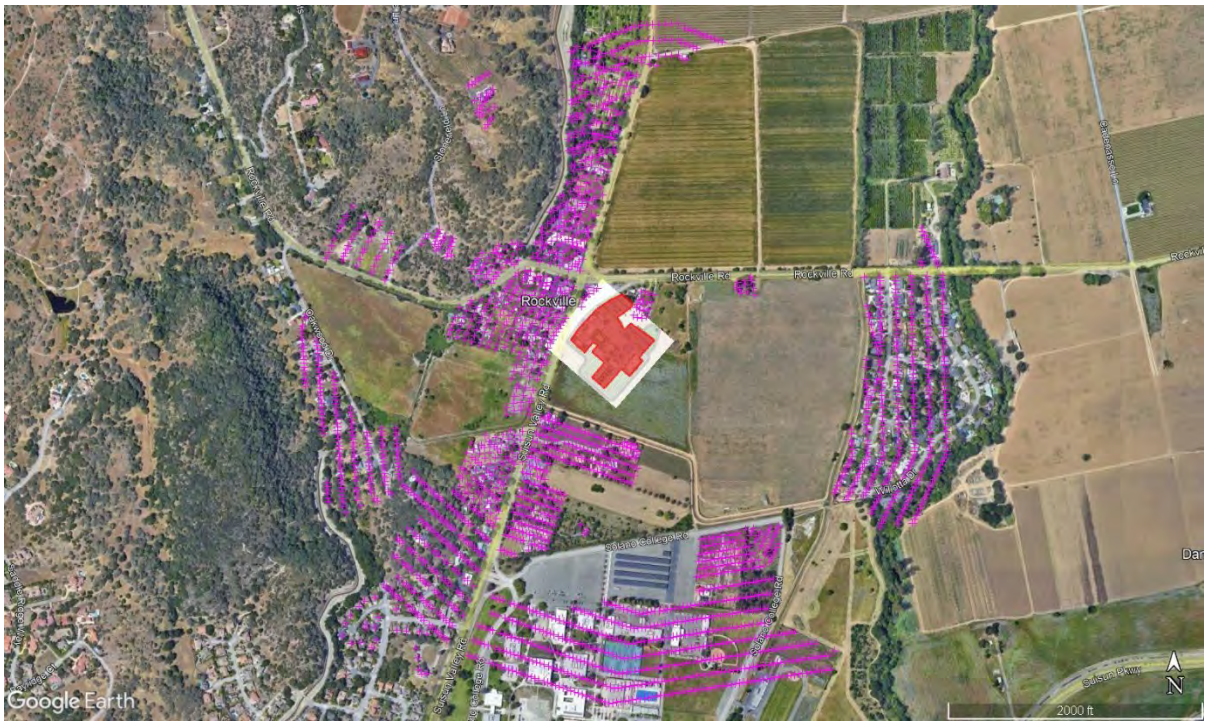
ATTACHMENT D

HRA MODEL SNAPSHOTS AND INPUT ASSUMPTIONS

Project Location



Receptor Grid



Construction Cancer Risk – Unmitigated



Construction Chronic Hazard Index – Unmitigated



Construction $PM_{2.5}$ Concentrations – Unmitigated



Construction Cancer Risk – Mitigated



Construction Chronic Hazard Index – Mitigated



Construction $PM_{2.5}$ Concentrations – Mitigated



General AERMOD Input Parameters			
Project Boundary			
	Based on site plan		
Project Elevation Data			
	Source	**Lakes Environmental**	
	Link	http://www.webgis.com/terraindata.html	
	Evel Data Descr.	**7.5 min DEM**	
Project Receptor Grid			
	Telescoping Grid	Spacing (m)	Distance (m)
	Grid 1	**20**	**310**
	Grid 2	**40**	**300**
	Grid 3		
	Grid 4		
	Comments	**Receptors on roads or parking lot areas have been removed.**	
Meteorological Dataset			
	Location	**Suisun STP**	
	Provided By	**Bay Area AQMD**	
	Years	**2013-2017**	
	Elevation (m)	**5.3**	
Construction Modeling Specific Inputs			
AERMOD Input Options			
	Regulatory Options	**Default**	
	Pollutant Type	**Other**	
	Averaging Period	**Period & Hourly**	
	Dispersion Coefficient	**Rural**	
	County	**Solano**	
	Urban Grouping / Pop	**N**	
	# of Receptors	**2,468**	
Construction Area Parameters			
	Source Type	**Polygon Area**	
	Project Area (m^2)	**20876.8**	
	Ht. of Source (m)	**3.048**	

General HARP Input Parameters		
Construction		
Sensitive Receptors		
Sensitive Scenario Parameters		
	Starting Age	**3rd Trimester**
	Age Range	**3rd Trimester - 2 Year**
	Receptor Type	**Individual Resident**
	Assessment Type	**Cancer / Chronic / Acute**
	Exposure Duration	**1**
	Intake Rate	**RMP using the Derived Method**

	Comments	**Each year of construction is modeled separately and the impact to each receptor is summed to estimate the total exposure from construction emissions. Additionally, the starting age is increased for each year of construction.**
Sensitive Pathway Parameters		
	Pathways	**SCAQMD Mandatory minimum Pathways**
	Deposition Rate	**0.02**
	TAH < 16 yrs	**Y**
	TAH ≥ 16 yrs	**Y**
Worker Receptors		
Worker Scenario Parameters		
	Starting Age	**16**
	Age Range	**16 - 17**
	Receptor Type	**Worker**
	Assessment Type	**Cancer / Chronic / Acute**
	Exposure Duration	**1**
	Intake Rate	**OEHHA Derived Method**
	Comments	**Each year of construction is modeled separately and the impact to each receptor is summed to estimate the total exposure from construction emissions. Additionally, the starting age is increased for each year of construction.**
Worker Pathway Parameters		
	Pathways	**OEHHA minimum Pathways**
	Deposition Rate	**0.02**
	TAH < 16 yrs	**N**
	TAH ≥ 16 yrs	**N**

Construction MEI (Sensitive) - Cancer Risk (in a Million) HARP Rec #: 426 X: 576948.42 Y: 4233178.88			
Unmitigated	T2	T3	T4
76.41	76.41	11.61	5.07
MEI (Sensitive) - Chronic Hazard Index HARP Rec #: 426 X: 576948.42 Y: 4233178.88			
Unmitigated	T2	T3	T4
9.58E-02	9.58E-02	1.46E-02	6.45E-03
MEI (Sensitive) - Acute Hazard Index HARP Rec #: NA X: NA Y: NA			
Unmitigated	T2	T3	T4
0.00E+00	0.00E+00	0.00E+00	0.00E+00
MEI (Sensitive) - PM 2.5 HARP Rec #: 426 X: 576948.42 Y: 4233178.88			
Unmitigated	T2	T3	T4
0.479	0.479	0.073	0.032

Construction MEI (Worker) - Cancer Risk (in a Million) HARP Rec #: 531 X: 576814.89 Y: 4233203.16			
Unmitigated	T2	T3	T4
8.53	8.53	1.29	0.56
MEI (Worker) - Chronic Hazard Index HARP Rec #: 531 X: 576814.89 Y: 4233203.16			
Unmitigated	T2	T3	T4
2.60E-02	2.60E-02	3.95E-03	1.75E-03
MEI (Worker) - Acute Hazard Index HARP Rec #: NA X: NA Y: NA			
Unmitigated	T2	T3	T4
0.00E+00	0.00E+00	0.00E+00	0.00E+00
MEI (Worker) - PM 2.5 HARP Rec #: 531 X: 576814.89 Y: 4233203.16			
Unmitigated	T2	T3	T4
0.130	0.130	0.020	0.009

Construction MEI (School) - Cancer Risk (in a Million) HARP Rec #: 1 X: 0 Y: 0			
Unmitigated	T2	T3	T4
0.00	0.00	0.00	0.00
MEI (School) - Chronic Hazard Index HARP Rec #: 1 X: 0 Y: 0			
Unmitigated	T2	T3	T4
0.00E+00	0.00E+00	0.00E+00	0.00E+00
MEI (School) - Acute Hazard Index HARP Rec #: NA X: NA Y: NA			
Unmitigated	T2	T3	T4
0.00E+00	0.00E+00	0.00E+00	0.00E+00
MEI (School) - PM 2.5 HARP Rec #: 1 X: 0 Y: 0			
Unmitigated	T2	T3	T4
0.0000	0.0000	0.0000	0.0000

Appendix B

Biological Resources Report

BIOLOGICAL RESOURCES REPORT

SOLANO LANDING

ROCKVILLE, SOLANO COUNTY, CALIFORNIA



LSA

July 2023

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BIOLOGICAL RESOURCES REPORT

SOLANO LANDING

ROCKVILLE, SOLANO COUNTY, CALIFORNIA

Submitted to:

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July 2023

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TABLE OF CONTENTS

TABLE OF CONTENTS iii
FIGURES AND TABLES v
LIST OF ABBREVIATIONS AND ACRONYMS vii
1.0 INTRODUCTION 1-1
1.1 Project Description 1-1
1.1.1 Location 1-1
1.1.2 Land Use and Zoning 1-1
1.1.3 Project Details 1-1
1.2 Purpose of This Report 1-2
2.0 METHODS 2-1
2.1 Database Review 2-1
2.2 Field Survey and Evaluation 2-1
3.0 BIOLOGICAL RESOURCES 3-1
3.1 Environmental Setting 3-1
3.2 Hydrology 3-1
3.3 Soils 3-2
3.4 Vegetation Communities 3-2
3.4.1 Coyote Brush Scrub Community 3-3
3.4.2 Mixed Oak Woodland 3-3
3.4.3 Open Water 3-3
3.4.4 Wild Radish Fields 3-3
3.4.5 Ruderal/Disturbed Vegetation 3-3
3.5 Wildlife 3-4
3.6 Tree Inventory 3-4
3.7 Potential Impacts to Biological Resources 3-5
3.7.1 Plants 3-12
3.7.2 Invertebrates 3-13
3.7.3 Birds 3-15
3.7.4 Mammals 3-18
3.7.5 Impact analysis ..... **Error! Bookmark not defined.**
4.0 CONCLUSIONS 4-1
5.0 REFERENCES 5-1

APPENDICES

A: FIGURES
B: TREE INVENTORY
C: USFWS LIST OF THREATENED AND ENDANGERED SPECIES

FIGURES AND TABLES

TABLES

Table 3.A: Summary of Trees Observed in the Project Area 3-4
Table 3.B: Special-Status Species Occurring Within 5 Miles of the Project Site 3-7

LIST OF ABBREVIATIONS AND ACRONYMS

ATC	Agricultural Tourist Center
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	County of Solano
CWA	Clean Water Act
DBH	diameter at breast height
HCP	Solano Habitat Conservation Plan
HM	Habitat Management
MBTA	Migratory Bird Treaty Act
NRCS	Natural Resources Conservation Service
project	Solano Landing Development
RWQCB	Regional Water Quality Control Board
sf	square foot/feet
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service

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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

1.1.1 Location

Solano Landing is a planned new development (project) at 2316 Rockville Road (Assessor's Parcel Number 0027-200-150), Rockville, Solano County, California. The 24.42-acre project site is currently undeveloped and is accessible via Suisun Valley Road and Rockville Road (Figure 1, Project Location, and Figure 2, Project Site Location on Topographic Base; Figure 3, Project Site Location on Aerial Base; all figures provided in Appendix A).

1.1.2 Land Use and Zoning

The project site is situated in the gateway to the Suisun Valley Wine Region and part of the area known as the Rockville Corners Business Community. Suisun Valley is a thriving regional agricultural destination supported by Agricultural Tourist Centers (ATC) that sustain and enhance the unique rural characteristic of the area. When the Suisun Valley Strategic Plan was developed, ATC designation was envisioned to support the continued viability of agriculture within the Suisun Valley. This project aims to enhance the vision and the characteristics of the Suisun Valley while bringing additional tourism to the Suisun Valley.

Solano Landing plans to use the unique zoning of the property for both commercial and agricultural uses. The property currently contains two small outbuildings that were used as produce stands years ago. The only recent use of the property is that a local farmer has grown alfalfa on it for the past several years. The property is part of the Suisun Valley Strategic Plan and currently has designated 2.1 acres ATC.

The applicant is requesting an additional 7.4 acres of ATC zoning for the developed portion of the property, which would bring the total to 9.1 acres of ATC zoned classification. This request is made in accordance with the Suisun Valley Strategic Plan. The Suisun Valley Strategic Plan allows for reserve acreage to be allocated to certain portions of the Suisun Valley for tourist-orientated projects.

1.1.3 Project Details

Once approved, the project would consist of 9.5 acres of ATC developed land and 10.5 acres of planted vineyards. The proposed project would include the construction of a total of 32,141 square feet (sf) of commercial development. The development of the property would include:

- A boutique market to sell locally grown products grown in the Suisun Valley and promoted on the property ;
- Six stand-alone tasting rooms with 1,500 sf each featuring high-quality wines from local or regional wineries and/or breweries;
- A multi-purpose/dining hall to support the hotel and other property-related events;

- A restaurant offering local food, beer and wine;
- A hotel concierge building used for administering the daily needs of the Boutique Hotel;
- A boutique hotel consisting of 10 prefabricated, stand-alone cottages.

The proposed project would include a total of 192 parking spaces and would include shuttle service from the project site to designated spots within the Suisun Valley.

1.2 PURPOSE OF THIS REPORT

The purpose of this Biological Resources Report is to satisfy the Solano County Department of Resource Management's requirement for additional technical studies identified during review of the rezoning submittal and project plans. The County of Solano (County) requested a biological resource analysis including characterization of existing habitats on site and a tree survey indicating type, species and size of existing trees as well as an analysis of trees to be removed. In addition, California Environmental Quality Act (CEQA) compliance requires the identification of special-status species and their habitats, wetlands and other regulated waters, and other potential biological resource constraints to property development.

This report includes a description of the project, an explanation of the methods used to conduct the analysis, results of field surveys including documentation of plant and wildlife species observed, a complete tree inventory, and a list of special-status species (plants and animals) that could potentially occur at the site (and their likelihood of occurrence). The report furthermore provides recommended mitigation measures to address the requirements of CEQA.

2.0 METHODS

2.1 DATABASE REVIEW

Prior to conducting the field survey, LSA compiled a list of sensitive plant and wildlife species potentially occurring within the project area to evaluate potential impacts resulting from project construction. This report provides a site assessment of the potential presence of special-status species, sensitive biological communities, and wetlands and other waters under the jurisdiction of the United States Fish and Wildlife Service (USFWS), United States Army Corps of Engineers (USACE), and/or the Regional Water Quality Control Board (RWQCB), and the California Department of Fish and Wildlife (CDFW). In addition, we reviewed the updated Solano Habitat Conservation Plan (HCP) database (Solano County Water Agency 2019), which incorporates California Natural Diversity Database (CNDDB) (CDFW 2023a) records and the California Native Plant Society (CNPS 2023) rare plant database, the Solano County General Plan (County of Solano 2008), and other in-house information LSA has obtained regarding potential regulatory constraints on developing the site.

Vegetation communities in the project area were classified based on descriptions in *A Manual of California Vegetation, Second Edition* by Sawyer, Keeler-Wolf, and Evans (2008), as appropriate. Names of plant species are consistent with the *Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin, B.G. et. al. 2012) and the Jepson Online Interchange for California Floristics (Jepson Flora Project 2023). Plant communities were mapped using a Global Positioning System (GPS) unit with submeter accuracy. All data were entered into a geographic information system (GIS) database to calculate the extent of the communities within the project area and to produce the final mapping.

2.2 FIELD SURVEY AND EVALUATION

LSA biologist and certified arborist Anna Van Zuuk conducted a general biological survey on January 20, 2023. During the survey, Ms. Van Zuuk walked the entire project area recording plant communities, wildlife species, and potential aquatic resources. Ms. Van Zuuk also assessed the potential for the project area to support special-status species and sensitive habitats. On January 26–27 and February 8, 2023, LSA conducted a tree inventory of the 24.42-acre parcel. The purpose of these site visits was to inventory all trees and identify other potential biological resource constraints to property development.

LSA inventoried and evaluated all trees within the project boundaries with a single main stem of at least 6 inches diameter at breast height (DBH)[1]. LSA also reviewed applicable tree protection and preservation ordinances for the site. The Solano County General Plan includes policies and regulations encouraging the protection of oak woodlands consistent with the Oak Woodland

[1] Diameter at breast height or DBH is normally measured at 54 inches above the average ground height. Exceptions including leaning trees, trees on sloped terrain, and trees with low branches or multiple stems. Leaning trees or trees on sloped terrain are measured at a right angle to the trunk, 54 inches from the ground height along the center axis of the trunk. Trees with branches below 54 inches are measured at the smallest diameter below the smallest branch. Trees with multiple stems (from ground level) are measured at 54 inches from the average ground height for each stem. A combination logger/diameter tape or a caliper was used to measure DBH.

Conservation Act. The primary regulations are related to RS.I-3: "Develop and adopt an ordinance to protect oak woodlands as defined in Senate Bill (SB) 1334 and heritage oak trees." Heritage trees are defined as: (a) trees with a trunk diameter of 15 inches or more measured at 54 inches above natural grade, (b) any oak tree native to California, with a diameter of 10 inches above natural grade, or (c) any tree or group of trees specifically designated by the County for protection because of its historical significance, special character, or community benefit. The general plan further describes considerations for the development of an ordinance for the County; however, no such ordinance has been adopted.

LSA performed a Level 2–Basic Visual Assessment in accordance with the International Society of Arboriculture's best management practices. This assessment level is limited to the observation of conditions and defects, which are readily visible from the ground. No laboratory or chemical testing or analysis was performed. Data collected included species identification and measurements of DBH, height, and canopy; each tree was also evaluated for overall heath (including a rating) and notes were made for identifying features, including wildlife nesting. Each tree was tagged.

3.0 BIOLOGICAL RESOURCES

3.1 ENVIRONMENTAL SETTING

The project area is in Suisun Valley, one of several designated agricultural region in western Solano County identified in the County's General Plan. Suisun Valley is bordered on the south and east by Fairfield, to the north by Napa County, and to the east by Green Valley. Excellent soil and climatic conditions have sustained viable agriculture in this area, despite being surrounded by urban development on three sides. The Suisun Valley Agricultural Region is identified in the Solano County General Plan and is also covered by the Suisun Valley Strategic Plan. The area encompasses approximately 9,000 acres, with the majority of land in agricultural use (92 percent) and the remainder of the land in public, industrial, commercial, or residential use.

3.2 HYDROLOGY

The project site is within the Suisun Bay watershed (HUC18050001) at the southern end of the Suisun Creek Watershed. The Suisun Creek Watershed straddles Solano and Napa counties and empties into Suisun Marsh and Suisun Bay. The project site is 0.8 kilometer (0.5 mile) west of Suisun Creek.

LSA did not detect any evidence of wetlands on the site, possibly due to vegetation management activities (spraying, mowing, tillage). A formal delineation including soil pits and an examination of hydrology was not conducted. Aquatic resources identified include an unnamed irrigation ditch along the southern boundary of the site and a roadside drainage along Suisun Valley Road to the east (Figure 4, Preliminary Aquatic Resources).

The unnamed irrigation ditch runs along the entirety of the southern boundary of the project site. This ditch is an average of 25 feet wide from top of bank to top of bank and supplies irrigation water to agricultural fields east and west of the project site. This ditch may have hydrological connectivity to Suisun Creek, located approximately 0.5 mile east of the project site or to Dan Wilson Creek in Fairfield. Both eventually drain into Suisun bay. This ditch is channelized with steep banks and no riparian zone, is largely unvegetated, and is lined with large concrete blocks along most of its length.

The ephemeral roadside drainage is parallel to Suisun Valley Road along the eastern boundary of the project site. This drainage is an average of 4 feet wide, shallow, and collects runoff during rain events, discharging storm water into the irrigation ditch. The drainage is vegetated with a variety of nonnative ruderal species including wild oats (*Avena* sp.), common bedstraw (*Galium aparine*), and Italian thistle (*Carduus pycnocephalus*), none of which are considered hydrophytic plant species.

On January 18, 2023, the Environmental Protection Agency and the U.S. Department of the Army ("the agencies") published a "Revised Definition of 'Waters of the United States'" in the *Federal Register*, which took effect on March 20, 2023. According to this rule, ditches (including roadside ditches) are specifically excluded from the agencies' definition of "waters of the United States". Therefore, the roadside drainage may only be subject to Section 401 of the Clean Water Act (CWA) and regulated by the RWQCB. The irrigation ditch would still be subject to Section 404 of the CWA in addition to Section 401. Permitting by the RWQCB may be needed if the project affects these

ditches or if culverts, driveways, or bridge structures are needed. CDFW generally does not regulate irrigation ditches or roadside drainages; therefore, it is unlikely that a 1602 permit would be required.

3.3 SOILS

The project site is a flat lot with a substrate of compacted natural soil underlying the roadways and recently farmed/tilled natural soil. The parcel has two soil types: Brentwood clay loam (0 to 2 percent slopes, approximately 95 percent) and Conejo soils, wet (approximately 5 percent; Figure 5, NRCS Soil Types). Brentwood soils are on nearly level to gently sloping fans formed in valley fill from sedimentary rocks at elevations from 40 to 400 feet. Most areas with these soils are irrigated and used for tree fruit, nut crops, vegetables, and field crops. Natural vegetation is annual grasses, forbs, and scattered oaks. The Conejo series soils consist of very deep, well-drained soils that formed in alluvium from basic igneous or sedimentary rocks. They are typically found on alluvial fans and stream terraces at elevations from 30 to 2,000 feet. Areas with these soils are typically used for irrigated row crops, orchards, and hay, pasture, and grain production. Similar to the Brentwood soils, natural vegetation is annual grasses and forbs with a few scattered oaks. Neither of these two soil types are considered hydric soils.

Pursuant to Government Code Section 65570, the California Department of Conservation Farmland Mapping and Monitoring Program compiles important farmland maps for the state. These maps combine soil survey and current land use information from the United States Department of Agriculture and Natural Resource Conservation Service to provide an inventory of agricultural resources in each county. County, state, and federal agencies have established several classifications of important agricultural land based on factors such as soil characteristics, climate, and water supply.

Soils of the project site are classified as Prime Farmland. This land has the best combination of physical and chemical features and is able to sustain long-term agricultural production. The site has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date. According to Appendix G of the *State CEQA Guidelines*, a project would have a significant effect on the environment if it would convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to non-agricultural use.

The project would convert 9.1 acres of prime farmland to ATC zoned classification. This request is made in accordance with the Suisun Valley Strategic Plan.

3.4 VEGETATION COMMUNITIES

The project site contains three natural communities: coyote brush scrub, mixed oak woodland, and open water (associated with the irrigation ditch mentioned above), totaling 3.93 acres (Figure 6, Natural Communities and Land Uses). Two semi-natural communities, wild radish fields and ruderal/disturbed vegetation, are also present totaling 19.79 acres. The remainder of the site

consists of developed land uses totaling 0.68 acre. Developed areas within the project site include the unvegetated roadway adjacent to the irrigation ditch and several derelict buildings to the north.

3.4.1 Coyote Brush Scrub Community

The coyote brush scrub community, also referred to as *Baccharis pilularis* Shrubland Alliance, is dominated by coyote brush in the shrub layer with scattered plants of poison oak (*Toxicodendron diversilobum*), Valley oak (*Quercus lobata*), coast live oak (*Quercus agrifolia*), and Italian stone pine (*Pinus pinea*). This community has a state rarity ranking of S5 (Apparently Secure) and a global rarity ranking of G5 (Secure) and is therefore, this community is not considered a sensitive natural community.

3.4.2 Mixed Oak Woodland

The mixed oak woodland, also referred to as *Quercus* (*agrifolia*, *douglasii*, *garryana*, *kelloggii*, *lobata*, *wislizeni*) Forest and Woodland Alliance, is dominated by valley oak and coast live oak. This community is defined as an oak species dominated canopy in which three or more oak species typically co-dominate. Other tree species present at lower cover include Northern California black walnut (*Juglans hindsii*), English walnut (*Juglans regia*), and persimmon (*Diospyros virginiana*), which are likely remnant orchard trees. The herbaceous layer is sparse but contains seedlings of both oak species, poison oak, and Himalayan blackberry (*Rubus armeniacus*). This community has a state rarity of S4 (Apparently Secure) and a global rarity of G4 (Apparently Secure); therefore, this community is not considered a sensitive natural community.

3.4.3 Open Water

The open water community within the project site is largely devoid of vegetation but does contain small quantities of hydrophytic vegetation on the fringes, such as rough cocklebur (*Xanthium strumarium*), curly dock (*Rumex crispus*), and tall flatsedge (*Cyperus eragrostis*). These species are not present in sufficient quantities to be considered a wetland (i.e., less than 5 percent). Waters are typically considered a sensitive natural community and are regulated by the RWQCB and the USACE.

3.4.4 Wild Radish Fields

Wild radish fields, also referred to as *Brassica nigra* – *Centaurea* (*solstitialis*, *melitensis*) Herbaceous Semi-Natural Alliance, cover the majority of the project site. This community is defined as *Brassica nigra*, *Hirshfeldia incana*, *Raphanus sativus*, or other mustards occurring with other nonnative plants at greater than 80 percent relative cover in the herbaceous layer and mustards are the dominant herb. Within the project site, wild radish (*Raphanus sativus*) overwhelmingly dominates, with smaller quantities of yellow star thistle (*Centaurea solstitialis*) and Italian thistle. Since this community is dominated by a variety of plant species not native to California, it is not considered a sensitive natural community.

3.4.5 Ruderal/Disturbed Vegetation

Ruderal/disturbed vegetation is present in open areas adjacent to Suisun Valley Road on the eastern edge of the project site and surrounding developed areas to the north. Ruderal species typically colonize quickly following disturbance, such as mowing, spraying, or grading. Ruderal species

observed in disturbed areas within the project site include wild oats, wild radish, white stemmed filaree (*Erodium moschatum*), spring vetch (*Vicia sativa*), common bedstraw, Italian thistle, cut leaved geranium (*Geranium dissectum*), and orchard grass (*Dactylis glomerata*).

3.5 WILDLIFE

Wildlife species observed on or near the project site included western scrub jay (*Aphelocoma californica*), house finch (*Haemorhous mexicanus*), red-winged blackbird (*Agelaius phoeniceus*), American crow (*Corvus brachyrhynchos*), acorn woodpecker (*Melanerpes formicivorus*), red-tailed hawk (*Buteo jamaicensis*), brewer's blackbird (*Euphagus cyanocephalus*), great blue heron (*Ardea herodias*), northern harrier (*Circus cyaneus*), turkey vulture (*Cathartes aura*), and Anna's hummingbird (*Calypte anna*). These species are typical of open grasslands, agricultural fields, and open woodlands in the Central Valley. No raptor nests were observed at the property.

Mammal species observed included California mouse (*Peromyscus californicus*) and eastern fox squirrel (*Sciurus niger*), as well as evidence of Botta's pocket gopher (*Thomomys bottae*) and California ground squirrel (*Otospermophilus beecheyi*) within the ruderal/disturbed areas and along the banks of the irrigation ditch, respectively. Burrows of Botta's pocket gopher and California ground squirrel provide important underground shelter for other animals, including special-status species, such as the burrowing owl (*Athene cunicularia*). A dusky-footed woodrat (*Neotoma fuscipes*) nest was observed at the base of a 28-inch Valley oak.

Amphibians and reptiles observed included gophersnake (*Pituophis catenifer*), American bullfrog (*Lithobates catesbeianus*), and Pacific chorus frog (*Pseudacris regilla*). Both amphibians were observed within the irrigation ditch, while the gophersnake was observed at the edge of the wild radish field in the center of the project site. All three of these species, as well as several of the mammal species mentioned above, are important prey items for many raptors.

3.6 TREE INVENTORY

A total of 252 trees were inventoried and evaluated within the project limits. All trees identified are summarized in Table 3.A below, and shown in Figure 7, Tree Locations. A table listing all tree species, their size, general health, and any supporting notes or recommendations is included in Appendix B.

Table 3.A: Summary of Trees Observed in the Project Area

Species	Count	Protected
Buckeye (*Aesculus californica*)	1	1
English walnut (*Juglans regia*)	15	0
Northern California black walnut (*Juglans hindsii*)	27	0
Italian stone pine (*Pinus pinea*)	2	0
California sycamore (*Platanus racemosa*)	1	0
Coast live oak (*Quercus agrifolia*)	98	98
Persimmons (*Diospyros kaki*)	15	0
Valley oak (*Quercus lobata*)	93	93
Total	***252***	***192***

Source: Compiled by LSA (2023).

The Solano County General Plan includes policies and regulations encouraging the protection of oak woodlands consistent with the Oak Woodland Conservation Act. The primary regulations are related to RS.I-3: "Develop and adopt an ordinance to protect oak woodlands as defined in Senate Bill (SB) 1334 and heritage oak trees." Heritage trees are defined as: (a) trees with a trunk diameter of 15 inches or more measured at 54 inches above natural grade, (b) any oak tree native to California, with a diameter of 10 inches above natural grade, or (c) any tree or group of trees specifically designated by the County for protection because of its historical significance, special character or community benefit. The general plan further describes considerations for the development of an ordinance for the County; however, no such ordinance has been adopted.

Based on the definitions of heritage trees set forth in the Solano County General Plan, a total of 54 valley oaks and 58 coast live oaks may be considered heritage trees (greater than 10 inches DBH) and an additional 45 trees of other California native species and escaped orchard trees may be considered heritage trees (greater than 15 inches DBH) (Table 3.A, Figure 7). Although tree removals will be required as part of project implementation, removal of heritage trees would not conflict with any adopted policies or ordinances protecting trees. No mitigation is required by the County.

3.7 POTENTIAL IMPACTS TO BIOLOGICAL RESOURCES

The following CEQA checklist summarizes potential impacts from the proposed project on biological resources on the project site. Each item is addressed in detail on the following pages.

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

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

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?

The CNDDB (CDFW 2023a) lists 26 plant species and 21 animal species occurrences within 5 miles of the project site (Table 3.B, Figures 8A and 8B). No special-status species were observed on the site during field surveys. The following general mitigation measure is designed to minimize impacts to all sensitive species, habitats, and environmental resources.

Mitigation Measure BIO-1 **Worker Environmental Awareness Program (WEAP).** During construction of the Project, before any work occurs on the Project site, including grading, vegetation removal and equipment staging, all construction personnel shall participate in an environmental awareness training regarding special-status species and sensitive habitats present on the Project site. Any additional construction personnel that are employed following the initial start of construction shall receive mandatory training before starting work. As part of the training, an environmental awareness handout shall be provided to all personnel that describes and illustrates sensitive resources (i.e., special-status species and habitat, nesting birds/raptors) to be avoided during proposed Project construction and lists measures to be followed by personal for the protection of biological resources. Such measures shall include, but are not limited to:

- Procedures to follow if a special-status species is found within the work area.
- Checking under equipment and staging areas for wildlife species each morning prior to work.
- Staying within designated work areas and maintaining exclusion/silt fencing.
- Reduced Project speed limits.
- No pets or firearms on-site.
- Contain trash/food waste and remove daily to avoid encouraging predators onto the Project site.
- Following Project Best Management Practices (BMPs).

Table 3.B: Special-Status Species Occurring Within 5 Miles of the Project Site

Common Name Scientific Name	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank	CDFW Status	Habitat	Potential to Occur
Plants								
Alkali milk-vetch (*Astragalus tener var. tener*)	None	None	G2T1	S1	1B.2		Playas, valley and foothill grassland (adobe clay), vernal pools	No suitable habitat
Pool orache (*Atriplex persistens*)	None	None	G2	S2	1B.2		Alkaline vernal pools	No suitable habitat
Big scale balsam root (*Balsamorhiza macrolepis*)	None	None	G2	S2	1B.2		Open grassy or rocky slopes, valleys	No suitable habitat
Narrow-flowered California brodiaea (*Brodiaea leptandra*)	None	None	G3	S3	1B.2		Open mixed-evergreen forest, chaparral in gravelly soil	Marginally suitable habitat present
Hollyleaf ceanothus (*Ceanothus purpureus*)	None	None	G2	S2	1B.2		Volcanic substrates, slopes, chaparral	No suitable habitat
Pappose tarplant (*Centromadia parryi* ssp. *parryi*)	None	None	G3T2	S2	1B.2		Chaparral, coastal prairie and marshes, meadows and seeps, valley and foothill grassland (vernally mesic)	No suitable habitat
Soft bird's-beak (*Chloropyron molle* ssp. *molle*)	Endangered	Rare	G2T1	S1	1B.2		Coastal salt marshes	No suitable habitat
Bolander's water hemlock (*Cicuta maculata* var. *bolanderi*)	None	None	G5T4T5	S2	2B.1		Coastal wetlands	No suitable habitat
Suisun thistle (*Cirsium hydrophilum* var. *hydrophilum*)	Endangered	None	G2T1	S1	1B.1		Tidal marshes	No suitable habitat
Greene's narrow-leaved daisy (*Erigeron greenei*)	None	None	G3	S3	1B.2		Chaparral, woodlands, and conifer forest generally on serpentine, sometimes rocky alluvium	Marginally suitable habitat present
Mt. Diablo buckwheat (*Eriogonum truncatum*)	None	None	G1	S1	1B.1		Northern coastal scrub, chaparral, and valley grassland on sand substrates	No suitable habitat

Table 3.B: Special-Status Species Occurring Within 5 Miles of the Project Site

Common Name Scientific Name	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank	CDFW Status	Habitat	Potential to Occur
Jepson's button-celery (*Eryngium jepsonii*)	None	None	G2	S2	1B.2		Moist clay soils, generally in vernal pools	No suitable habitat
San Joaquin spearscale (*Extriplex joaquinana*)	None	None	G2	S2	1B.2		Shadscale scrub, valley grassland, meadows, occasionally in wetlands	No suitable habitat
Contra Costa goldfields (*Lasthenia conjugens*)	Endangered	None	G1	S1	1B.1		Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools	No suitable habitat
Brewer's dwarf flax (*Hesperolinon breweri*)	None	None	G2	S2	1B.2		Chaparral or grassland, occasionally on serpentine	No suitable habitat
Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*)	None	None	G5T2	S2	1B.2		Coastal and estuarine marshes	No suitable habitat
Legenere (*Legenere limosa*)	None	None	G2	S2	1B.1		Wet areas, vernal pools, ponds	No suitable habitat
Jepson's leptosiphon (*Leptosiphon jepsonii*)	None	None	G2G3	S2S3	1B.2		Open or partially shaded grassy slopes	No suitable habitat
Mason's lilaeopsis (*Lilaeopsis masonii*)	None	Rare	G2	S2	1B.1		Intertidal marshes, streambanks	No suitable habitat
California alkaligrass (*Puccinellia simplex*)	None	None	G2	S2	1B.2		Saline flats and mineral springs in valley grassland	No suitable habitat
Long styled sand spurrey (*Spergularia macrotheca* var. *longistyla*)	None	None	G5T2	S2	1B.2		Alkaline marshes, mud flats, meadows, and hot springs	No suitable habitat
Fineleaf pondweed (*Stuckenia filiformis* ssp. *alpina*)	None	None	G5T5	S2S3	2B.2		Shallow, clear water of lakes, drainage channels	Habitat present
Suisun marsh aster (*Symphyotrichum lentum*)	None	None	G2	S2	1B.2		Marshes and swamps (brackish and freshwater)	No suitable habitat
Napa bluecurls (*Trichostema ruygtii*)	None	None	G1G2	S1S2	1B.2		Open areas, generally thin clay soils, possibly seasonally saturated	No suitable habitat

Table 3.B: Special-Status Species Occurring Within 5 Miles of the Project Site

Common Name Scientific Name	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank	CDFW Status	Habitat	Potential to Occur
Saline clover (*Trifolium hydrophilum*)	None	None	G2	S2	1B.2		Salt marshes, open areas in alkaline soils, alkaline grassland	No suitable habitat
Oval-leaved viburnum (*Viburnum ellipticum*)	None	None	G4G5	S3	2B.3		Chaparral, yellow pine forest, generally on north facing slopes	No suitable habitat
Fish								
Longfin smelt (*Spirinchus thaleichthys*)	Candidate	Threatened	G5	S1			Coastal lagoons, bays, estuaries, sloughs, tidal freshwater streams and offshore	No suitable habitat
Invertebrates								
Crotch's bumble bee (*Bombus crotchii*)	None	Candidate Endangered	G2	S2			Open grassland and scrub habitats	No suitable habitat
Western bumble bee (*Bombus occidentalis*)	None	Candidate Endangered	G3	S1			Open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows.	No suitable habitat
Monarch – California overwintering population (*Danaus plexippus plexippus*) pop. 1	Candidate	None	G4T1T2	S2			Overwintering sites require eucalyptus, Monterey pines, Monterey cypress, or other suitable evergreen tree for protection	No suitable habitat
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	Threatened	None	G3T2T3	S3			Dependent on host plant, the elderberry, which grows in riparian areas and foothill oak woodlands	No suitable habitat
Reptiles and Amphibians								
Western pond turtle (*Emys marmorata*)	None	None	G3G4	S3		CSC	Occurs in permanent or nearly permanent water sources, ponds, marshes, rivers, streams and irrigation ditches with emergent vegetation and basking sites.	No suitable habitat
Foothill yellow-legged frog – north coast DPS (*Rana boylii*) pop. 1	None	None	G3TNRQ	S4		CSC	Partly-shaded, shallow streams and riffles with a rocky substrate for egg-laying	No suitable habitat
California red-legged frog	Threatened	None	G2G3	S2S3		CSC	Deep, quiet pools of streams, marshes, and occasionally ponds,	No suitable habitat

Table 3.B: Special-Status Species Occurring Within 5 Miles of the Project Site

Common Name Scientific Name	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank	CDFW Status	Habitat	Potential to Occur
(*Rana draytonii*)							with dense, shrubby vegetation at edges	
Mammals								
Hoary bat (*Lasiurus cinereus*)	None	None	G3G4	S4			Primarily found in coniferous forest and broadleaf trees. Prefers woodlands, typically with foliage of mature deciduous and coniferous trees, forages near the edge of open areas.	Marginal foraging habitat present
Salt-marsh harvest mouse (*Reithrodontomys raviventris*)	Endangered	Endangered	G1G2	S1S2		FP	Found in saline or subsaline marsh habitats around the San Francisco Bay Estuary, and mixed saline or brackish areas in the Suisun Bay area.	No suitable habitat
Suisun shrew (*Sorex ornatus sinuosus*)	None	None	G5T1T2Q	S1S2		CSC	Tidal and brackish marshes dominated by bulrush and cattails	No suitable habitat
Birds								
Tricolored blackbird (*Agelaius tricolor*)	None	Threatened	G1	S1S2			Forages in grassland and cropland habitats. Nests near fresh water, preferably in emergent wetland but also in tall herbs	Marginal nesting and foraging habitat present
Burrowing owl (*Athene cunicularia*)	None	None	G4	S3		CSC	Usually occupies ground squirrel burrows in open, dry grasslands, agricultural and range lands. Often utilizes man-made structures, such as earthen berms, cement, asphalt, or rock.	Habitat present
Swainson's hawk (*Buteo swainsoni*)	None	Threatened	G5	S3			Grasslands, agricultural fields	Marginal foraging habitat present
Yellow rail (*Coturnicops noveboracensis*)	None	None	G4	S1S2		CSC	Shallow freshwater and brackish marshes and wet meadows	No suitable habitat
White-tailed kite (*Elanus leucurus*)	None	None	G5	S3S4		FP	Open grassland, meadows, or marshes	Marginal foraging habitat present

Table 3.B: Special-Status Species Occurring Within 5 Miles of the Project Site

Common Name Scientific Name	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank	CDFW Status	Habitat	Potential to Occur
American peregrine falcon (*Falco peregrinus anatum*)	Delisted	Delisted	G4T4	S3S4		FP	Marshes and grasslands near lakes and rivers, protected cliffs and ledges near water	No suitable habitat
Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	None	None	G5T3	S3		CSC	Brackish or freshwater marsh	No suitable habitat
California black rail (*Laterallus jamaicensis coturniculus*)	None	Threatened	G3T1	S1		FP	Marshes and wet meadows	No suitable habitat
Suisun song sparrow (*Melospiza melodia maxillaris*)	None	None	G5T3	S3		CSC	Tidal marshes in Suisun Bay	No suitable habitat
California Ridgway's rail (*Rallus obsoletus obseoletus*)	Endangered	Endangered	G3T1	S1		FP	Saltwater and freshwater marshes	No suitable habitat

Sources: CNPS (2023); CDFW (2023); USFWS (2023).

Status Codes:

Federal (U.S. Fish and Wildlife Service)
- FE = Listed as Endangered (in danger of extinction) by the Federal Government.
- FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the Federal Government.
- FC = Candidate to become a proposed species.
- FSC = Federal Species of Concern. May be Endangered or Threatened, but not enough biological information has been gathered to support listing at this time.

CNPS = California Native Plant Society
CDFW = California Department of Fish and Wildlife
DPS = distinct population segment
USFWS = United States Fish and Wildlife Service

State (California Department of Fish and Game)
- CE = Listed as Endangered by the State of California
- CSC = California Species of Special Concern
- CT = Listed as Threatened by the State of California
- CR = California Rare
- CC = State Candidate for listing as an Endangered Species

California Native Plant Society Rare Plant Inventory
- Rank 1A: Plants Presumed Extinct in California
- Rank 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere
- Rank 2: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
- Rank 3: Plants About Which We Need More Information—A Review List
- Rank 4: Plants of Limited Distribution—A Watch List

3.7.1 Plants

The project site has no vernal pools, marshes, or wetlands present; hence, there is no suitable habitat for species that rely on these habitats. Only two special-status plant species, Jepson's leptosiphon (*Leptosiphon jepsonii*) and Suisun marsh aster (*Symphyotrichum lentum*) have CNDDB occurrences within 1 mile of the project site. Neither of these species are expected to occur, based on habitats observed at the site. The site contains marginally suitable habitat for narrow-flowered California brodiaea (*Brodiaea leptandra*) and Greene's narrow-leaved daisy (*Erigeron greenei*) in mixed oak woodland and chaparral habitats; suitable habitat for fine leaf pondweed (*Stickenia filiformis ssp. alpina*) is present in the irrigation ditch. Although these species are not expected to occur since the site has been disturbed by mowing, tilling, grading and previous agricultural activity, impacts to any of these species would be considered significant under CEQA.

Mitigation Measure BIO-2 **Avoid and Minimize Impacts to Rare Plants.** Before the initiation of any vegetation removal or ground-disturbing activities, in areas that provide suitable habitat for special-status plants, the following measures shall be implemented:

- A qualified botanist shall conduct appropriately timed surveys for special-status plant species, in all suitable habitat that would be potentially disturbed by the Project.
- Surveys shall be conducted following CDFW or other approved protocol.
- If no special-status plants are found during focused surveys, the botanist shall document the findings in a letter to the lead agency, and other appropriate agencies as needed, and no further mitigation will be required.
- If special-status plants are found during focused surveys, the following measures shall be implemented:
    - Information regarding the special-status plant population shall be reported to the CNDDB.
    - If the populations can be avoided during Project implementation, they shall be clearly marked in the field by a qualified botanist and avoided during construction activities. Before ground clearing or ground disturbance, all on-site construction personnel shall be instructed as to the species' presence and the importance of avoiding impacts to this species and its habitat.
    - If special-status plant populations cannot be avoided, consultations with CDFW and/or USFWS would be required.

If allowed under the appropriate regulations, the plants shall be mapped, photographed, and then transplanted to a suitable location by a qualified botanist. If required by the relevant agency, a plan to compensate for the loss of special-status plant species will be prepared, detailing appropriate replacement ratios, methods for implementation, success criteria, monitoring and reporting protocols, and contingency measures that would be implemented if the initial mitigation fails; the plan would be developed in consultation with the appropriate agencies prior to the start of local construction activities.

3.7.2 Invertebrates

3.7.2.1 Monarch Butterfly

Monarch butterfly (*Danaus plexippus*) is a migratory butterfly that has been listed as a candidate for inclusion on the USFWS list of endangered and threatened wildlife since December 2020. The USFWS has concluded that listing monarchs under the federal Endangered Species Act would be warranted but is precluded due to other high-priority species. Currently, the monarch is scheduled to be federally listed in 2024. Monarchs are not listed as threatened or endangered under the California Endangered Species Act. However, monarch butterflies are listed by the State of California as a California Special Resource because their overwintering habitat is threatened by disturbance and by alteration and destruction of habitat. However, the likelihood that the monarch butterfly is overwintering in the project site is considered to be very unlikely.

Monarchs rely exclusively on milkweed species as a larval host plant. No milkweed plants have been identified during surveys of the site, which were conducted outside the flowering period of milkweed species. Milkweed plants, however, may be present in the project action area; therefore, monarch larvae may be present as well. The likelihood that monarch butterfly is present in the project area is considered to be moderate; therefore, project activities could impact this species. Implementation of Mitigation Measure BIO-3 would reduce potential impacts to milkweed and monarch butterfly to a less than significant level because preconstruction surveys would be required to identify and relocate (if needed) monarch breeding habitat prior to project construction activities.

Mitigation Measure BIO-3 **Monarch Butterfly Avoidance.** Preconstruction surveys shall be conducted during the monarch breeding season (March 16 through November 30) to determine if milkweed is present on the site and, if present, is being used for monarch breeding. Surveys shall be conducted by a qualified biologist no more than 14 days prior to ground or vegetation disturbance activities. The biologist shall search for evidence of monarch eggs, caterpillars, chrysalises, and adults. If active monarch breeding is identified, the milkweed stand shall be avoided until the applicant develops and implements a salvage and relocation plan that has been reviewed and approved by the applicable Resource Agencies.

3.7.2.2 Bumble Bees

Western bumble bee (*Bombus occidentalis*) and Crotch's bumble bee (*Bombus crotchii)* are currently considered candidate species by the CDFW. As candidate species, the western and Crotch's bumble bees receive the same legal protection afforded to endangered or threatened species.[2] There is a record of Crotch's bumble bee occurrence 1.3 miles due north of the project site (CNDDB occurrence 2746). Project activities would not affect meadow habitat or grasslands; thus, the potential for destruction of underground nests is very low. However, there is some suitable habitat and nectar plants within the project site; therefore, the potential for Crotch's and western bumble bees to occur in the project area is moderate.

Implementation of **Mitigation Measure BIO-1** would minimize potential impacts to western and Crotch's bumble bees by requiring that workers be trained to identify special-status species and associated habitats and to implement appropriate measures to avoid impacts during construction activities. In addition, implementation of the following mitigation measure would limit all herbaceous vegetation removal activities from September 1 through February 28, which would benefit pollinators. With implementation of these mitigation measures, impacts to western bumble bee and Crotch's bumble bee would be reduced to a less than significant level.

Mitigation Measure BIO-4 **Avoid Project Impacts to Western and Crotch's Bumble Bee**. Surveys should be performed by a qualified biologist familiar with the species behavior and life history to determine the presence/absence of special status bumble bees within 6 weeks prior to vegetation removal and/or grading. Surveys should be conducted during the flying season when the species is most likely to be detected above ground, between March 1 to September 1. Survey results, including negative findings, should be submitted to CDFW prior to implementing Project-related ground-disturbing activities. At minimum, a survey report should provide the following:

- A description and map of the survey area, focusing on areas that could provide suitable habitat for special-status bumble bees.
- Field survey conditions that should include name(s) of qualified biologist(s) and brief qualifications; date and time of survey; survey duration; general weather conditions; survey goals, and species searched.
- Map(s) showing the location of nests/colonies.
- A description of physical (e.g., soil, moisture, slope) and biological (e.g., plant composition) conditions where each nest/colony is found. A sufficient description of biological

[2] California Code, Fish and Game Code - FGC § 2074.2 and §2085.

conditions, primarily impacted habitat, should include native plant composition (e.g., density, cover, and abundance) within impacted habitat (e.g., species list separated by vegetation class; density, cover, and abundance of each species).

- If adverse impacts to Crotch's bumble bee cannot be avoided either during Project activities or over the life of the Project, the County should consult with CDFW to determine appropriate avoidance and/or minimization measures for the species.

3.7.3 Birds

Wild radish fields are the result of the area being left fallow after years of cultivation, most recently of alfalfa. The site may provide marginally suitable foraging habitat for tricolored blackbird (*Agelaius tricolor*), burrowing owl (*Athena cunicularia*) , Swainson's hawk (*Buteo swainsoni*), and white-tailed kite (*Elanus leucurus*). In addition, the existing trees and shrubs on the site provide adequate nesting habitat for migratory birds, which are protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code Section 3513.

3.7.3.1 Tricolored Blackbird

Tricolored blackbirds breed in colonies in thorny shrubs, such as Himalayan blackberry (*Rubus armeniacus*), or California wild rose (*Rosa californica*) adjacent to wetlands and near an abundant source of insects, such as pastures or croplands. They are also known to nest in dense thickets of tall herbs, such as the wild radish fields present at the project site. The nearest CNDDB record is roughly 5 miles southwest of the project site in Lynch Canyon North. While the project site itself is not a high value foraging or nesting site for tricolored blackbirds, it could be used by this species on an occasional basis. Thus, development of the property contributes to the regional reduction of foraging habitat for this species and may therefore require mitigation under CEQA. The following mitigation measure is recommended to reduce direct impacts to tricolored blackbird nesting and foraging habitat to a less than significant level.

Mitigation Measure BIO-5 **Avoid Impacts to Tricolored Blackbird.** If construction activities begin between February 1 and August 31, a preconstruction survey for nesting tricolored blackbirds shall be performed by a qualified biologist to ensure that no individuals of this species are harmed during construction activities. This survey may be conducted concurrently with other bird surveys (e.g., Swainson's hawk, burrowing owl). If an active tricolored blackbird colony is discovered within the project site or within a 100-foot radius, a qualified biologist shall evaluate the potential for construction to disturb nesting activities. CDFW shall be contacted to review the evaluation and determine if the project can proceed without adversely affecting nesting activities. CDFW shall also be consulted to establish protection measures, such as buffers. Disturbance of active nests shall be avoided until it is determined by a qualified biologist that nesting is complete and the young have fledged, or

that the nest has failed. If work is allowed to proceed, at a minimum, a qualified biologist shall be on-site during the start of construction activities during the nesting season to monitor nesting activity. The monitor shall have the authority to stop work if it is determined the project is adversely affecting nesting activities.

3.7.3.2 Burrowing Owl

Burrowing owls occur in warmer valleys, open, dry grasslands, deserts, and scrublands associated with agriculture and urban areas that support populations of California ground squirrels. Burrowing owls nest below ground, using abandoned burrows of other species (mostly ground squirrels) and feed on insects and small mammals. The nearest CNDDB record sighting is approximately 3 miles east of the project site along Cordelia Road. Though no burrowing owls or sign were observed within the project site, burrowing owls may utilize the numerous burrows and adjacent agricultural fields for nesting and foraging. Thus, development of the property contributes to the regional reduction of foraging habitat for these species and may therefore require mitigation under CEQA. Mitigation for lost foraging habitat is also required under the Solano HCP once it is adopted. The following mitigation measures are recommended to reduce direct impacts to burrowing owl nesting and foraging habitat to a less than significant level.

Mitigation Measure BIO-6 **Avoid Impacts to Burrowing Owl.** Preconstruction surveys for western burrowing owl shall be conducted by a qualified biologist in accordance with CDFW's 2012 Staff Report on Burrowing Owl Mitigation and measures outlined in the Solano HCP. If burrowing owls are identified during the preconstruction survey, passive exclusion shall be implemented per CDFW's 2012 Staff Report on Burrowing Owl Mitigation (including avoidance of occupied burrows during the breeding season).

3.7.3.3 Swainson's Hawk

Swainson's hawk occurs widely in the lowlands of Solano County, and Swainson's hawks are known to nest in trees within industrial landscapes as long as suitable foraging habitat is nearby. There are no known, active, or recently active Swainson's hawk or other raptor nests within the project site. There are three known Swainson's hawk nest site within 1 mile of the project site along Suisun Creek. Other raptors include the white-tailed kite, which uses trees in open areas for nesting and open grasslands and marshes for foraging. The closest known CNDDB nest site of white-tailed kite is approximately 1 mile southeast of the project site near Suisun Creek in Cordelia.

Since the project proposes to remove trees as a result of project construction, Swainson's hawk may be impacted in the event they are nesting in the project area when construction begins. The following mitigation measure is recommended to reduce direct impacts to potentially nesting and foraging Swainson's hawk and other raptors to a less than significant level.

Mitigation Measure BIO-7 **Swainson's Hawk Avoidance.** For any construction activities initiated between March 15 and September 1, surveys for nesting Swainson's hawk shall be conducted within 0.5 mile of areas of

disturbance for this species as described in the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in the California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000). The recommended minimum survey protocol is completion of surveys for at least the two survey periods immediately prior to a project's initiation. Survey periods correspond to typical migration, courtship, and nesting behavior and defined as follows:

Survey Period	Survey Dates	Survey Time	Number of Surveys
1	January 1 to March 20	All day	1
2	March 20 to April 5	Sunrise to 1000 or 1600 to sunset	3
3	April 5 to April 20	Sunrise to 1200 or 1630 to sunset	3
4	April 21 to June 10	All day; monitoring known nests only	Ongoing
5	June 10 to July 30	Sunrise to 1200 or 1630 to sunset	3

If surveys determine that the species is present and nesting within this area, a buffer zone of 0.5 mile shall be established and coordination with CDFW shall be required prior to any work in this buffer zone during the nesting season. Work within 0.5 mile may be permitted with CDFW approval if a qualified biologist monitors the nest when Project disturbance activities occur within 0.5 mile of the nest. If the monitor determines that construction may result in abandonment of the nest, all construction activities within 0.5-mile shall be halted until the nest is abandoned or all young have fledged. The monitor shall continue monitoring the nest until construction within 0.5 mile of the nest is completed, or until all chicks have completely fledged and are no longer dependent on the nest. The monitor shall have the authority to stop work if it is determined the project is adversely affecting nesting activities.

3.7.3.4 Nesting Birds

The project area provides suitable nesting habitat for a number of bird species protected under Section 3503 of the California Fish and Game Code; however, the survey was conducted outside of the nesting bird season (February 1 to August 31). Since the project proposes to remove trees as a result of project construction, migratory bird species may be impacted in the event they are nesting in the project area when construction begins. Therefore, the project has the potential to impact nesting bird species protected under Section 3503. Birds protected under the California Fish and Game Code and the MBTA could potentially nest on or near the property; however, as long as the project complies with provisions of the MBTA and California Fish and Game Section 3513, the project will not result in significant impacts to any protected nesting birds. The following general avoidance and minimization measures are recommended to reduce potential impacts to nesting birds to a less than significant level.

Mitigation Measure BIO-8 **Nesting Birds.** A pre-construction survey by a qualified biologist for nesting birds shall be required if construction activities are scheduled to occur during the breeding season (February 1 to August 31) for raptors and other migratory birds, including special-status bird species. The survey shall be conducted 15 days prior to ground disturbing activities and shall cover a 500-foot radius surrounding the construction zone. If active nests are found, actions typically include, but are not limited to, monitoring by agency-approved biologists, establishment or refinement of species-specific buffers, reduction or elimination of the use of loud equipment, reducing foot traffic and remaining in the vehicles, and the maintenance of visual screens. Migratory birds shall be protected from project area staging and operations through the use of a buffer established based on the birds' sensitivity and response to the potential activity. Baseline behavior of the bird should be established to inform the buffer size. The qualified biologist may start with a 100-foot nest buffer or a 250-foot nest buffer for raptors but may adjust the buffer size based on the reaction of the bird to the activity. If there is a potential for nest abandonment due to intrusion into the buffer zone, as established by the qualified biologist, then CDFW and the USFWS shall be consulted. The biologist should have the authority to stop work if it is determined that the project is adversely affecting nesting activities. If a lapse in Project-related work of 15 days or longer occurs, another focused survey, and if required, consultation with CDFW and the USFWS shall be performed before Project work can resume. Tree removal activities should be conducted outside the nesting bird season (February 1 – August 31).

3.7.4 Mammals

3.7.4.1 Bats

No bats or evidence of roosting bats were observed; however, hoary bats (*Lasiurus cinereus*) may forage over the wild radish field and use the adjacent woodlands for night roost habitat. Hoary bats are solitary and can be found in all woodlands and forests with medium to large-size trees and dense foliage. Generally, individuals prefer open habitats or habitat mosaics with access to trees for cover and open areas or habitat edges for feeding. They primarily feed on moths and require access to water. The nearest CNDDB record sighting is 4.25 miles east of the project site in Suisun City. Development of the property contributes to the regional reduction of habitat for this species and may therefore require mitigation under CEQA. The following mitigation measures are recommended to reduce impacts to hoary bat foraging and roosting habitat to a less than significant level.

Mitigation Measure BIO-9 **Avoid and Minimize Impacts to Special-Status Bats**. Potential bat roost trees shall be identified by a qualified bat biologist during a tree habitat assessment conducted several months prior to tree

removal. Any potential bat roost trees in the project site shall be removed only between approximately March 1 and April 15, or when evening temperatures are above 45°F and rainfall less than 0.5 inch in 24 hours occurs, prior to parturition of pups. The next acceptable period is after pups become self-sufficiently volant – September 1 through about October 15, or prior to evening temperatures dropping below 45°F and onset of rainfall greater than 0.5 in in 24 hours. In areas where suitable habitat occurs and there is potential for special-status bat species to be present, specific mitigation measure(s) will be developed in consultation with CDFW.

Mitigation Measure BIO-10

Roost Tree Removal. If non-bat roost trees or other vegetation must be removed outside the dates listed above, a 100 ft buffer around each bat roost tree shall be established to reduce potential of disturbance of non-volant young during maternity season, or torpid bats during winter months. Work activities shall be limited to daylight hours to minimize potential effects to foraging bats. Bat roost trees shall be removed only during seasonal periods of bat activity as described above, and only after:

a. Negative results from a night emergence survey conducted no more than 1-2 nights prior to tree removal by a qualified bat biologist, using night vision and/or IR-sensitive camera equipment and bioacoustics recording equipment, or;

b. All other vegetation other than potential roost trees within the impact area has been removed at least 4 days prior to removal of the bat roost trees.

Potential bat roost trees shall be removed using a two-step tree process spanning two consecutive days:

a. **Day 1:** Small branches and small limbs containing no cavity, crevice, or exfoliating bark habitat, as determined by a qualified bat biologist, are removed using chainsaws only. Trees containing suitable potential habitat shall be trimmed with chainsaws on Day 1 under initial field supervision by a qualified bat expert to ensure that the tree cutters fully understand the process and avoid incorrectly cutting potential habitat features or trees. After tree cutters have received sufficient instruction, the qualified bat expert does not need to remain on the site.

b. **Day 2:** The remainder of the tree is to be removed. The disturbance caused by chainsaw noise and vibration, coupled with the physical alteration of the tree, has the effect of causing

colonial bat species to abandon the roost tree after nightly emergence for foraging. Removing the tree the next day prevents re-habituation and re-occupation of the tree.

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 Wildlife or U.S. Fish and Wildlife Service?

No riparian or other sensitive natural communities are present on the project site.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Aquatic resources identified on the project site include an unnamed irrigation ditch along the southern boundary of the site and an ephemeral roadside drainage ditch along Suisun Valley Road along the eastern boundary of the project site.

The unnamed irrigation ditch runs along the entirety of the southern boundary of the project site. This ditch is an average of 25 feet wide from top of bank to top of bank and supplies irrigation water to agricultural fields east and west of the project site. This ditch may have hydrological connectivity to Suisun Creek, located approximately 0.5 mile east of the project site or to Dan Wilson Creek in Fairfield. Both eventually drain into Suisun bay. This ditch is channelized with steep banks and no riparian zone, is largely unvegetated, and is lined with large concrete blocks along most of its length. The irrigation ditch would be considered Waters of the United States and Waters of the State, subject to regulation by the USACE and the RWQCB.

The ephemeral roadside drainage is parallel to Suisun Valley Road along the eastern boundary of the project site. This drainage is an average of 4 feet wide, shallow, and collects runoff during rain events, discharging storm water into the irrigation ditch. The drainage is vegetated with a variety of nonnative ruderal species including wild oats (Avena sp.), common bedstraw (Galium aparine), and Italian thistle (*Carduus pycnocephalus*), none of which are considered hydrophytic plant species. The roadside drainage would only be subject to Section 401 of the Clean Water Act (CWA) and regulated by the RWQCB.

The proposed project would not directly impact the unnamed irrigation ditch along the southern boundary of the site. However, implementation of the proposed project may result in direct impacts to the ephemeral roadside drainage to accommodate the proposed access driveway off of Suisun Valley Road and proposed parking/access for the market along Suisun Valley Road. As described above, the ephemeral roadside ditch is considered Waters of the State and regulated by the RWQCB. Implementation of the following mitigation measure, which requires that the project applicant obtain the necessary regulatory permit and comply with all permit conditions, would reduce potential impacts to wetlands to a less than significant level. With implementation of this mitigation measure, this impact would be less than significant with mitigation incorporated.

Mitigation Measure BIO-11 **Wetland Mitigation.** The proposed project shall be designed to minimize fill of jurisdictional waters. If direct impacts to the ephemeral roadside drainage cannot be avoided, prior to ground disturbance, the project applicant shall obtain a permit from the Regional Water Quality Control Board (RWQCB, CWA Section 401 water quality certification). Impacts to waters of the State shall be mitigated by providing compensatory mitigation at a minimum 1:1 ratio in area. A Habitat Mitigation and Monitoring Plan shall be prepared and implemented for the proposed mitigation approach. This plan shall be subject to approval by the RWQCB prior to any disturbance of waters of the State.

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?

There are no wildlife nursery sites on the property. The CDFW Biogeographic Information and Observation System (CDFW 2023b) was reviewed to determine if the project site is within an Essential Connectivity Area. The Solano Landing project site is at the periphery of an identified Essential Connectivity Area; therefore, the project may—but is not likely to—adversely affect migratory corridors. Connectivity to open farmland, coast range oak woodlands and other habitats would not be significantly reduced by implementation of the project as long as wildlife-friendly fencing is installed. Mitigation of direct impacts to migration and movement habitat will reduce the CEQA impact category to a level of less than significant with mitigation incorporated.

Mitigation Measure BIO-12 **Minimize Impacts to Wildlife Movement.** To minimize the impact of development on wildlife movement, all perimeter fencing shall meet the following standards:

- Fence heights shall be limited to a maximum of 5 feet above ground level (limited height variations based on topographic changes are allowable).
- Welded wire or other mesh fences shall have a minimum 4-inch by 4-inch opening. No-climb horse fencing is prohibited as perimeter fencing.
- Solid perimeter fences are prohibited.
- Wood or metal picket fences shall have a minimum spacing of 4 inches between pickets and shall not have sharp or pointed spikes or decorations along the top.

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

LSA inventoried 252 trees (Table 3.A, and Figure 7, Tree Locations). Most of these trees are within the footprint of the planned development and therefore need to be removed. Based on the definitions of heritage trees set forth in the Solano County General Plan, a total of 54 valley oaks and 58 coast live oaks may be considered heritage trees (greater than 10 inches DBH) and an additional 45 trees of other California native species and escaped orchard trees may be considered heritage trees (greater than 15 inches DBH) (Table 3.A, Figure 7). Removal of heritage trees would not conflict with any adopted policies or ordinances protecting trees. Mitigation Measure BIO-13 is suggested if the County requires mitigation for these removals.

Mitigation Measure BIO-13 **Heritage Tree Mitigation**. All native oak trees meeting the heritage definition of the Solano County General Plan shall be protected from damage to the maximum extent possible. This protection measure includes designating no work zones by exclusion fencing along the canopy dripline. If a heritage tree cannot be protected from damage or removal, the loss of each mature tree shall be mitigated by planting saplings of the same species in areas where mature trees will not interfere with ongoing operations of the vineyard, tasting rooms, hotel and associated parking areas. Trees planted within the parking area for shade may count towards the heritage tree mitigation as long as they consist of native oak species. The following guidelines for oak restoration shall be followed:

- **Mitigation Planting:** To compensate for the loss of mature native oaks, saplings of the same species shall be planted for each mature tree removed. The number of saplings planted sufficient to replace the tree canopy for each tree removed. Every effort shall be made to incorporate preservation of oak trees as part of the project. Oak saplings shall be sourced from a certified *Phytophthora ramorum*-free nursery. Saplings must be at least 3 years old and shall be spaced at least 15 feet from each other. Each sapling shall be staked with two wooden stakes and caged to a sufficient height. Saplings shall be planted in moist soil, after the first substantial rain. In the following summer, watering may be necessary to enhance survival.

- **Performance and Success Criteria:** Performance criteria for the revegetation area shall be assessed for at least 3 years following the conclusion of grading activities. The oak planting site(s) shall have at least 65 percent cover by native or naturalized plants (primarily grasses), and no more than 20 percent of the area shall be covered by nonnative weeds. The survival of planted

oak saplings shall exceed 65% (i.e., 10 living oak saplings per mature tree removed).

- **Verification:** The Solano County Department of Resource Management shall verify that the impacts to native trees are mitigated consistent with the above requirements, including ongoing monitoring to ensure revegetation success.

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?

The County is not a participant in the Solano HCP and the HCP has not yet been adopted. This project will not conflict with the provisions of the Solano HCP nor interfere with the implementation of this plan once it is adopted. No impact would occur.

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4.0 CONCLUSIONS

In summary, LSA makes the following conclusions and recommendations:

- A wetland delineation is recommended to fully document the conditions within aquatic features and ascertain jurisdictional status.
- Implementing appropriate best management practices for erosion control during construction. Rehabilitating soils and establishing bio-retention swales will avoid potential impacts to water quality.
- A rare plant survey during the normal blooming period is recommended for three special-status plant species with potential to occur in natural communities on site: California brodiaea, Greene's narrow-leaved daisy, and fine leaf pondweed.
- The project site contains habitat for five special-status animal species: hoary bat, tricolored blackbird, burrowing owl, Swainson's hawk, and white-tailed kite. Implementation of mitigation measures listed above will reduce the impacts to these species to a less than significant level.

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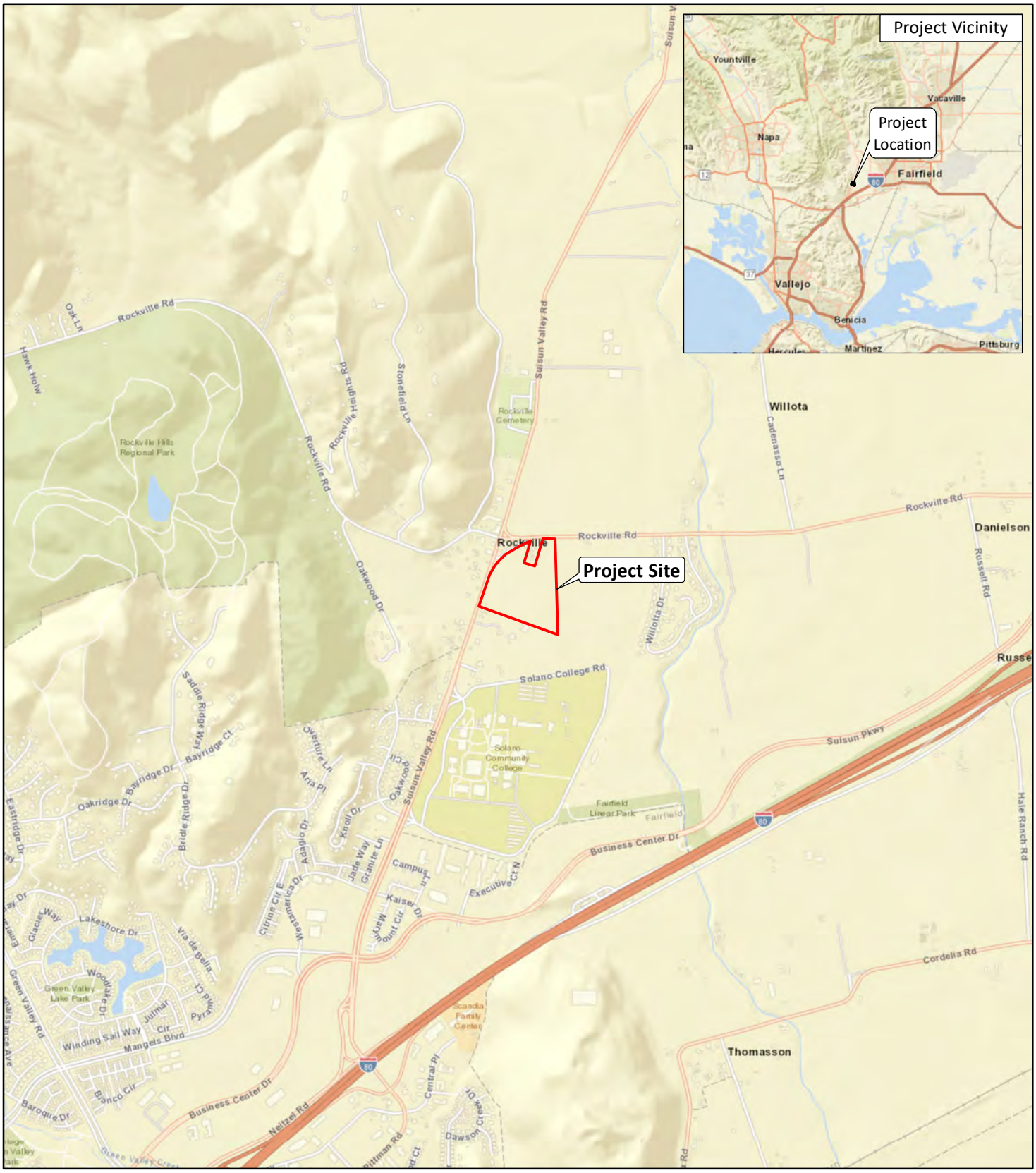
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APPENDIX A

FIGURES

Figure 1: Project Location
Figure 2: Project Site Location on Topographic Base
Figure 3: Project Site Location on Aerial Base
Figure 4: Preliminary Aquatic Resources
Figure 5: NRCS Soil Types
Figure 6: Natural Communities and Land Uses
Figure 7: Tree Locations
Figure 8A: Special-Status Plant Species Occurrences
Figure 8B: Special-Status Animal Species Occurrences

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LSA

LEGEND

Project Site

FIGURE 1

N

0 1000 2000

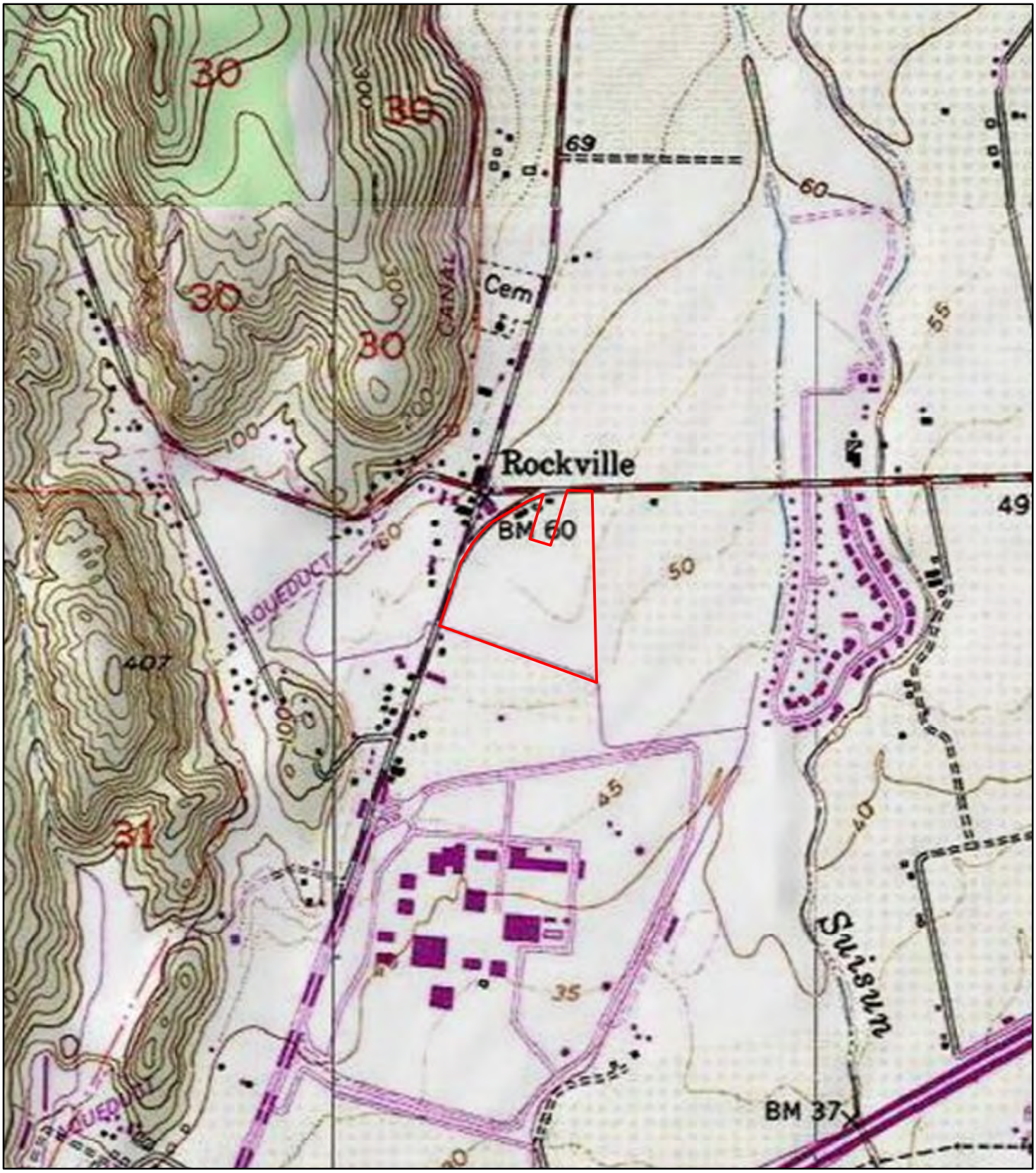
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Solano Landing Development
Solano County, California
LSA Project No. 20230890

Project Location

SOURCE: Esri World Street Map (2023).

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LSA

LEGEND

Project Site

FIGURE 2

N

0 500 1000

FEET

Solano Landing Development
Solano County, California
LSA Project No. 20230890

Project Site Location on Topographic Base

SOURCE: USGS 7.5-Minute Quadrangle, Fairfield South (1949, ed. 1985).

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LSA

LEGEND

Project Site

FIGURE 3

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0 100 200

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Solano Landing Development
Solano County, California
LSA Project No. 20230890

Project Site Location on Aerial Base

SOURCE: Vivid Maxar Aerial Imagery (06/2021)

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LSA

LEGEND

Project Site

Culverts

Preliminary Non-Wetland Waters - (0.76 ac)

N

0 100 200

FEET

SOURCE: Vivid Maxar Aerial Imagery (06/2021); Mapping - LSA (03/2023)

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FIGURE 4

Solano Landing Development
Solano County, California
LSA Project No. 20220500

Preliminary Aquatic Resources



LSA

LEGEND

Project Site

Soil Types

BrA - Brentwood clay loam, 0 to 2 percent slopes

Cs - Conejo soils, wet

N

0 100 200

FEET

FIGURE 5

Solano Landing Development
Solano County, California
LSA Project No. 20230890

NRCS Soil Types

SOURCE: Vivid Maxar Aerial Imagery (06/2021); USDA NRCS (08/2004)

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LSA

LEGEND

Project Site

Natural Communities and Land Uses - (24.40 ac)

Coyote Brush Scrub - (0.45 ac)

Mixed Oak Woodland - (2.77 ac)

Open Water - (0.71 ac)

Wild Radish Fields - (19.44 ac)

Ruderal / Disturbed - (0.35 ac)

Developed - (0.68 ac)

N

0 100 200

FEET

FIGURE 6

Solano Landing Development
Solano County, California
LSA Project No. 20230890

Natural Communities and Land Uses

SOURCE: Vivid Maxar Aerial Imagery (06/2021); Mapping - LSA (02/2023)

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LSA

LEGEND

Project Site

Tree Locations by Species

- California buckeye - (1)
- California sycamore - (1)
- Cherry plum - (2)
- Coast live oak - (98)
- English walnut - (15)
- Italian stone pine - (2)
- Northern California black walnut - (27)
- Persimmon - (15)
- Valley oak - (93)

N

0 62.5 125
FEET

FIGURE 7

Solano Landing Development
Solano County, California
LSA Project No. 20220500

Tree Locations

SOURCE: Vivid Maxar Aerial Imagery (06/2021); Mapping - LSA (02/2023)

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LEGEND

- Project Site
- 5-Mile Buffer

Special Status Plant Species Occurrences

- Alkali Milk-vetch - (2)
- Big-scale Balsamroot - (1)
- Bolander's Water-hemlock - (1)
- Brewer's Western Flax - (1)
- California Alkali Grass - (1)
- Contra Costa Goldfields - (3)
- Delta Tule Pea - (10)
- Greene's Narrow-leaved Daisy - (1)
- Holly-leaved Ceanothus - (2)
- Jepson's Coyote-thistle - (1)
- Jepson's Leptosiphon - (1)
- Legenere - (1)
- Long-styled Sand-spurrey - (1)
- Mason's Lilaeopsis - (2)
- Mt. Diablo Buckwheat - (1)
- Napa Bluecurls - (1)
- Narrow-anthered Brodiaea - (1)
- Northern Slender Pondweed - (1)
- Oval-leaved Viburnum - (1)
- Pappose Tarplant - (5)
- Saline Clover - (2)
- San Joaquin Spearscale - (1)
- Soft Salty Bird's-Beak - (1)
- Suisun Marsh Aster - (8)
- Suisun Thistle - (2)
- Vernal Pool Smallscale - (1)

LSA

FIGURE 8A

0 3000 6000
FEET

SOURCE: Vivid Maxar Aerial Imagery (06/2021); Mapping - CDFW(03/2023)

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Solano Landing Development
Solano County, California
LSA Project No. 20230890

Special Status Plant Species Occurrences

LEGEND

Project Site

5-Mile Buffer

Special Status Animal Species Occurrences

American Peregrine Falcon - (1)

Burrowing Owl - (2)

California Black Rail - (4)

California Linderiella - (1)

California Red-legged Frog - (4)

California Ridgway's Rail - (2)

Crotch Bumble Bee - (1)

Foothill Yellow-legged Frog, North Coast DPS - (2)

Hoary Bat - (1)

Longfin Smelt - (1)

Monarch, California Overwintering Population - (1)

Salt-marsh Harvest Mouse - (6)

Saltmarsh Common Yellowthroat - (3)

Suisun Shrew - (2)

Suisun Song Sparrow - (7)

Swainson's Hawk - (5)

Tricolored Blackbird - (1)

Valley Elderberry Longhorn Beetle - (5)

Western Bumble Bee - (1)

Western Pond Turtle - (3)

White-tailed Kite - (1)

Yellow Rail - (1)

LSA

FIGURE 8B

N

0 3000 6000

FEET

SOURCE: Vivid Maxar Aerial Imagery (06/2021); Mapping - CDFW (03/2023)

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Solano Landing Development
Solano County, California
LSA Project No. 20230890

Special Status Animal Species Occurrences

APPENDIX B

TREE INVENTORY

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Tree Inventory

Tag #	Species Common Name	*Scientific Name*	DBH Combined (inches)	Canopy Radians (ft)	Height (ft)	Health	Notes
A2122	Valley oak	*Quercus lobata*	11	11' 10"	13.5	3	
A4116	Valley oak	*Quercus lobata*	12.25	15.5	21.5	3	Stick nest.
A4117	English walnut	*Juglans regia*	19	13'	14.5	2	Trunk hollow, rot. Sprouting from base (rootstock)
A4118	English walnut	*Juglans regia*	24.25	12'	11	2	Trunk hollow, rot. Small valley oak rooted at base.
A4119	Valley oak	*Quercus lobata*	22	19' 8"	16.5	3	
A4120	Northern California black walnut	*Juglans hindsii*	34	14' 1"	18	3	Graft dead, only rootstock remaining.
A4121	English walnut	*Juglans regia*	15	11' 6"	10	1	Minimal canopy remaining, large branches broken. Trunk hollow, rot.
A4123	Coast live oak	*Quercus agrifolia*	15.75	13' 2"	12	3	DBH taken at ground level (below branching).
A4124	Northern California black walnut	*Juglans hindsii*	23.75	16' 3"	12	3	English walnut graft dead, only rootstock remaining.
A4125	Northern California black walnut	*Juglans hindsii*	41	16' 4"	19.5	3	English walnut graft dead, only rootstock remaining.
A4126	Valley oak	*Quercus lobata*	18.5	13' 10"	20.5	3	Lower limbs (roadway side) pruned, ~3-inch cuts.
A4127	Northern California black walnut	*Juglans hindsii*	28.75	17' 5"	17	3	English walnut graft dead, only rootstock remaining.
A4128	Valley oak	*Quercus lobata*	8	15'	17	3	Tree leans N.
A4129	Valley oak	*Quercus lobata*	8.5	8' 2"	18.5	3	
A4130	Northern California black walnut	*Juglans hindsii*	10	15' 8"	14	1	English walnut graft dead, only rootstock remaining. 2 large (~6" dbh) scaffold branches dead.
A4131	Valley oak	*Quercus lobata*	16.5	8' 5"	25.5	3	Growing underneath powerlines, trimmed, resprouting.
A4132	Valley oak	*Quercus lobata*	10.25	11' 10"	25	3	DBH taken at 4 feet (below branching). Growing underneath powerlines.
A4133	Northern California black walnut	*Juglans hindsii*		22' 3"	16	3	
A4134	Valley oak	*Quercus lobata*	10.25	15' 6"	16	3	
A4135	Valley oak	*Quercus lobata*	16.25	8' 7"	18.5	3	
A4136	Coast live oak	*Quercus agrifolia*	40.75	11' 5"	18.5	3	Lots of low branches.
A4137	Valley oak	*Quercus lobata*	14.25	12' 10"	17	3	
A4138	Valley oak	*Quercus lobata*	7	7'	26.5	3	
A4139	Valley oak	*Quercus lobata*	27.75	10' 5"	26	3	
A4140	Northern California black walnut	*Juglans hindsii*	57.75	21' 2"	15.5	2	Trunk hollow, rot.

Tree Inventory

Tag #	Species Common Name	*Scientific Name*	DBH Combined (inches)	Canopy Radians (ft)	Height (ft)	Health	Notes
A4141	Valley oak	*Quercus lobata*	15.5	18' 7"	22.5	3	
A4142	Valley oak	*Quercus lobata*	7.25	5'	27	3	
A4143	Northern California black walnut	*Juglans hindsii*	48.5	25' 9"	28.5	3	Mistletoe.
A4144	Coast live oak	*Quercus agrifolia*	23.75	15'	20.5	3	
A4145	Coast live oak	*Quercus agrifolia*	6.75	11' 6"	13.5	3	Tree leans W.
A4146	Valley oak	*Quercus lobata*	7.75	12'	20.5	3	
A4147	Valley oak	*Quercus lobata*	10.75	15'	16	3	
A4148	Coast live oak	*Quercus agrifolia*	9.25	8' 9"	10.5	3	DBH taken at ground level (below branching).
A4149	Coast live oak	*Quercus agrifolia*	7.25	8' 11"	11.5	3	DBH taken at 2 feet (below branching).
A4150	Valley oak	*Quercus lobata*	6.25	9'	24	3	
A4151	Northern California black walnut	*Juglans hindsii*	61.5	19' 8"	19.5	2	English walnut graft dead (largest trunk), only rootstock remaining.
A4152	Northern California black walnut	*Juglans hindsii*	64.25	29' 2"	26.5	3	English walnut graft dead, only rootstock remaining.
A4153	Valley oak	*Quercus lobata*	25.5	16' 1"	24	3	
A4154	Northern California black walnut	*Juglans hindsii*	34.5	16' 5"	18.5	2	English walnut graft dead, only rootstock remaining.
A4155	Valley oak	*Quercus lobata*	12.75	12' 9"	25	3	
A4156	Northern California black walnut	*Juglans hindsii*	28.75	13' 6"	13	2	English walnut graft dead, only rootstock remaining. Trunk rot.
A4157	Valley oak	*Quercus lobata*	7.5	13' 3"	16	3	
A4158	Northern California black walnut	*Juglans hindsii*	71	26'	40	1	Trunk hollow, rot. Main leaders dead or dying. Healthy vegetation resprouting from base. Nails in trunk.
A4159	Coast live oak	*Quercus agrifolia*	16.5	11'	18	3	
A4160	Valley oak	*Quercus lobata*	19.5	19'	28	3	DBH taken at 4 feet (below branching).
A4161	Valley oak	*Quercus lobata*	6	8' 6"	22	3	
A4162	Valley oak	*Quercus lobata*	15	20' 2"	26	3	
A4163	Coast live oak	*Quercus agrifolia*	13.25	8'	31.5	3	Stick nest.
A4164	Valley oak	*Quercus lobata*	52.5	23' 8"	28.5	3	
A4165	English walnut	*Juglans regia*	34	26' 9"	28	1	Dead? Poison oak growing at base.
A4166	English walnut	*Juglans regia*	41	20' 7"	30.5	2	Lots of basal sprouts from rootstock.
A4167	Valley oak	*Quercus lobata*	10.5	14' 8"	30.5	3	
A4168	Valley oak	*Quercus lobata*	18.5	15' 8"	18.5	3	
A4169	Coast live oak	*Quercus agrifolia*	15.25	11'	20.5	3	Stick nest.
A4170	Valley oak	*Quercus lobata*	6.75	20' 5"	27	3	

Tree Inventory

Tag #	Species Common Name	*Scientific Name*	DBH Combined (inches)	Canopy Radians (ft)	Height (ft)	Health	Notes
A4171	Valley oak	*Quercus lobata*	6.75	9'	28	3	
A4172	English walnut	*Juglans regia*	19.5	24'	32	3	Lots of basal sprouts from rootstock.
A4173	Valley oak	*Quercus lobata*	11.25	13' 5"	23.5	3	
A4174	Coast live oak	*Quercus agrifolia*	9.25	12' 6"	17	3	Stick nest.
A4175	Valley oak	*Quercus lobata*	9.5	9' 8"	17	3	DBH taken at 2 feet (below branching).
A4176	Coast live oak	*Quercus agrifolia*	33	24' 10"	38	3	
A4177	Coast live oak	*Quercus agrifolia*	23.5	17' 10"	24	3	
A4178	Valley oak	*Quercus lobata*	6.75	28' 4"	22	3	
A4179	Valley oak	*Quercus lobata*	7	7' 3"	14.5	3	
A4180	Coast live oak	*Quercus agrifolia*	10	7' 7"	14	3	DBH taken at 1 foot (below branching).
A4181	Valley oak	*Quercus lobata*	9.5	15' 10"	28	3	
A4182	Coast live oak	*Quercus agrifolia*	18	15' 7"	27.5	3	Far side of chain link fence surrounded by blackberry.
A4183	Valley oak	*Quercus lobata*	13.5	15'	15	3	Surrounded by blackberry.
A4184	English walnut	*Juglans regia*	36.5	14' 7"	26.5	2	Mistletoe infestation.
A4185	California sycamore	*Platanus racemosa*	26.25	16' 5"	20.5	3	Growing next to barn.
A4186	Coast live oak	*Quercus agrifolia*	40.5	28' 5"	55	4	
A4187	Valley oak	*Quercus lobata*	27.75	21' 3"	30	3	
A4188	Italian stone pine	*Pinus pinea*	6	3' 10"	24	3	Large gall at 6 feet.
A4189	Valley oak	*Quercus lobata*	7	16' 11"	27.5	3	Tree leans E.
A4190	Coast live oak	*Quercus agrifolia*	46	25' 1"	27.5	4	Small mud nests (cup)
A4191	Coast live oak	*Quercus agrifolia*	12.75	10' 5"	25.5	3	
A4192	Valley oak	*Quercus lobata*	7	7' 3"	27	3	
A4193	Coast live oak	*Quercus agrifolia*	8	7' 2"	26	3	
A4194	Coast live oak	*Quercus agrifolia*	8.5	8'	21	3	
A4195	Valley oak	*Quercus lobata*	7.75	13' 4"	26	3	
A4196	Coast live oak	*Quercus agrifolia*	11.5	17' 5"	24	3	
A4197	Coast live oak	*Quercus agrifolia*	34.25	15' 8"	25	3	
A4198	Valley oak	*Quercus lobata*	20.25	17' 5"	28	3	
A4199	Coast live oak	*Quercus agrifolia*	14.5	11'	29	3	Stick nest.
A4200	Coast live oak	*Quercus agrifolia*	6.5		15	3	
A4201	Coast live oak	*Quercus agrifolia*	16.5	6'	25	3	
A4202	Coast live oak	*Quercus agrifolia*	6	6'	15	3	
A4203	Valley oak	*Quercus lobata*	7.75		20	3	Surrounded by blackberry.
A4204	Valley oak	*Quercus lobata*	31.25			3	

Tree Inventory

Tag #	Species Common Name	*Scientific Name*	DBH Combined (inches)	Canopy Radians (ft)	Height (ft)	Health	Notes
A4205	Coast live oak	*Quercus agrifolia*	9			3	Surrounded by blackberry.
A4206	Coast live oak	*Quercus agrifolia*	8			3	Surrounded by blackberry.
A4207	Italian stone pine	*Pinus pinea*	7.5			3	Surrounded by coyote brush. Galls.
A4208	Coast live oak	*Quercus agrifolia*	13.75			3	
A4209	Coast live oak	*Quercus agrifolia*	7			3	
A4210	Coast live oak	*Quercus agrifolia*	14.25	12' 9"		3	
A4211	Coast live oak	*Quercus agrifolia*	25	13' 10"		3	
A4212	Valley oak	*Quercus lobata*	10.5	14' 8"		3	
A4213	Coast live oak	*Quercus agrifolia*	18.75	14' 2"	18.5	3	
A4213	Persimmon	*Diospyros virginiana*	25	14' 8"	20	3	Smaller stems have wildly different bark, but all stems connected at base.
A4214	Coast live oak	*Quercus agrifolia*	26.5	11' 9"	18.5	3	
A4215	Coast live oak	*Quercus agrifolia*	6	7' 6"	17.5	3	
A4216	Valley oak	*Quercus lobata*	9.75	10' 1"	20.5	3	Included bark at branch union.
A4217	Coast live oak	*Quercus agrifolia*	12.5	16' 10"	14.5	3	Trunk leaning west, on ground. Lots of deadwood.
A4218	Valley oak	*Quercus lobata*	7.5	7' 11"	20.5	3	
A4219	Valley oak	*Quercus lobata*	6	8' 9"	26	3	
A4220	Valley oak	*Quercus lobata*	8.5	14' 11"	18.5	3	Included bark.
A4221	Coast live oak	*Quercus agrifolia*	6	7' 1"	16	3	
A4222	Valley oak	*Quercus lobata*	6.75	7' 6"	21	3	Surrounded by blackberry.
A4223	Coast live oak	*Quercus agrifolia*	10.25	11' 9"	27	3	
A4224	Valley oak	*Quercus lobata*	29.25	29' 6"	26	3	
A4225	Coast live oak	*Quercus agrifolia*	15	13' 11"	26	3	
A4226	Coast live oak	*Quercus agrifolia*	8.5	10' 8"	26	3	Growing into/through canopy of valley oak.
A4227	Coast live oak	*Quercus agrifolia*	6	11' 10"	15.5	3	Tree leans E.
A4228	Valley oak	*Quercus lobata*	8.5	13' 4"	30.5	3	
A4229	Valley oak	*Quercus lobata*	34.25	28' 3"	27.5	3	Stick nest.
A4230	Coast live oak	*Quercus agrifolia*	12	17'	25	3	
A4231	Valley oak	*Quercus lobata*	28.25	15'	26.5	3	Trunks merged at 3 feet, included bark.
A4232	Coast live oak	*Quercus agrifolia*	8.5	8'	23	3	
A4233	Coast live oak	*Quercus agrifolia*	9	5'	28	3	
A4234	Coast live oak	*Quercus agrifolia*	6	3'	22	3	Tagged on N side. Surrounded by poison oak.
A4235	Coast live oak	*Quercus agrifolia*	12	5'	27	3	

Tree Inventory

Tag #	Species Common Name	*Scientific Name*	DBH Combined (inches)	Canopy Radians (ft)	Height (ft)	Health	Notes
A4236	English walnut	*Juglans regia*	13.25	8'	15	3	DBH taken at 2 feet (below branching). Cavity at base.
A4237	Valley oak	*Quercus lobata*	12.5	15'	27	3	
A4238	Valley oak	*Quercus lobata*	7.5	14'	25	3	Surrounded by woody debris.
A4239	Coast live oak	*Quercus agrifolia*	98.25	20'	25	3	dbh cont: 8, 4.5
A4240	Northern California black walnut	*Juglans hindsii*	10	12'	13	3	Surrounded by blackberry. DBH taken at 3 feet (below branching)
A4241	Valley oak	*Quercus lobata*	7	5'	22.5	3	Surrounded by blackberry.
A4242	Valley oak	*Quercus lobata*	11.25	14'	23	3	
A4243	Valley oak	*Quercus lobata*	14.25	14'	22	3	
A4244	Valley oak	*Quercus lobata*	10.25	14'	21	3	Included bark, codominant leaders.
A4245	Valley oak	*Quercus lobata*	17.75	17'	29	3	
A4246	Valley oak	*Quercus lobata*	18.25	13'	22.5	3	
A4247	Coast live oak	*Quercus agrifolia*	17.5	15'	19	3	
A4248	Coast live oak	*Quercus agrifolia*	27	19'	30.5	3	
A4249	Coast live oak	*Quercus agrifolia*	8.25	13'	15	3	
A4250	Persimmon	*Diospyros virginiana*	7.25	12'	15	3	DBH taken at 1 foot (below branching).
A4251	Coast live oak	*Quercus agrifolia*	12	12'	19	3	DBH taken at 1 foot (below branching).
A4252	Coast live oak	*Quercus agrifolia*	8.5	12'	17	3	
A4253	Valley oak	*Quercus lobata*	12.25	13'	18	3	DBH taken at 3 feet (below branching).
A4254	Valley oak	*Quercus lobata*	7.25	13' 4"	20	3	
A4255	Coast live oak	*Quercus agrifolia*	15.5	5' 10"	15.5	3	Stick nest.
A4256	Valley oak	*Quercus lobata*	7	11' 1"	16.5	3	
A4257	Valley oak	*Quercus lobata*	7	11' 2"	17.5	3	
A4258	Coast live oak	*Quercus agrifolia*	23.5	23' 6"	26.5	3	DBH taken at 2 feet (below branching).
A4259	Coast live oak	*Quercus agrifolia*	6.25	8' 4"	17	3	
A4260	Cherry plum	*Prunus cerasifera*	8	15' 5"	18.5	3	
A4261	Northern California black walnut	*Juglans hindsii*	17.5	9'	12	2	Trunk rot, peeling bark.
A4262	Coast live oak	*Quercus agrifolia*	6.25	7' 9"	15.5	3	
A4263	Valley oak	*Quercus lobata*	10.5	21' 6"	25	3	
A4264	Coast live oak	*Quercus agrifolia*	10	9'	24	3	Stick nest.
A4265	Coast live oak	*Quercus agrifolia*	35.25	12' 9"	23.5	3	
A4266	Valley oak	*Quercus lobata*	7.25	12' 5"	16.5	3	
A4267	Northern California black walnut	*Juglans hindsii*	24.75	13' 4"	15.5	3	
A4268	Valley oak	*Quercus lobata*	6.25	9'	22	3	

Tree Inventory

Tag #	Species Common Name	*Scientific Name*	DBH Combined (inches)	Canopy Radians (ft)	Height (ft)	Health	Notes
A4269	Valley oak	*Quercus lobata*	22.5	25' 6"	21.5	3	
A4270	Coast live oak	*Quercus agrifolia*	10.5	11' 3"	19	3	
A4271	Coast live oak	*Quercus agrifolia*	13.5	11' 6"	29.5	3	DBH taken at 3 feet (below branching).
A4272	Coast live oak	*Quercus agrifolia*	22.75	15'	21	3	
A4273	Coast live oak	*Quercus agrifolia*	11.5	13'	22	3	
A4274	Coast live oak	*Quercus agrifolia*	7.5	9'	19	3	
A4275	Coast live oak	*Quercus agrifolia*	6.25	5'	19.5	3	
A4276	Coast live oak	*Quercus agrifolia*	6	12'	20	3	
A4277	Valley oak	*Quercus lobata*	33.5	13'	19	3	
A4278	Valley oak	*Quercus lobata*	59	22'	20	3	
A4279	Valley oak	*Quercus lobata*	13.5	33'	27	3	
A4280	English walnut	*Juglans regia*	11	15'	18	3	DBH taken at 2 feet (below branching).
A4281	Coast live oak	*Quercus agrifolia*	9.75	5'	26.5	3	
A4282	Coast live oak	*Quercus agrifolia*	10.5	14'	24.5	3	
A4283	Valley oak	*Quercus lobata*	7	21'	18.5	3	Tree leans S.
A4284	Coast live oak	*Quercus agrifolia*	7	17'	25	3	Tree leans E.
A4285	Coast live oak	*Quercus agrifolia*	8.5	11'	16	3	DBH taken at 2 feet (below branching).
A4286	Coast live oak	*Quercus agrifolia*	9.5	13'	22	3	
A4287	Coast live oak	*Quercus agrifolia*	9.5	8'	15.5	3	
A4288	Northern California black walnut	*Juglans hindsii*	39	15'	20.5	2	Surrounded by blackberry, ground squirrel burrows at base. English walnut graft dead, only rootstock remaining.
A4289	Northern California black walnut	*Juglans hindsii*	55	26'	28.5	3	English walnut graft dead, only rootstock remaining.
A4290	Coast live oak	*Quercus agrifolia*	11	10' 10"	14.5	3	Large limb broken but alive, growing into walnut.
A4291	Northern California black walnut	*Juglans hindsii*	80.5	20'	22.5	3	Mistletoe.
A4292	Northern California black walnut	*Juglans hindsii*	25	15' 2"	19	2	Deadwood in canopy.
A4293	Valley oak	*Quercus lobata*	22	18' 6"	29	3	
A4294	Coast live oak	*Quercus agrifolia*	10.5	9' 10"	28	3	Surrounded by poison oak.
A4295	Northern California black walnut	*Juglans hindsii*	26.5	22'	18	2	Minimal canopy, lots of deadwood. Surrounded by poison oak.
A4296	Coast live oak	*Quercus agrifolia*	27.5	18'	31	3	Surrounded by poison oak.
A4297	Coast live oak	*Quercus agrifolia*	12	13' 4"	31	3	Surrounded by poison oak.
A4298	Northern California black walnut	*Juglans hindsii*	28	14' 4"	27	3	Surrounded by poison oak. Mistletoe.
A4299	Northern California black walnut	*Juglans hindsii*	15	21	21.5	3	Mistletoe.

Tree Inventory

Tag #	Species Common Name	*Scientific Name*	DBH Combined (inches)	Canopy Radians (ft)	Height (ft)	Health	Notes
A4300	Northern California black walnut	*Juglans hindsii*	54.25	22' 10"	15	3	Mistletoe.
A4301	Coast live oak	*Quercus agrifolia*	33.5	15' 10"	29	3	
A4302	Northern California black walnut	*Juglans hindsii*	7	6' 5"	16.5	1	Dead?
A4303	Persimmon	*Diospyros virginiana*	13.25	14'	16	3	
A4304	Persimmon	*Diospyros virginiana*	11.25	14' 8"	16	3	DBH taken at 1 foot (below branching).
A4305	Valley oak	*Quercus lobata*	19.75	18' 9"	30	3	
A4306	Persimmon	*Diospyros virginiana*	10.5	13'	14	3	DBH taken at 1 foot (below branching).
A4307	Coast live oak	*Quercus agrifolia*	15.5	16' 9"	24	3	
A4308	Valley oak	*Quercus lobata*	19.75	18' 2"	27.5	3	
A4309	Persimmon	*Diospyros virginiana*	18.25	13' 7"	16	3	Surrounded by poison oak.
A4310	Persimmon	*Diospyros virginiana*	11.25	14' 10"	18	3	DBH taken at 2 feet (below branching).
A4311	Coast live oak	*Quercus agrifolia*	12	15' 2"	24.5	3	
A4312	Valley oak	*Quercus lobata*	13.5	13'	28	3	
A4314	Persimmon	*Diospyros virginiana*	16.5	18' 4"	18	3	DBH taken at 1 foot (below branching).
A4315	Persimmon	*Diospyros virginiana*	11.5	20'	12	3	DBH taken at 1 foot (below branching). Growing at base of oak.
A4316	Valley oak	*Quercus lobata*	32.75	22' 3"	29.5	3	Surrounded by poison oak.
A4317	Coast live oak	*Quercus agrifolia*	12.5	16' 8"	28	3	Surrounded by poison oak.
A4318	Valley oak	*Quercus lobata*	7.25	19'	19.5	3	Surrounded by poison oak.
A4319	Coast live oak	*Quercus agrifolia*	9.25	15' 5"	24	3	Surrounded by poison oak.
A4320	Valley oak	*Quercus lobata*	23.75	18' 7"	39	3	Surrounded by poison oak.
A4321	Valley oak	*Quercus lobata*	6.75	10' 8"	21	3	Surrounded by poison oak.
A4322	Persimmon	*Diospyros virginiana*	31.75	12' 3"	13	3	Surrounded by poison oak.
A4323	Valley oak	*Quercus lobata*	11.5	14' 7"	26	3	Surrounded by poison oak.
A4324	Valley oak	*Quercus lobata*	53	19'	31.5	3	Surrounded by poison oak.
A4325	Persimmon	*Diospyros virginiana*	11	9' 11"	15	3	Surrounded by poison oak.
A4326	Valley oak	*Quercus lobata*	8	9' 9"	15	3	Surrounded by poison oak.
A4327	Persimmon	*Diospyros virginiana*	13.25	12' 5"	14.5	3	
A4328	Valley oak	*Quercus lobata*	10.25	13' 6"	20.5	3	
A4329	Coast live oak	*Quercus agrifolia*	8	12' 4"	25.5	3	
A4330	Coast live oak	*Quercus agrifolia*	13.75	10' 6"	29.5	3	
A4331	Valley oak	*Quercus lobata*	13.5	17' 8"	30.5	3	
A4332	Coast live oak	*Quercus agrifolia*	46.5	17'	30	3	
A4333	Coast live oak	*Quercus agrifolia*	10	15' 6"	26.5	3	
A4334	Coast live oak	*Quercus agrifolia*	40.5	18'	30.5	3	

Tree Inventory

Tag #	Species Common Name	*Scientific Name*	DBH Combined (inches)	Canopy Radians (ft)	Height (ft)	Health	Notes
A4335	Coast live oak	*Quercus agrifolia*	9.5	15' 5"	16.5	3	
A4336	Coast live oak	*Quercus agrifolia*	13	9'	17	3	
A4337	English walnut	*Juglans regia*	28.75	13' 7"	21	3	
A4338	English walnut	*Juglans regia*	22.75	18' 7"	21.5	3	Basal sprouting.
A4339	Cherry plum	*Prunus cerasifera*	12	10' 9"	19.5	3	
A4340	California buckeye	*Aesculus californica*	36.75	11' 4"	15	3	Infested with mistletoe, including low on main trunks. Growing underneath powerlines.
A4341	Coast live oak	*Quercus agrifolia*	6.5	9' 5"	15	3	
A4342	Coast live oak	*Quercus agrifolia*	7.5	8' 8"	15.5	3	
A4343	Valley oak	*Quercus lobata*	12	16'	23.5	3	
A4344	Coast live oak	*Quercus agrifolia*	6.25	8' 10"	13	3	
A4345	English walnut	*Juglans regia*	19.5	12' 2"	19.5	3	Basal sprouting, ground squirrel burrow underneath.
A4346	Coast live oak	*Quercus agrifolia*	15	17' 3"	19	3	
A4347	Coast live oak	*Quercus agrifolia*	8.25	11'	14	3	
A4348	Valley oak	*Quercus lobata*	8.5	12' 8"	18	3	California wild grape growing into canopy.
A4349	Persimmon	*Diospyros virginiana*	28.5	16' 7"	17.5	3	Trunk hollow, rot?
A4350	Coast live oak	*Quercus agrifolia*	10.75	13' 9"	21.5	3	
A4351	Valley oak	*Quercus lobata*	43.75	37' 4"	23.5	3	Tree leaning strongly S.
A4352	Valley oak	*Quercus lobata*	7.5	16'	18.5	3	
A4353	Persimmon	*Diospyros virginiana*	33.75	12' 10"	13	3	
A4354	Coast live oak	*Quercus agrifolia*	14	7' 1"	22.5	3	
A4355	Valley oak	*Quercus lobata*	6.75	8'	29	3	California wild grape growing into canopy.
A4356	Valley oak	*Quercus lobata*	6.25	7' 7"	14	3	
A4357	Persimmon	*Diospyros virginiana*	40.5	14' 3"	14	3	
A4358	Coast live oak	*Quercus agrifolia*	9	14' 8"	10	3	
A4359	Northern California black walnut	*Juglans hindsii*	56.5	22'	27	3	
A436-	Northern California black walnut	*Juglans hindsii*	45.5	14' 3"	25	3	Mistletoe.
A4360	English walnut	*Juglans regia*	84.75	16' 2"	20	3	Mistletoe. Main stems of english walnut and rootstock.
A4361	Coast live oak	*Quercus agrifolia*	35.75	24'	21.5	3	Canopy on E side only.
A4362	Valley oak	*Quercus lobata*	10.5	14' 10"	19	3	Canopy on S side.
A4363	Valley oak	*Quercus lobata*	28	26'	32.5	3	Wood rat nest at base.
A4364	Coast live oak	*Quercus agrifolia*	7.5	18' 9"	16.5	3	
A4365	Coast live oak	*Quercus agrifolia*	7.5	11'	20	3	

Tree Inventory

Tag #	Species Common Name	*Scientific Name*	DBH Combined (inches)	Canopy Radians (ft)	Height (ft)	Health	Notes
A4366	Coast live oak	*Quercus agrifolia*	12	10'	20.5	3	
Not tagged	English walnut	*Juglans regia*	22	9'	13	1	Surrounded by blackberry. Trunk hollow, rot. Dead?
Not tagged	English walnut	*Juglans regia*	20	10'	17.5	3	Growing in thicket of coyote brush and blackberry, lower trunk not visible.

APPENDIX C

USFWS LIST OF THREATENED AND ENDANGERED SPECIES

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Project Code: 2023-0034323
Project Name: Solano Landing

January 16, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Project Code: 2023-0034323
Project Name: Solano Landing
Project Type: Commercial Development
Project Description: A new development called “Solano Landing” comprised of six stand-alone Tasting Rooms, a Restaurant, a Boutique Market, Multi-Purpose Facility, ten (10) stand-alone cottages which will make up the Boutique Hotel, Hotel Concierge Building and accompanying landscape nestled about vineyards. The project will consist of 9.5 acres of ATC developed land and 10.5 acres of planted vineyards.
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.242304950000005,-122.12102784775516,14z



Counties: Solano County, California

Endangered Species Act Species

There is a total of 14 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Salt Marsh Harvest Mouse *Reithrodontomys raviventris* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/613	Endangered

Birds

NAME	STATUS
California Clapper Rail *Rallus longirostris obsoletus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Crustaceans

NAME	STATUS
California Freshwater Shrimp *Syncaris pacifica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7903	Endangered
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
Contra Costa Goldfields *Lasthenia conjugens*	Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7058	
Santa Cruz Tarplant *Holocarpha macradenia*	Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6832	
Soft Bird's-beak *Cordylanthus mollis ssp. mollis*	Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8541	
Suisun Thistle *Cirsium hydrophilum var. hydrophilum*	Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2369	

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPaC User Contact Information

Agency: LSA
Name: Steve Kohlmann
Address: 157 Park Place
City: Pt. Richmond
State: CA
Zip: 94801
Email steve@tierrawildlife.com
Phone: 5105661384

Appendix C

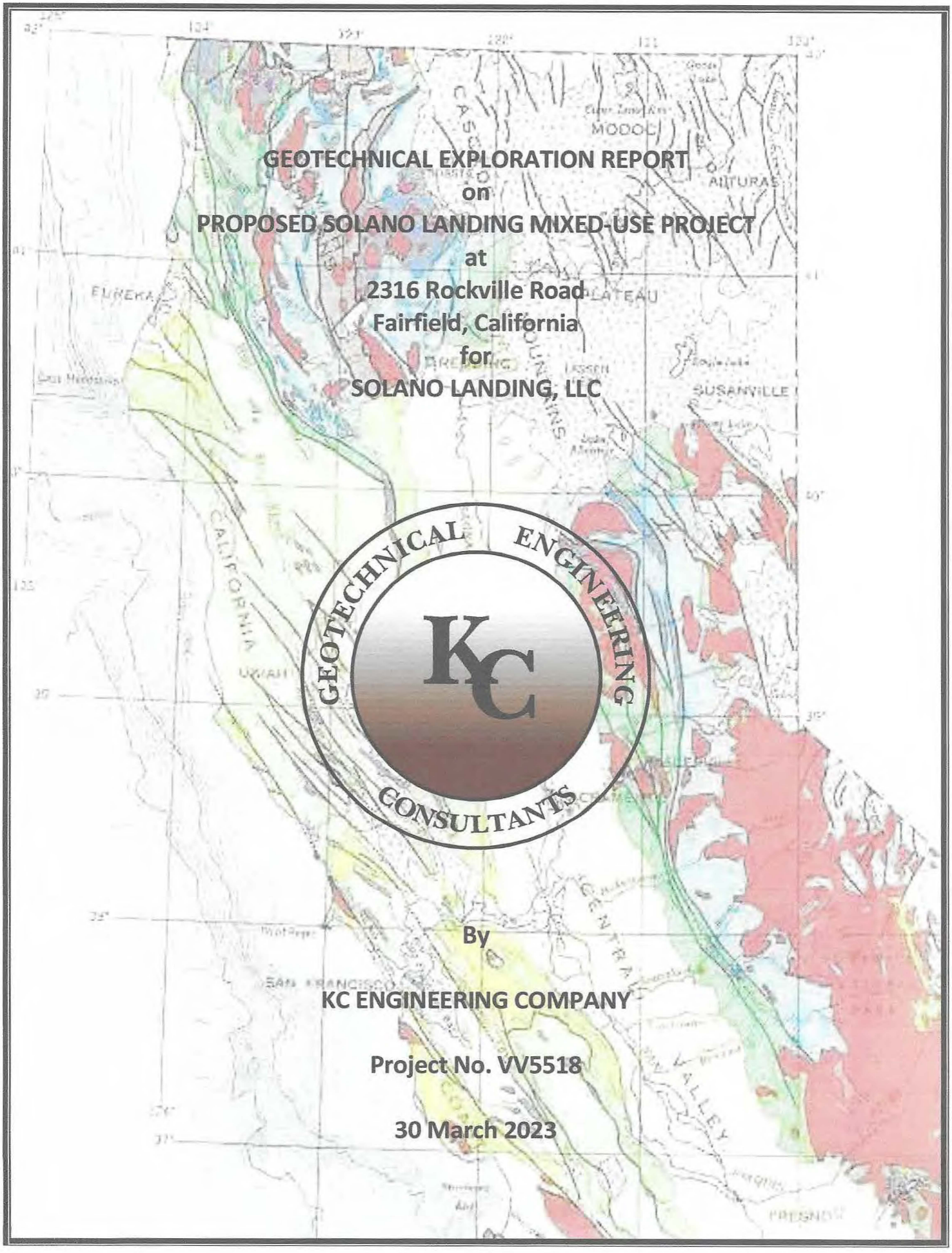
Cultural Resources Inventory and Evaluation Report

CONFIDENTIAL

This report contains confidential cultural resources location information; therefore, report distribution is restricted to those with a need to know. Cultural resources are nonrenewable and their scientific, cultural, and aesthetic values can be significantly impaired by disturbance. To deter vandalism, artifact hunting, and other activities that can damage cultural resources, the locations of cultural resources are kept confidential. The legal authority to restrict cultural resources information is in Section 304 of the National Historic Preservation Act of 1966, as amended.

Appendix D

Geotechnical Investigation



GEOTECHNICAL EXPLORATION REPORT
on
PROPOSED SOLANO LANDING MIXED-USE PROJECT
at
2316 Rockville Road
Fairfield, California
for
SOLANO LANDING, LLC

GEOTECHNICAL ENGINEERING CONSULTANTS

KC

By

KC ENGINEERING COMPANY

Project No. VV5518

30 March 2023

865 Cotting Lane, Suite A
Vacaville, California 95688
(707) 447-4025, fax 447-4143

8798 Airport Road
Redding, California 96002
(530) 222-0832, fax 222-1611

KC ENGINEERING COMPANY
A SUBSIDIARY OF MATERIALS TESTING, INC.

Project No. VV5518
30 March 2023

Mr. Jimmy Pierson
Solano Landing LLC
506 Couch Street
Vallejo, CA 94590

Subject: Proposed Solano Landing Mixed-Use Project
APN 0027-200-150
2316 Rockville Road, Fairfield, California
GEOTECHNICAL EXPLORATION REPORT

Dear Mr. Pierson:

In accordance with your authorization, **KC ENGINEERING COMPANY** has explored the geotechnical conditions of the surface and subsurface soils for the proposed Solano Landing mixed-use project to be constructed at the subject site.

The accompanying report presents our conclusions and recommendations based on our exploration. Our findings indicate that the proposed Solano Landing mixed-use project and associated improvements are geotechnically feasible for construction on the subject site provided the recommendations of this report are carefully followed and are incorporated into the project plans and specifications.

Should you have any questions relating to the contents of this report or should you require additional information, please contact our office at your convenience.

Reviewed by,

David V. Cymanski, G.E.
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
DAVID V. CYMANSKI
GE 2585
EXP. 6-30-24
GEOTECHNICAL
STATE OF CALIFORNIA

Respectfully Submitted,
KC ENGINEERING COMPANY

Daniel Sanchez
Staff Engineer

Copies: 3 mail, 1 email to client, Taylor Lombardo & Foulk Civil Engineering

TABLE OF CONTENTS

Page No.

LETTER OF TRANSMITTAL

GEOTECHNICAL EXPLORATION REPORT 4
- Purpose and Scope 4
- Site Location and Description 4
- Proposed Construction 5
- Field Exploration 5
- Laboratory Testing 6
- Subsurface Conditions 6
- Soil Corrosivity 7
- Site Geology 8
- Geo-Hazards 8
- Settlement Considerations 11

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS 12
- General 12
- Geotechnical Considerations 12
- Grading 13
- Surface & Subsurface Drainage 15
- Foundations 17
- Slab-on-Grade Construction 20
- Retaining Walls 22
- Pavement Areas 23
- Underground Utility and Excavations 24

LIMITATIONS AND UNIFORMITY OF CONDITIONS 26

APPENDIX 27
- Aerial Vicinity Map, Figure 1
- Site Plan, Figure 2.0
- Illustrative Site Plan, Figure 2.1
- Site Plan 3D View, Figure 2.2
- Geologic Map, Figure 3
- Log of Test Borings, Figures 4 - 11
- Subsurface Exploration Legend
- Laboratory Test Results
- ASCE 7 Hazards Report

GEOTECHNICAL EXPLORATION REPORT

Purpose and Scope

The purpose of the geotechnical exploration for the proposed Solano Landing mixed-use project to be constructed at 2316 Rockville Road in Fairfield, Solano County, California was to determine the surface and subsurface soil conditions at the subject site. Based on the results of the exploration, geotechnical criteria were established for the grading of the site, the design of foundations, slabs, pavements, drainage and the construction of other related facilities on the property.

In accordance with your authorization, our exploration services included the following tasks:

a. A review of available geotechnical and geologic literature concerning the site and vicinity;
b. Site reconnaissance by the Geotechnical Engineer to observe and map surface conditions;
c. Drilling and logging of eight exploratory borings and sampling of the subsurface soils;
d. Laboratory testing of the samples obtained to determine their classification and engineering characteristics;
e. Analysis of the data and formulation of conclusions and recommendations; and
f. Preparation of this written report.

Site Location and Description

The subject property is located at 2316 Rockville Road in Fairfield, California as shown on Figure 1, "Aerial Vicinity Map" included in the Appendix of this report. The property is located in an agricultural farming area southeast of Suisun Valley Road and Rockville Road. The property contains old house and barn structure on the north end and open undeveloped agricultural land on the south. A residential neighboring property is also on the north end. The building areas and surrounding property is flat in topography. Soft to loose soils are present on the upper 1 to 2 feet from agricultural disking/farming. The site was densely covered in tall grasses and weeds at the time of our exploration. The property contains young and mature oak trees along Suisun Valley Road and on the north end. The property is accessible from both Suisun Valley Road and Rockville Road.

The above description is based on a reconnaissance of the site by the Geotechnical Engineer, a review of a Google Earth aerial image dated 4/24/22, and an Overall Site Plan by Taylor Lombardo Architects, LLP, dated 8/22/22 showing the proposed structure footprints. The Google aerial

image was used as the basis for our "Aerial Vicinity Map" and the Overall Site Plan was used as our "Site Plan" included as Figures 1 and 2, respectively, in the Appendix.

Proposed Construction

Based on the drawings by Taylor Lombardo Architects, the property will be developed to include a boutique market building, tasting room buildings, restaurants, a multi-purpose/dining hall, a hotel concierge, hotel cottages, an outdoor amphitheater, driveways, parking lots and surrounding vineyards in the locations shown on Figure 2.0, "Site Plan" and Figure 2.1 "Illustrative Site Plan" of the Appendix. The buildings are expected to be one to two stories in height and constructed of wood and/or steel framing. The building pads are expected to be elevated from existing surrounding grades for improved drainage. Additional grading will consist of reworking the upper 2 vertical feet of the existing ground prior to placing any fill for the building pads and surrounding improvement areas. Lime treatment of the building pads may also be performed. Additional site improvements are expected to consist of installing underground utilities, storm water bio-retention swales or basins and landscaping.

Field Exploration

The field exploration was performed on 2/13/23 and 2/21/23 and included a reconnaissance of site and the drilling of eight exploratory test borings at the approximate locations shown on Figures 2.0 and 2.1.

The borings were drilled to a maximum depth of 38.5 feet below the existing ground surface. The drilling was performed with a Mobile B24 rig using a power-driven, 4-inch diameter continuous flight solid augers. Visual classifications per ASTM D2488 were made from the auger cuttings and the samples in the field. As the drilling proceeded, representative disturbed tube samples were obtained by driving a 3-inch O.D., California Modified split-tube sampler, containing thin brass liners, into the boring bottom in accordance with ASTM D3550. The sampler was driven into the in-situ soils under the impact of a 140 pound hammer having a free fall of 30 inches. The number of blows required to advance the sampler 12 inches into the soil were adjusted to the standard penetration resistance (N-Value). The raw blow counts obtained using the California sampler were corrected to equivalent N-Values using Burmister's (1948) 65% energy and diameter correction formula. When the sampler was withdrawn from the boring bottom, the brass liners containing the relatively undisturbed samples were removed, examined for identification purposes, labeled and sealed to preserve the natural or in-situ moisture content.

The samples were then transported to our laboratory for testing per ASTM D4220. Classifications made in the field were verified in the laboratory after further examination and testing. The stratification of the soils, descriptions, location of undisturbed soil samples and standard

penetration resistance are shown on the respective "Log of Test Boring" contained within the Appendix.

Laboratory Testing

The laboratory testing program was directed towards providing sufficient information for the estimation of the engineering characteristics of the site soils so that the recommendations outlined in this report could be formulated. The laboratory test results are presented in the Appendix.

Moisture content and dry density tests (ASTM D2937) were performed on representative relatively undisturbed soil samples to determine the consistency of the soil and the moisture variation throughout the explored soil profile as well as estimate the compressibility of the underlying soils.

In order to assist in the identification and classification of the subsurface soils, sieve analysis tests (ASTM D6913) and Atterberg Limits test (ASTM D4318) were performed on selected soil samples. The Atterberg Limits test results and Expansion Index test (ASTM D4829) were also used to estimate the expansion potential of the near surface soils. The strength of the subsurface soils were evaluated by an unconfined compression tests (ASTM D2166) and a direct shear test (ASTM D3080) on relatively undisturbed samples.

A consolidation test (ASTM D2435) was performed on a sample of the underlying firm soil deposits to evaluate its compressibility characteristics. The results were used to estimate the potential settlement due to the proposed anticipated structure loads.

A representative bulk sample of the near-surface pad soils was obtained and tested to evaluate the presence and concentration of water-soluble sulfates in accordance with ASTM C1580. These test results were used to identify the corrosion potential of the soils to at or below grade concrete. Additional corrosivity indicator tests were performed including soil pH, minimum resistivity and chlorides.

Subsurface Conditions

Based on our findings from the field and laboratory results, the subsurface soil conditions on the property were found to consist of moderately to highly expansive clays, clayey sand, and gravel alluvial fan deposits. For Boring 1, the upper 10 feet consist of moderately expansive very stiff clay, underlain by a loose clayey sand down to 16 feet below the surface, underlain by very stiff sandy clay down to 18 feet, further underlain by very stiff to hard sandy clay with cemented weathered gravels and tuff fragments down to a depth explored of 28.5 feet below the surface. At Boring 2,

the upper 6 feet consist of moderately expansive very stiff clay, underlain by firm to stiff clays down to 17 feet below the surface, underlain by a stiff sandy clay with weathered gravel and tuff fragments down to a depth explored of 20.5 feet below the surface. Borings 3, 4, and 8 were explored down to 13.5 feet below the surface and consist of moderately to highly expansive firm to very stiff clays. At Boring 5, the upper 6 feet consist of moderately to highly expansive very stiff clay, underlain by a stiff clay layer down to 13 feet, underlain by stiff sandy clay down to 23 feet, underlain by a firm sandy clay down to 26 feet, underlain by a medium dense sandy gravel layer down to 28 feet, further underlain by hard sandy clay with weathered gravel down to the maximum depth explored of 38.5 feet below grade. At Boring 6, the upper 5 feet consist of moderately expansive very stiff clay, underlain by variable firm to stiff clay with silt layers down to a depth explored of 18.5 feet below the surface. At Boring 7, the upper 7.5 consist of highly expansive very stiff clay, underlain by medium dense clayey sand with gravel down to 11 feet, underlain by medium dense sand with silt and gravel down to 16 feet, then underlain by a loose gravel with sand down to a depth explored of 18.5 feet below the surface. The upper 1 to 2 feet of the surface soils across the site were soft to loose from agricultural disking.

Groundwater was encountered at depths ranging from 6 feet to 15 feet below the surface at the time of our exploration. Fluctuations in the groundwater level can occur with variations in seasonal rainfall, subsurface stratification, and irrigation on the site and vicinity.

A more thorough description and stratification of the soils encountered along with the results of the laboratory tests are presented on the respective "Log of Test Boring" in the Appendix. The approximate locations of the borings are shown on Figure 2.0, "Site Plan".

Soil Corrosivity

A representative composite sample of the near surface building pad soil (upper 3 feet) was collected and transported to Sunland Analytical in Rancho Cordova for testing of water soluble sulfates, pH, minimum resistivity and chlorides per ASTM and California Test Methods.

The testing indicates a sulfate content of 17.6 ppm (mg/kg), a chloride content of 3.4 ppm, a minimum resistivity of 2,140 ohm-cm, and a soil pH of 6.1 for the sample collected. It is noted that the sulfate test results indicate low or "S0" sulfate exposure to concrete as identified in the Durability Requirements, Section 1904 of the 2022 California Building Code, and Tables 19.3.1.1 of ACI 318-19 Building Code Requirements for Structural Concrete. Therefore, no cement type or minimum concrete strength requirements are applicable.

The Caltrans Corrosion Guidelines[1] defines a corrosive site as one where the soil and/or water has a sulfate concentration of 1,500 ppm or more, a chloride concentration of 500 ppm or more, a pH of 5.5 or less, and a minimum resistivity less than 1,100 ohm-cm. Based on these criteria, the soils at the site are not considered to have a severe corrosion potential to buried metal.

KC ENGINEERING CO. is not a corrosion engineering firm. Therefore, to further define the soil corrosion potential and interpret the above test results, or to design cathodic protection or grounding systems, a licensed Corrosion Engineer should be consulted.

Site Geology

According to Geologic Map of the Fairfield South 7.5' Quadrangle[2], the site is mapped across two distinguished zones of alluvial fan deposits (Holocene and latest Pleistocene to Holocene). The late Pleistocene to Holocene fan deposits are found in gently sloping, fan-shaped, relatively undissected alluvial surfaces including sand, gravel, silt, and clay, that were moderately to poorly sorted, and moderately to poorly bedded. These materials are deposited by streams emanating from mountain drainages onto alluvial valleys and are composed of moderate to poorly sorted sand, gravel, silt, and clay. The materials encountered during our exploration correlate with geologic mapping. A partial Geologic Map showing the site and surrounding areas is included as Figure 3, "Geologic Map".

Geo-Hazards

Seismicity & Ground Motion Analysis

The site is not located within an Alquist-Priolo Earthquake Fault Zone[3]. There are no known active faults crossing the site as mapped and/or recognized by the State of California. The Rockville area is located in a seismic-active region and earthquake related ground shaking should be expected during the design life of structures constructed on the site. The California Geological Survey has defined an active fault as one that has had surface displacement in the last 11,700 years, or has experienced earthquakes in recorded history.

[1] California Department of Transportation, Division of Engineering Services, Materials Engineering and Testing Services Corrosion Branch, *Corrosion Guidelines*, Version 3.2, May 2021.
[2] Bezore, S.P., Wagner, D.L., and Sowers, J.M., 1998, *Geologic Map of the Fairfield South 7.5' Quadrangle, Solano County, California*, California Geological Survey, Division of Mines and Geology.
[3] Parish, J.G., 2018 *Earthquake Fault Zones,* California Geological Survey, Special Publication 42, Revised 2018.

Based on our review of the Fault Activity Map of California[4] and the USGS National Seismic Hazard Maps-Source Parameters[5], the nearest major active faults are the Cordelia Fault, the Green Valley Fault, the West Napa Fault, the Hunting Creek-Berryessa Fault, and the Hayward-Rodgers Creek Fault located approximately 0.7 miles west, 2.3 miles west, 8.5 miles southwest, 15 miles northwest, and 20.2 miles southwest of the site, respectively. Numerous other active faults in the Bay Area may also produce significant seismic shaking at the site.

The 2022 CBC specifies that the potential for liquefaction and soil strength loss should be evaluated, where applicable, for the Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration with an adjustment for site class effects in accordance with American Society of Civil Engineer (ASCE 7-16)[6]. The MCE_G is peak ground acceleration is based on the geometric mean peak ground acceleration with a 2 percent probability of exceedance in 50 years. Based on ASCE 7-16, the MCE_G peak ground acceleration with adjustment for site class effects (PGA_M) was calculated to be 0.676g for the property using ASCE 7 Hazards seismic design tool web-based with a site coefficient (F_{PGA}) of 1.1 for Site Class D. Structures at the site should be designed to withstand the anticipated ground accelerations.

Based on the ASCE 7 Hazards Tool[7] website and ASCE 7-16, the 2022 CBC earthquake design values are as follows. The ASCE hazard summary report is included in the Appendix.

Site Class:	F* D
Mapped Acceleration Parameters:	S_S = 1.549g; S_1 = 0.600g
Design Spectral Response Accelerations:	S_{DS} = 1.033g; S_{D1} = 1.02g

* A Site Class F is noted because liquefiable layers are present (ASCE 7-16, Section 20.3.1). A site response analysis is not necessary per the exception in ASCE 7-16, Section 20.3.1-1 for structures with a fundamental period of vibration less than or equal to 0.5 seconds. This should be evaluated by the project Structural Engineer. However, based on the average N-values for the upper 100 feet the provided values are based on a stiff clay soil profile or Site Class D. In our opinion, a ground motion hazard analysis is not necessary per the exception in ASCE 7-16, Section 11.4.8-1. The MCE_R spectral response acceleration parameter SM_1 has been increased by 50 percent for the calculation of the design spectral response acceleration parameter SD_1. The modified seismic design report is included in the Appendix.

[4] Jennings, C.W. and Bryant, W.A., 2010, *Fault Activity Map of California*, California Geological Survey Geologic Data Map No. 6, scale 1:750,000

[5] U.S. Geological Survey, 2008 National Seismic Hazards Maps – Source Parameters, accessed 3/15/23, from USGS web site: https://earthquake.usgs.gov/cfusion/hazfaults_2008_search/query_main.cfm

[6] American Society of Civil Engineer (ASCE), 2016, Minimum Design Loads for Buildings and Other Structures, Standard 7-16 and Supplement 1-3.

[7] https://asce7hazardtool.online, accessed 3/15/23

Fault Rupture

The site is not located within an Alquist-Priolo Earthquake Fault Zone. Based on our review of geologic maps, no known active or inactive faults cross or project toward the subject site. In addition, no evidence of active faulting was visible on the site during our site reconnaissance. Therefore, it is our opinion that there is no potential for fault-related surface rupture at the subject site.

Landsliding

The subject site and surrounding areas are located in rural flat farming land and therefore, not subject to seismically-induced landslide hazards.

Liquefaction

Soil liquefaction is a phenomenon in which loose and saturated cohesionless soils are subject to a temporary, but essentially total loss of shear strength, due to pore pressure build-up under the reversing cyclic shear stresses associated with earthquakes. Soils typically found most susceptible to liquefaction are saturated and loose, fine to medium grained sand having a uniform particle range and less than 35% fines passing the No. 200 sieve, and a corrected standard penetration blow count $(N_1)_{60}$ less than 30. According to Special Publication 117A by the California Geological Survey, the assessment of hazards associated with potential liquefaction of soil deposits at a site must consider translational site instability (i.e. lateral spreading, etc.) and more localized hazards such as bearing failure and settlement. The acceptable factor of safety against liquefaction is recommended in SP117 to be 1.3 or greater.

Based on our site exploration and laboratory test data, the soil profile within the upper 13.5 to 38.5 feet was found to principally consist of fine-grained firm to hard cohesive sandy clay, silty clay and clay soils. The liquefaction potential of these cohesive materials are considered to be very low. However, potentially liquefiable loose and medium dense clayey sand and sand deposits with 7 to 36% fines passing the No. 200 sieve were identified in Borings 1 between 10 to 16 feet below grade and in Boring 7 between 7 to 16 feet below grade.

A liquefaction analysis was performed for the layers in Boring 1 and 7 using the data from our field and lab exploration per the recommended analysis methods of the NCEER report[8] and Idriss and Boulanger (2008). The high groundwater modeled in the analysis was 6 feet below the ground surface based on the nearby well and our field exploration. Per CGS Special Publication

[8] Youd, T.L., et al., 2001 "Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils," in Journal of Geotechnical Geoenvironmental Engineering, October 2001

117, a probabilistically derived peak ground acceleration with a 10 percent probability of exceedance in 50 years (475-year return period) of 0.536g was used from the USGS Unified Hazard Tool[9] website. A maximum magnitude of 6.8 was also used from the nearby Cordelia and Green Valley Faults. Based on our analysis, the layers in Boring 1 and 7 were found to have a factor of safety less than 1.3 indicating a potential for liquefaction.

Utilizing the volumetric strain relationship developed by Tokimatsu and Seed[10], total settlement of 1.4 to 1.6 inches was determined for Borings 1 and 7. Differential settlement across a structure footprint may approach 0.8 inches. According to Ishihara[11], the potential for surface manifestation (i.e. sand boils/ejecta, ground fissures, etc...) is unlikely considering the depth of the potentially liquefiable soil layer. Due to the lack of open slope faces, the potential for lateral spreading at the site is considered nil.

Settlement Considerations

Our investigation of the site also included an evaluation of consolidation settlement of a firm clay layer in Boring 2 at 11 to 17 feet below grade. In order to determine the compressibility and potential settlement of the soil layer, a laboratory consolidation test (ASTM D2435) was performed on a relatively undisturbed soil sample. The lab results are presented in the Appendix. The sample was found to be over-consolidated. Settlement is still expected to occure with time under future loading.

We performed a settlement analysis utilizing the proposed estimated structure loads. Utilizing the estimated column loads of 50 kips and wall loads of 5kpf and a bearing capacity of 2,000 psf for a perimeter footing and a distributed load for the thickened interior slab foundation, we determined a total consolidation settlement of up to 0.5 inch in area of Boring 2. Once actual structure loads are determined, additional analysis may be required.

In our opinion, the amount of anticipated total and differential settlement and/or angular distortion that may occur over the proposed building footprint is marginally excessive for a conventional shallow spread footing and slab floor foundation. To mitigate these concerns and to minimize the anticipated differential settlement, we recommend that the proposed structures be supported on uniformly thickened post-tensioned slab foundation systems as recommended herein.

[9] https://earthquake.usgs.gov/hazards/interactive/, accessed 03/28/23
[10] Tokimatsu, K. and Seed, H.B., 1987, *Evaluation of Settlements in Sands Due to Earthquake Shaking*, Journal of the Geotechnical Engineering Division, ASCE, Volume 113, No. 8, August 1987.
[11] Ishihara, K., 1985, *Stability of Natural Deposits During Earthquakes*, Proceedings of the Eleventh International Conference on Soil Mechanics and Foundation Engineering, San Francisco, CA, Volume 1, p. 321-376, August.

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

General

From a geotechnical point of view, the proposed Solano Landing structures and additional improvements are considered to be feasible for construction on the subject site provided the recommendations presented in this report are incorporated into the project plans and specifications.

All grading and foundation plans for the development must be reviewed by the Soil Engineer prior to contract bidding or submittal to governmental agencies to ensure that the geotechnical recommendations contained herein are properly incorporated and utilized in design.

KC ENGINEERING CO., should be notified at least two working days prior to site clearing, grading, and/or foundation operations on the property. This will give the Soil Engineer ample time to discuss the problems that may be encountered in the field and coordinate the work with the contractor.

Field observation and testing during the grading and/or foundation operations must be provided by representatives of ***KC ENGINEERING CO.***, to enable them to form an opinion regarding the adequacy of the site preparation, the acceptability of fill materials, and the extent to which the earthwork construction and the degree of compaction comply with the specification requirements. Any work related to the grading and/or foundation operations performed without the full knowledge and under the direct observation of the Soil Engineer will render the recommendations of this report invalid.

Geotechnical Considerations

The primary geotechnical considerations for the property are the presence of moderately to highly expansive clay soils, the potential for total and differential settlements due to seismically induced liquefaction and consolidation settlement, and the presence of near surface soft/loose materials. Laboratory testing of samples obtained show that the surficial clay soils are moderately to highly expansive. The soil is prone to heave and shrink movements with changes in moisture content and, consequently, must be carefully considered in the design of grading, foundations, and drainage.

As discussed in the "Liquefaction" section above, up to 1.6 inches of total settlement may occur from seismically induced liquefaction in area of Boring 7 and up to 1.4 inches in area of Boring 1. Differential settlement ranging up to 0.8 inches may also be possible across a structure footprint. In our opinion, the amount of anticipated total and differential settlement and/or angular

distortion that may occur over the proposed structure building footprints are excessive for a conventional shallow spread footing and slab floor foundation.

Due to the expansive soil conditions and the potential for differential settlement up to 0.8 inches across the structure footprints, we recommend that the market building, tasting room buildings, restaurants, multi-purpose/dining hall, hotel concierge and cottages be supported by a uniformly thickened post-tensioned slab foundation systems as recommended in the "Foundation" section of this report.

Alternatively, the proposed building pad soils could be lime treated to mitigate the expansive nature of the materials, as well as to provide a structural fill pad. Specific recommendations are presented in the "Grading" section of this report. The structures could then be supported by a well-reinforced conventional spread footing and slab floor foundation systems. The recommendations provided in the following sections will minimize the detrimental effects of expansive soil movement. Specific grading, drainage and foundation recommendations are provided herein.

The upper 1 to 2 feet across the site was found to be relatively soft and loose due to previous agricultural farming and disking operations. To mitigate this concern, we recommend that the upper 2 feet of existing grades be over-excavated, processed and compacted prior to placing any additional fills. Specific grading recommendations are provided herein.

Grading

Grading activities may be performed during the rainy season, however, achieving proper compaction may be difficult due to excessive moisture and delays will occur. Use of lime treatment or geogrids and geotextiles to stabilize soft areas and street subgrades may be required depending on actual moisture conditions at the time of grading. Grading performed during the dry months will minimize the occurrence of the above problems.

The surface of the site in areas to be graded should be stripped to remove all existing vegetation and/or other deleterious materials. It is estimated that stripping depths of 1 to 2 inches may be necessary. Disking of vegetation into the soils is not recommended. Any material that is deemed to be topsoil and requiring stripping may not be used as engineered fill but may be stockpiled and used later for landscaping purposes.

Where any loose or soft soils are encountered they must be over-excavated to undisturbed native ground. Excavated soil materials may be used as engineered fill with the approval of the Soils Engineer provided they do not contain organics.

After stripping and clearing, the exposed surface soils under building pads, streets and any improvement area should be over-excavated 12 inches and then the exposed material scarified to a depth of 12 inches, moisture conditioned as necessary to 4 or more percent above optimum moisture content by thorough mixing to a uniform moisture content, followed by compacting to a minimum of 90% relative compaction as determined by ASTM D1557. The above original ground processing should extend a minimum distance of 5 feet beyond the structure footprints or improvement area footprint. The site may then be filled to the desired finished grades by placing engineered fill in lifts of 8 inches in uncompacted thickness and compacting to a minimum relative compaction of 90% at 4% or more above optimum in accordance with the aforementioned test procedure.

Utility trenches extending underneath all traffic areas must be backfilled with native or import soil materials and compacted to relative compaction of 90% to within 12 inches of the subgrade. The upper 12 inches should be compacted to 95% relative compaction in accordance with Laboratory Test Procedure ASTM D1557. Backfilling and compaction of these trenches must also meet the requirements set forth by the City of Fairfield or Solano County, Department of Public Works.

As discussed above, the building pads may be alternatively lime treated where conventional footing foundations are desired. In this case, we recommended that the upper 3 feet of the building pads and adjacent concrete flatwork comprise the on-site materials modified with high calcium quicklime. It is noted that the structural fill must extend at least 5 feet beyond the building footprint and to the edge of surrounding flatwork, whichever is greater.

The lime treatment should consist of a 5% mixture by dry weight with high-calcium quicklime meeting ASTM C 977. Based on a unit weight of 120 p.c.f., a minimum spread rate of 9.0 p.s.f. is recommended for the 18-inch mixing depth. In the pavement areas, the upper 12 inches of subgrade may also be lime treated with a minimum spread rate of 6.0 p.s.f. The lime treated soils should be compacted to at least 95% relative compaction of the maximum wet density at a moisture content at least 4% above optimum. The lime treatment must be performed by a qualified soil stabilization contractor in general conformance with Caltrans Standard Specification Section 24. The product specification and quality control test results must be provided to us by the contractor for review and acceptance prior to the treatment operations. The lime should be spread and mixed with equipment capable of providing relatively uniform conditions and allowed to mellow overnight. The lime treated sections must be mixed again the following day prior to compaction. After compaction, it is important to moist cure the lime treated soils until placement of the subsequent slab subbase materials (i.e. do not let pad dry out and desiccate).

Where select import material is to be used to meet design grades or be required for general fill, the import material should be approved by the Soil Engineer before it is brought to the site. Where select import soil is used for the pad areas, it should meet the following requirements:

a. Have a Plasticity Index not higher than 15;
b. No rocks larger than 3 inches in maximum size;
c. Caltrans Class 2 aggregate base may be used.

The fill materials shall be placed in uniform lifts of not more than 8 to 12 inches in uncompacted thickness depending on size and weight of equipment used. Each layer shall be spread evenly and shall be thoroughly blade mixed during the spreading to obtain uniformity of material in each layer. Before compaction begins, the fill shall be brought to a water content that will permit proper compaction by either (a) aerating the material if it is too wet, or (b) spraying the material with water if it is too dry. Significant moisture mixing and processing should be anticipated by the Contractor.

Compaction shall be by footed rollers or other types of acceptable compacting rollers. Rollers shall be of such design that they will be able to compact the fill to the specified density. Rolling shall be accomplished while the fill material is within the specified moisture content range. Rolling of each layer shall be continuous over its entire area and the roller shall make sufficient trips to ensure that the required density has been obtained. No ponding or jetting shall be permitted.

The standard test used to define maximum densities and optimum moisture content of all compaction work shall be the Laboratory Test procedure ASTM D1557 and field tests shall be expressed as a relative compaction in terms of the maximum dry density and optimum moisture content obtained in the laboratory by the foregoing standard procedure. Field density and moisture tests shall be made in each compacted layer by the Soil Engineer in accordance with ASTM D6938, respectively. When footed rollers are used for compaction, the density and moisture tests shall be taken in the compacted material below the surface disturbed by the roller. When these tests indicate that the compaction requirements for any layer of fill, or portion thereof, have not been met, the particular layer, or portion thereof, shall be reworked until the compaction requirements have been met.

Surface & Subsurface Drainage

A very important factor affecting the performance of structures is the proper design, implementation, and maintenance of surface and subsurface drainage, as well as maintaining uniform moisture conditions around the structures. Ponded water will cause swelling and/or loss of soil strength and may also seep under structures. Should surface water be allowed to seep

under the structures, differential foundation movement resulting in structural damage and/or standing water under the slab will occur. This may cause dampness to the floor which may result in mildew, staining, and/or warping of floor coverings. To minimize the potential for the above problems, dampproofing and waterproofing should be provided as required by Section 1805 of the 2022 CBC. In addition, the following surface drainage measures are recommended and must be maintained by the property owner in perpetuity:

a) Positive building pad slopes and drainage must be provided by the project Civil Engineer to remove all storm water from the pad and to prevent storm and/or irrigation water from ponding adjacent to the structure foundations. The finished pad grade around the structures should be compacted and sloped 5% away from the exterior foundations and as required in Section 1804.4 of the 2022 CBC and be directed to yard swales and drainage outlets. Earth swales should slope a minimum of 2% to a suitable outlet.

b) Enclosed or trapped planter areas adjacent to the structure foundation should be avoided if possible. Where enclosed planter areas are constructed, these areas must be provided with adequate measures to drain surface water (irrigation and rainfall) away from the foundation. Positive surface gradients and/or controlled drainage area inlets should be provided. Care should be taken to adequately slope surface grades away from the structure foundation and into area inlets. Drainage area inlets should be piped to a suitable discharge facility.

c) Adequate measures for storm water discharge from the roof gutter downspouts must be provided by the project Civil Engineer and maintained by the property owners at all times, such that no water is allowed to pond next to the structure. Closed pipe discharge lines should be connected to downspouts and discharged into a suitable drainage facility. It is important not to allow concentrated discharge on the surface of any slope so as to prevent erosion.

d) Site drainage should be designed by the project Civil Engineer. Civil engineering, hydraulic engineering, and surveying expertise is necessary to design proper surface drainage to assure that the flow of water is directed away from the foundations.

e) Over-irrigation of plants is a common source of water migrating beneath a structure. Consequently, the amount of irrigation should not be any more than the amount necessary to support growth of the plants. Foliage requiring little irrigation (drip system) is recommended for the areas immediately adjacent to the structure.

With respect to any proposed bio-retention swales or basins, we anticipate that bio-swales will be located relatively close to the proposed structures. We recommend a minimum separation of 10 horizontal feet where possible. The bottom of the swales and/or treatment materials should be sloped away from the structure foundation a minimum of 5%. In addition, we recommend that a subsurface drain be provided below the select treatment soils and drainrock at the low side of the swale/basin. The subdrain should be connected to the nearest storm drain catch basin. A 4 inch SDR35 perforated pipe surrounded by Caltrans Class 2 Permeable Material should be provided to discharge collected water into the nearest catch basin. An impermeable liner may also be required in the bottom of the swales where located closer than 10 feet from a building foundation. Structure foundations where located adjacent to bio-treatment swales should be deepened 1 foot below the bottom of the treatment section. Additional details can be provided when plans are available.

Foundations

Considering the moderately to highly expansive site soil conditions, we recommend that the market building, tasting room buildings, restaurants, multi-purpose/dining hall, hotel concierge, and cottage structures be supported on a uniformly thickened post-tension slab foundation system. Alternatively, conventional spread footing foundations may be utilized provided that the upper 3 feet of the building pad soils are lime treated as recommended in the "Grading" section above. Recommendation for both systems are provided below.

Post-Tensioned Slabs

Post-tensioned slabs for the structures should be a minimum of 10 inches in thickness (for uniform thickness slabs) and designed using the following criteria which is based on the design method of the "Standard Requirements for Design of Shallow Post-Tensioned Concrete Foundations on Expansive Soils", dated May 2008, Third Edition, prepared by the Post Tensioning Institute:

Edge Moisture Variation Distance:

e_m (Edge Lift)	=	3.7 feet
e_m (Center Lift)	=	6.9 feet

Differential Movement:

y_m (Edge Lift)	=	3.0 inches
y_m (Center Lift)	=	-2.0 inches

Estimated Differential Settlement: = 0.75 inch

In addition to the recommendations and guidelines in the Third Edition by the PTI, the following recommendations should also be incorporated into the design and construction for the above structural mat foundation systems:

a) An allowable bearing capacity of 1,000 p.s.f. may be utilized and may be increased by one-third to resist short-term wind and seismic loading.

b) To resist lateral loading, a coefficient of friction between the perimeter concrete thickened edge and the soil of 0.30 may be used.

c) All areas to receive slabs should be thoroughly soaked within the upper 12 inches prior to placing the vapor retarder and underslab components. This work should be performed under the observation of the Soil Engineer and approved prior to vapor barrier and concrete placement.

d) The reinforcement and/or cables shall be placed in the center of the slab unless otherwise designated by the Structural Engineer.

e) A vapor retarder membrane should be installed between the prepared building pad and the interior slab to minimize moisture condensation under the floor coverings and/or upward vapor transmission. The vapor barrier membrane should be a minimum 15-mil extruded polyolefin plastic that complies with ASTM E1745 Class A and have a permeance of less than 0.01 perms per ASTM E96 or ASTM F1249. It is noted that polyethylene films (visqueen) do not meet these specifications. The vapor barrier must be adequately lapped and taped/sealed at penetrations and seems in accordance with ASTM E1643 and the manufacturer's specifications. The vapor retarder must be placed continuously across the slab area.

f) The slabs should be thickened at the perimeter to extend below pad grade at least 6 inches for a width of 12 inches to create frictional resistance for lateral loading, to provide additional edge rigidity, and to minimize moisture infiltration under the slab.

g) Water vapor migrating to the surface of the concrete can adversely affect floor covering adhesives. Provisions should be provided in the concrete mix design to minimize moisture emissions. This should include the selection of a water-cement ratio which inhibits water permeation (0.45 max). Additional suitable admixtures to limit water transmission may also be utilized. The slabs should not be subjected to rainfall or cleaning water prior to placement of the floor coverings.

h) Exterior porches, garages and attached covered patios areas should also be designed as part of the same post-tension foundation system.

i) We recommend that appropriate provisions be provided by the Structural Engineer and Contractor to minimize slab cracking, such as curing measures and/or admixtures to minimize concrete shrinkage and curling. American Concrete Institute methods and guidelines of curing, such as wet curing or membrane curing, are recommended to minimize drying shrinkage cracking.

j) The foundation plans, specifications, calculations and concrete mix designs should be provided to the Structural Engineer and us for review prior to construction to ensure conformance with the above recommendations.

Continuous Spread Footings

Provided the building pads are lime treated as presented in the "Grading" section above, spread footing foundations may be utilized. Continuous spread footings for the buildings should be utilized around the perimeter of the structure and for all interior bearing and shear walls. Footing for the market building, tasting room buildings, restaurants, multi-purpose/dining hall, and hotel concierge should be a minimum of 1.5 feet wide. All interior and exterior column footings should be interconnected to the perimeter with reinforced concrete tie-beams. Isolated footings should not be utilized unless connected with reinforced tie-beams. The continuous and pad/column footings should extend a minimum depth of 24 inches below the interior slab subgrade soil elevation. The tie beams should extend to a minimum depth of 18 inches below the interior soil pad grade. The recommended design allowable bearing pressure for footings is 2,000 p.s.f. due to dead plus live loads. This value may be increased one-third for transient wind and seismic loads.

All foundations must be adequately reinforced to provide structural continuity and resist the anticipated loads as determined by the project Structural Engineer. The final footing design and reinforcement should be determined by the project Structural Engineer. However, continuous footings and tie-beams are recommended to be reinforced with a minimum of four No. 5 bars, two at the top and two near the bottom of the footing. Additional reinforcement will be as required by the structural engineer and in accordance with structural building code requirements. Foundations designed in accordance with the above criteria are expected to experience a total settlement of less than 1 inch with less than 1/2 of an inch of differential settlement in 30 feet.

To accommodate lateral building loads, the passive resistance of the foundation soil can be utilized. The passive soil pressures can be assumed to act against the front face of the footing

below a depth of 1 foot below the ground surface. It is recommended that a passive pressure equivalent to that of a fluid weighing 225 p.c.f. be used. For design purposes, an allowable friction coefficient of 0.28 can be assumed at the base of the spread footings. These two modes of resistance should not be added unless the frictional component is reduced by 50 percent since the mobilization of the passive resistance requires some horizontal movement, effectively reducing the frictional resistance.

Slab-on-Grade Construction

Interior slabs where footing foundation are used, and exterior concrete slabs, including pedestrian sidewalks, driveways, non-structural detached patios and general flatwork will likely experience some cracking due to finishing and curing methods as well as moisture variations within the underlying clay soils. We should note that City or County maintained curbs, gutters, sidewalks and driveway aprons should be designed and constructed per the City or County Standards, Specifications and Plans. To reduce the potential cracking of the slabs-on-grade, the following recommendations are made:

a) All areas to receive slabs should be thoroughly wetted and soaked in the upper 12 inches to seal any desiccation or shrinkage cracks prior to placing concrete. This work should be done under the observation of the Soil Engineer.

b) Slabs should be underlain by a minimum of 4 inches of angular gravel or clean crushed rock material placed between the finished subgrade and the slabs to serve as a capillary break between the subsoil and the slab. The gravel should not have more that 10% passing the No. 4 sieve per CBC Section 1805.4.1. Caltrans Class 2 aggregate base may also be used provided it is compacted to a minimum of 90%.

c) Interior slabs for building structures where footings are used, and exterior slabs for attached patios, structure entries, outdoor BBQ and kitchen areas, and auto parking stalls should be a minimum of 5 inches thick and reinforced with a minimum of No. 4 rebar spaced 18 inches center to center, each way. Additional PCC pavement recommendations are presented under the Pavement section of this report. The actual slab thickness and reinforcement should be determined by the project Structural Engineer in accordance with the structural requirements and the anticipated loading conditions. The reinforcement shall be placed in the center of the slab unless otherwise designated by the design engineer.

d) Where a footing and slab foundation is used or where moisture vapor is a concern, a vapor retarder membrane should be installed between the prepared building pad aggregate base and the interior slabs to minimize moisture condensation

under the floor coverings and/or upward vapor transmission. The vapor barrier membrane should be a minimum 15-mil extruded polyolefin plastic that complies with ASTM E1745 Class A and have a permeance of less than 0.01 perms per ASTM E96 or ASTM F1249. It is noted that polyethylene films (visqueen) do not meet these specifications. The vapor barrier must be adequately lapped and taped/sealed at penetrations and seems in accordance with ASTM E1643 and the manufacturer's specifications. The vapor retarder must be placed continuously across the slab area.

e) Water vapor migrating to the surface of the concrete can adversely affect floor covering adhesives. Provisions should be provided in the concrete mix design to minimize moisture emissions. This should include the selection of a water-cement ratio which inhibits water permeation (0.45 max) and/or the addition of suitable admixtures to limit water transmission.

f) Slabs for driveways, entries, attached patios and exterior flatwork should be placed structurally independent of the foundations. Driveway/pavement slab recommendations are presented in the "Pavement" section of the report. A 30-pound felt strip, expansion joint material, or other positive separator should be provided around the edge of all floating slabs to prevent bonding to the foundation. However, rebar doweling to the foundation is recommended to minimize vertical movements between exterior slabs and building foundations. Doweling details should be determined by the Structural Engineer.

g) To minimize moisture infiltration under exterior slabs and to add edge rigidity, we recommend that slabs be thickened at the edges to extend below the aggregate base layer to the soil subgrade for a minimum width of 6 inches.

h) Slabs should be provided with crack control saw cut joints or tool joints to allow for expansion and contraction of the concrete. In general, contraction joints should be spaced no more than 20 times the slab thickness in each direction. The layout of the joints should be determined by the project Structural Engineer and/or Architect.

h) We recommend that appropriate provisions be provided by the Structural Engineer and Contractor to minimize slab cracking, such as curing measures and/or admixtures to minimize concrete drying-shrinkage and curling. American Concrete Institute methods and guidelines of curing, such as wet curing or membrane curing, are recommended to minimize drying shrinkage cracking.

Retaining Walls

Any retaining walls that are to be incorporated into the project should be designed to resist lateral pressures exerted from a media having an equivalent fluid weight as noted the following table.

Gradient of Back Slope	Equivalent Fluid Weight (p.c.f.)			Coefficient of Friction
	Unrestrained Condition (Active)	Restrained Condition (At Rest)	Passive Resistance	
Horizontal	60	75	225	0.28

It should be noted that the effects of any surcharge or compaction loads behind the walls must be accounted for in the design of the walls. We recommend that the project Structural Engineer use the formula P_Q = QHKa where Q = uniform surcharge load in psf, Ka = 0.5, and H = wall height. Because the surcharge pressure acting on the retaining wall is considered relatively uniform, the resultant force P_Q should be applied at mid-height of the wall.

Per Section 1803.5.12 of the 2022 California Building Code, dynamic lateral earth pressures on retaining walls supporting more than 6 feet of backfill in height are required. Based on the Mononobe-Okabe & Seed-Whitman equations, a total unit weight of 120 pcf and a Kh of ½ PGAm, an earthquake load of $15.5H^2$ should be applied at 1/3H where H = wall height, from the bottom of the wall is applicable.

Low height retaining walls (less than 5 feet), including dry stack non-mortared walls, may be founded on continuous spread footings as noted in the "Foundation" section above.

The above criteria are based on fully drained conditions. In order to achieve fully-drained conditions, a gravel drainage filter blanket should be placed behind the wall. The gravel blanket should be a minimum of 12 inches thick and should extend to within 12 inches of the surface and capped with compacted soil. If the excavated area behind the wall exceeds 12 inches, the entire excavated space behind the 12-inch blanket should consist of compacted engineered fill or blanket material. The gravel drainage blanket material may consist of either granular crushed rock or drain pipe fully encapsulated in geotextile filter fabric (Mirafi 140N or equivalent) or Class II permeable material that meets CalTrans Specification, Section 68. A 4-inch diameter SDR35 perforated drain pipe should be installed in the bottom of the drainage blanket and should be underlain by 4 inches of filter type material. Piping with a minimum gradient of 2% shall be provided to discharge water that collects behind the walls to an adequately controlled discharge system away from the structure foundations. Weep holes may alternatively be utilized.

Pavement Areas

The driveways and parking areas will be paved with either asphalt concrete (AC) or Portland cement concrete (PCC) surfaces. Recommendations for these pavement surfaces are presented below. We emphasize that the performance of the pavement is critically dependent upon adequate and uniform compaction of the subgrade soils, as well as engineered fill and utility trench backfill within the limits of pavements. Pavements will typically have poor performance and shorter life where water is allowed to migrate into the aggregate base and subgrade soils. The main sources of water into pavement materials are landscape planters constructed within or adjacent to pavement areas. Where this is planned, it is suggested to extend the curbs into the soil subgrade at least 2 inches. The construction of all pavements should conform to the requirements set forth by the latest Standard Specifications of the Department of Transportation of the State of California (Caltrans) and/or City of Fairfield or Solano County.

R-Value: Bulk samples were obtained of the near surface soils within the planned street areas that are representative of the anticipated subgrade soils. The samples were tested in accordance with the California Test Method 301 to determine the R-Value for the site soils. An R-Value of 6 was determined for the sample as shown in the Appendix.

Preparation of Subgrade: After underground utilities have been placed in the areas to receive pavement and removal of excess material has been completed, the upper 12 inches of the subgrade soil should be scarified, moisture conditioned and compacted to a minimum relative compaction of 95% at a moisture content at 3% or more above optimum in accordance with the grading recommendations specified in this report. As recommended in the "Grading" section above, the upper 12 inches of the subgrade may alternatively be lime treated. Prior to placement of aggregate baserock, it is recommended that the subgrade be proof rolled and observed for deflection by the Soils Engineer. Should deflection and/or pumping conditions be encountered, stabilization recommendations will be provided based on field conditions.

Aggregate Base: All aggregate base material placed subsequently should also be compacted to a minimum relative compaction of 95% based on the ASTM Test Procedure D1557. Aggregate base should meet the minimum requirements of Caltrans ¾" Class 2 per Section 26 and be crushed and angular. The recommended aggregate base thicknesses for asphalt concrete pavements are noted in the table below. The minimum aggregate base thickness for Portland cement concrete PCC roadway pavements is 6 compacted inches.

Asphalt Concrete: Asphalt concrete shall conform with Section 39 of Caltrans Standard Specifications and shall be per the City of Fairfield or Solano County Standards. Based on an R-Value of 6, and traffic indices typical for commercial/farming projects, the recommended pavement sections for aggregate and asphalt concrete surfaces are summarized in the table

below. Should the driveway and parking lot soils be lime treated, we are providing an alternate section based on a minimum R-value of 30. The appropriate traffic index (TI) and any minimum pavement sections should be determined by the Civil Engineer in conformance with the City of Fairfield.

Traffic Condition	Traffic Index (TI)	Asphalt Concrete (inches)	Class II Aggregate Base[1] (inches)
Auto Parking Stalls	4.5	3.0 3.0	8.0 4.0*
Drive Isles/Lanes	6.0	4.0 4.0	11.5 6.5*
Collector	8.0	4.5 4.5	18.5 11.5*
Arterial	10.0	6.0 6.0	23.5 15.0*

NOTES:
(1) Minimum R-Value = 78
(2) All layers in compacted thickness to CalTrans Standard Specifications.
* 12" Lime Treated Subgrade (R-Value = 30 min)

Portland Cement Concrete: Where PCC pavement areas are utilized, such as for drive isles and truck areas or trash enclosures, the concrete should be poured on the compacted aggregate base layer described above of 6 inches. We recommend a minimum of 6 inches thick PCC reinforced with a minimum of No. 4 rebar spaced at 16 inches on center, each way, underlain by 6 inches of compacted Class 2 aggregate base. Pavement joints shall be per the HDM and City/County Standards.

Underground Utility and Excavations

Groundwater was encountered at depths as shallow as 6 feet at the time of our exploration. Depending on the time of year of underground construction, higher groundwater may be encountered especially in deeper utilities. Temporary dewatering and shoring are the responsibility of the Contractor.

Should groundwater be encountered, the utility construction should begin at its lowest point and proceed uphill. The utility trench should be over-excavated 6 to 12 inches below the City/County required pipe bedding material. Open-graded 1.5-inch crushed aggregate should be placed in the bottom of the trench followed by the City/County standard bedding material. A sump pit should be excavated at the lowest point of the open excavation/trench to facilitate pumping of collected water. The collected water should be pumped to a City/County approved discharge facility.

Utility trenches extending to the building foundations must be backfilled with native or approved import material and compacted to relative compaction of 90% in accordance with Laboratory Test Procedure ASTM D1557. Backfilling and compaction of these trenches must meet the requirements set forth by the City of Fairfield or Solano County, Department of Public Works.

Applicable safety standards require that excavations in excess of 5 feet must be properly shored or that the walls of the excavation slope back to provide safety for installation of lines. If trench wall sloping is performed, the inclination should vary with the soil type and applicable OSHA Safety Standards.

With respect to state-of-the-art construction or local requirements, utility lines are generally bedded with granular materials. These materials can convey surface or subsurface water beneath the structures. It is, therefore, recommended that all utility trenches which possess the potential to transport water be sealed with a compacted impervious cohesive soil material or lean concrete where the trench enters/exits the building perimeter. This impervious seal should extend a minimum of 2 feet away from the building perimeter.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. It should be noted that it is the responsibility of the owner or his representative to notify ***KC ENGINEERING CO.***, in writing, a minimum of two working days before any clearing, grading, or foundation excavation operations can commence at the site.

2. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings and from a reconnaissance of the site. Should any variations or undesirable conditions be encountered during the development of the site, ***KC ENGINEERING CO.***, will provide supplemental recommendations as dictated by the field conditions.

3. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are brought to the attention of the Architect and Engineer for the project and incorporated into the plans and that the necessary steps are taken to see that the Contractor and Subcontractors carry out such recommendations in the field.

4. At the present date, the findings of this report are valid for the property investigated. With the passage of time, significant changes in the conditions of a property can occur due to natural processes or works of man on this or adjacent properties. In addition, legislation or the broadening of knowledge may result in changes in applicable standards. Changes outside of our control may render this report invalid, wholly or partially. Therefore, this report should not be considered valid after a period of two (2) years without our review, nor should it be used, or is it applicable, for any properties other than those investigated.

5. Notwithstanding, all the foregoing applicable codes must be adhered to at all times.

APPENDIX

Aerial Vicinity Map

Site Plan

Illustrative Site Plan

Site Plan 3D View

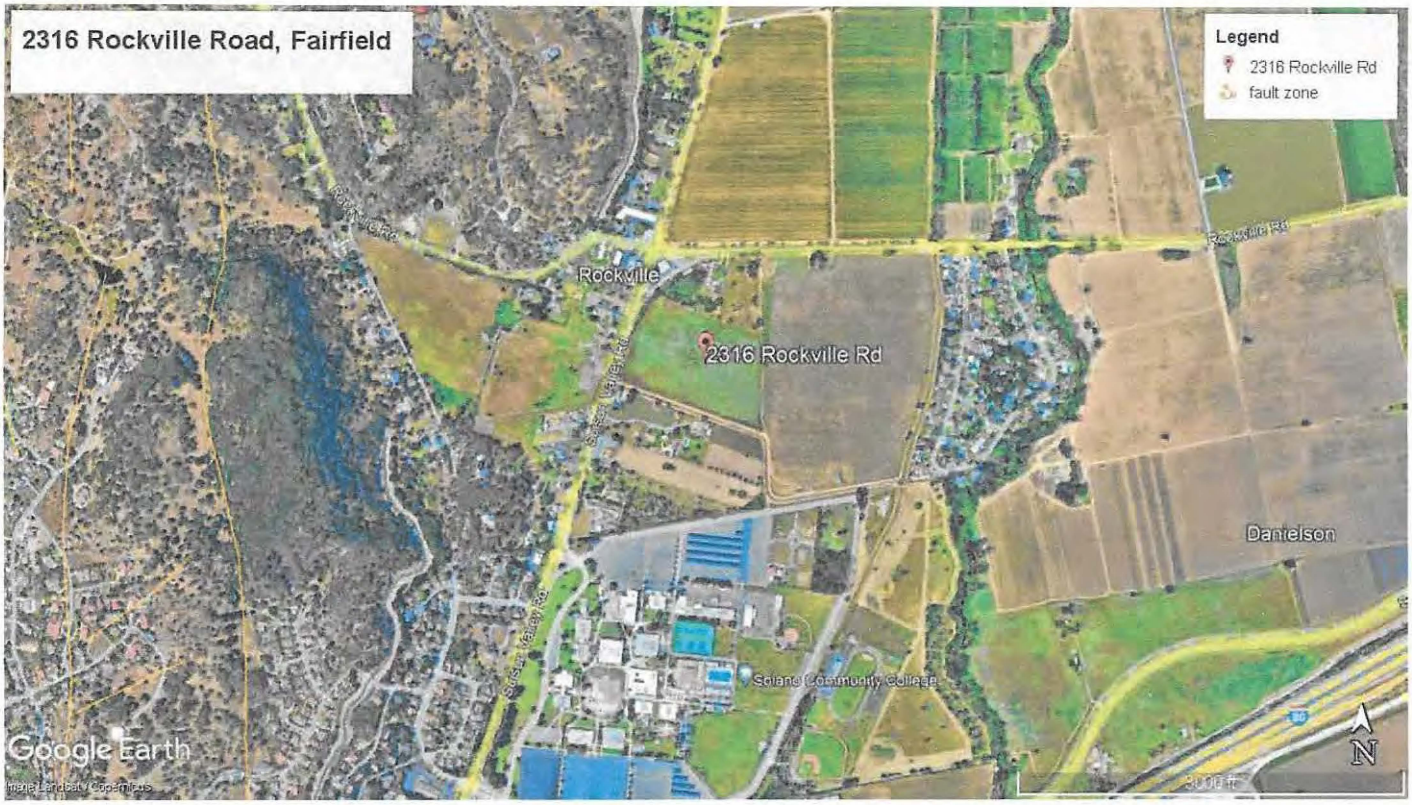
Geologic Map

Log of Test Borings

Subsurface Exploration Legend

Laboratory Test Results

ASCE 7 Hazards Report





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Vacaville, CA 95688
707.447.4025

Project No. VV5518
Proposed Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Figure 1 – AERIAL VICINITY MAP



LEGEND

Approximate Boring Location

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Project No. VV5518
Proposed Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Figure 2.0 – SITE PLAN



CLEAVER DESIGN ASSOCIATES

Solano Landing

Illustrative Site Plan

L1

LEGEND

Approximate Boring Location

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707-447-4025

Project No. VV5518
Proposed Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Figure 2.1 – ILLUSTRATIVE SITE PLAN



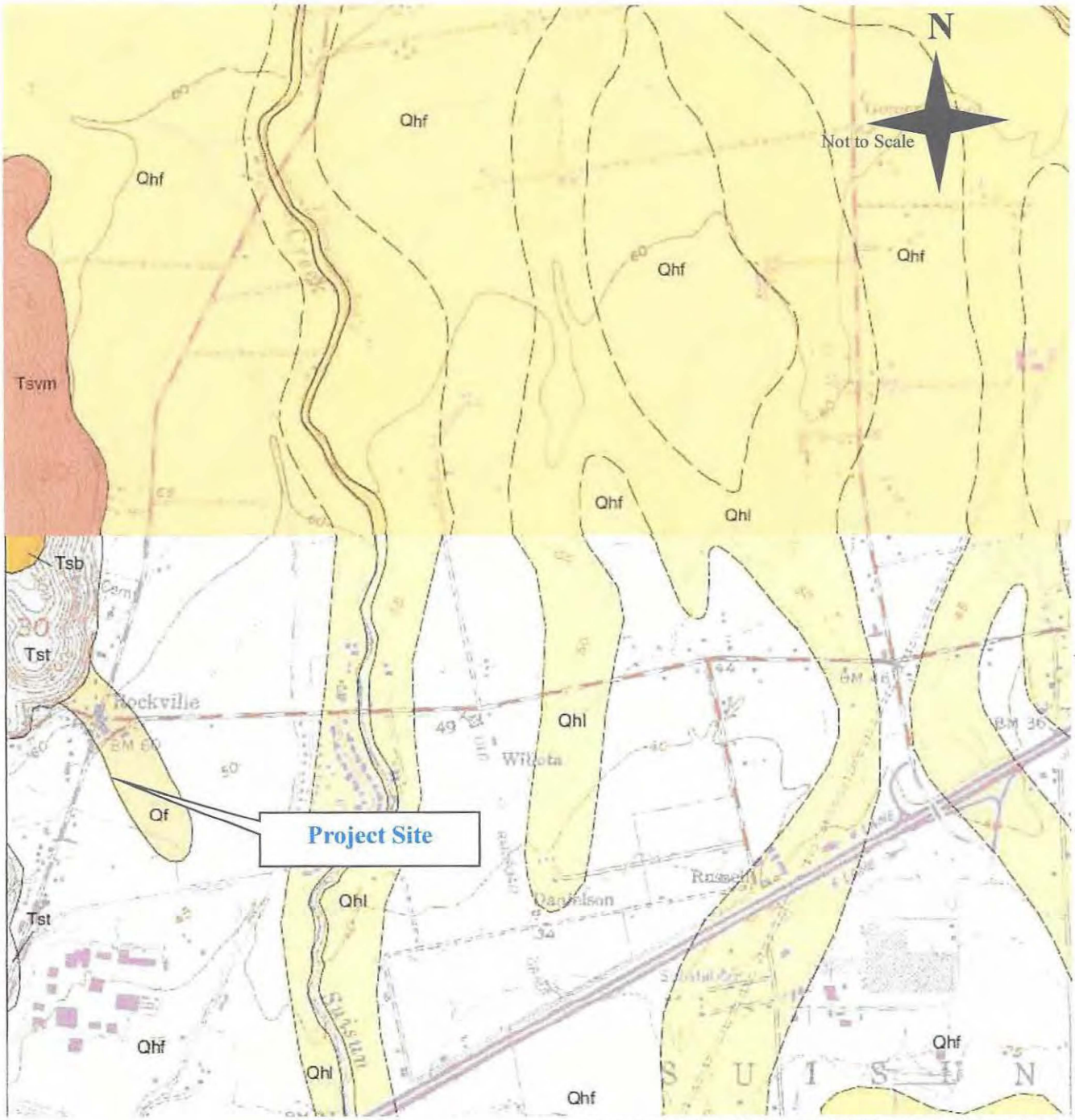
Solano Landing
2316 Rockville Road
Fairfield, CA 94534

Date: 08.22.2022
3D View - from Northwest

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2316 Rockville Road, Fairfield, CA
Figure 2.2 – SITE PLAN 3D VIEW



Geologic Map of the Fairfield South 7.5' Quadrangle, Solano County, Calilfornia

by
Stephen P. Bezore[1], David L. Wagner[1], and Janet M. Sowers[1]
1998

GEOLOGIC MAP OF THE
FAIRFIELD NORTH 7.5' QUADRANGLE
SOLANO AND NAPA COUNTIES, CALIFORNIA: A DIGITAL DATABASE

Qhl **Fan levee deposits (Holocene)** Qhf **Alluvial fan deposits (Holocene)**

Qf **Alluvial fan deposits (latest Pleistocene <~30,000 years to Holocene)**

Tst Ash-flow tuff (Pliocene). Pumicitic, locally welded, with bedded agglomeritic tuff.

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Project No. VV5518
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2316 Rockville Road, Fairfield, CA
Figure 3 – GEOLOGIC MAP

LOG OF TEST BORING

BORING NO.: 1

PROJECT: Solano Landing Mixed-Use Project
CLIENT: Solano Landing, LLC
LOCATION: 2316 Rockville Road, Fairfield, CA
DRILLER: California Geo-Tech
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ : 12'

PROJECT NO.: VV5518
DATE: 02/13/23
ELEVATION: n/a
LOGGED BY: DS
BORING DIAMETER: 4"
FINAL: ▽ : 6.5' AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Dark Brown CLAY; moist, very stiff.	CL					
	1-1					18	106.4	20.5	2.25	LL=41 PI=23 UCC=6,577 psf
5				▽						
	1-2			As Above very stiff.		16				No Retrieval.
10				Light Olive Brown Clayey SAND w/ Gravel; wet, loose.	SC					
				▽						
	1-3					7	105.5	21.8		%<200=36
15				Light Olive Brown Sandy CLAY; wet, very stiff.	CL					
	1-4a						92.0	29.0		%<200=66
	1-4b			Dark Brown Sandy CLAY w/ Weathered Cemented Gravels & Tuff Fragments; moist, very stiff.	CL	18	92.2	27.8		
20										
	1-5			As Above, hard.		50-5"	96.9	25.2		
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.

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Figure 4

LOG OF TEST BORING

BORING NO.: 1

PROJECT: Solano Landing Mixed-Use Project
CLIENT: Solano Landing, LLC
LOCATION: 2316 Rockville Road, Fairfield, CA
DRILLER: California Geo-Tech
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ : 12'

PROJECT NO.: VV5518
DATE: 02/13/23
ELEVATION: n/a
LOGGED BY: DS
BORING DIAMETER: 4"
FINAL: ▼ : 6.5' AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
	1-6			As Above, very stiff.		27	99.5	21.7		
30				Boring Terminated @ 28.5'. Groundwater Encountered @ 12'. Then rose to 6.5' from grade.						
35										
40										
45										
50										
55										

This information pertains only to this boring and is not necessarily indicative of the whole site.

KC ENGINEERING CO.

Figure 4

LOG OF TEST BORING
BORING NO.: 2

PROJECT: Solano Landing Mixed-Use Project
CLIENT: Solano Landing, LLC
LOCATION: 2316 Rockville Road, Fairfield, CA
DRILLER: California Geo-Tech
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ : 6'

PROJECT NO.: VV5518
DATE: 02/13/23
ELEVATION: n/a
LOGGED BY: DS
BORING DIAMETER: 4"
FINAL: ▽ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Dark Brown CLAY; moist, very stiff.	CL					
	2-1					18	106.4	20.5	3.0	LL=43 PI=23
5				▽ Light Brown CLAY; moist, stiff.	CL/CH					
	2-2					12	104.0	21.4	1.5	
10				Light Olive Brown CLAY w/ Trace Sand; very moist to wet, firm.	CL					
	2-3					7	93.9	27.6	0.5	%<200=81 Pc=1,638 psf
15				Light Olive Brown Sandy CLAY w/ Weathered Gravel/ Tuff Fragments; wet, stiff.	CL					
20	2-4			Boring Terminated @ 20.5'. Groundwater Encounterd @ 6'.		10	94.3	26.9		%<200=56
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.

KC ENGINEERING CO.

Figure 5

LOG OF TEST BORING
BORING NO.: 3

PROJECT: Solano Landing Mixed-Use Project
CLIENT: Solano Landing, LLC
LOCATION: 2316 Rockville Road, Fairfield, CA
DRILLER: California Geo-Tech
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ : 10'

PROJECT NO.: VV5518
DATE: 02/13/23
ELEVATION: n/a
LOGGED BY: DS
BORING DIAMETER: 4"
FINAL: ▼ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Brown CLAY; moist, stiff to very stiff.	CL/CH					
	3-1					15	107.4	20.7	2.25	ϕ=21° c=950 psf
5				Brown CLAY; moist to very moist, stiff.	CL/CH					
	3-2					12	102.8	23.0	1.5	UCC=3,696 psf
10				▽						
				Light Olive CLAY; very moist, stiff.	CL/CH					
	3-3					10	97.0	25.8	1.25	
15				Boring Terminated @ 13.5'. Groundwater Encountered @ 10'.						
20										
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.

KC ENGINEERING CO.

Figure 6

LOG OF TEST BORING
BORING NO.: 4

PROJECT: Solano Landing Mixed-Use Project
CLIENT: Solano Landing, LLC
LOCATION: 2316 Rockville Road, Fairfield, CA
DRILLER: California Geo-Tech
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ : 7.5'

PROJECT NO.: VV5518
DATE: 02/13/23
ELEVATION: n/a
LOGGED BY: DS
BORING DIAMETER: 4"
FINAL: ▼ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Brown CLAY; moist, stiff.	CL/CH					
	4-1					12	105.8	20.2	1.5	UCC=4,423 psf
5				▽						
	4-2			As Above.		10	107.0	22.2	1.0	
10				Light Olive CLAY w/ Trace Sand; wet, firm.	CL/CH					
	4-3					7	89.7	30.9	0.5	
				Boring Terminated @ 13.5'. Groundwater Encountered @ 7.5'.						
15										
20										
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.

KC ENGINEERING CO.

Figure 7

LOG OF TEST BORING
BORING NO.: 5

PROJECT: Solano Landing Mixed-Use Project
CLIENT: Solano Landing, LLC
LOCATION: 2316 Rockville Road, Fairfield, CA
DRILLER: California Geo-Tech
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ : 15'

PROJECT NO.: VV5518
DATE: 02/21/23
ELEVATION: n/a
LOGGED BY: DS
BORING DIAMETER: 4"
FINAL: ▽ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Brown CLAY; moist, very stiff.	CL					
	5-1					16	109.9	18.9	2.5	LL=44 PI=25
5				Light Brown CLAY; moist, stiff.	CL					
	5-2					11	100.3	23.1	1.0	
10										
	5-3			Yellowish Brown Sandy CLAY w/ Trace Gravel; very moist to wet, stiff. ▽	CL	10	98.3	25.4	0.5	%<200=65
15										
	5-4			As Above; wet.		10	90.2	31.3	0.5	
20										
	5-5			Yellowish Brown Sandy CLAY w/ Gravels; wet, firm.	CL	7	88.0	31.3	0.5	
25				Brown & Gray Sandy GRAVELS w/ Clay; wet, medium dense. (gravels up to 2")	GM					

This information pertains only to this boring and is not necessarily indicative of the whole site.

KC ENGINEERING CO.

Figure 8

LOG OF TEST BORING

BORING NO.: 5

PROJECT: Solano Landing Mixed-Use Project
CLIENT: Solano Landing, LLC
LOCATION: 2316 Rockville Road, Fairfield, CA
DRILLER: California Geo-Tech
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ : 15'

PROJECT NO.: VV5518
DATE: 02/21/23
ELEVATION: n/a
LOGGED BY: DS
BORING DIAMETER: 4"
FINAL: ▽ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
30	5-6			Grayish Green Sandy CLAY w/ Trace Weathered Gravel; very moist, hard.	CL/SC	36	84.5	34.2	4.5+	
	5-7			As Above.		46			4.5	
35										
	5-8			As Above.		50-5"	110.6	19.6	4.5	
				Boring Terminated @ 38.5'. Groundwater Encountered @ 15'.						
40										
45										
50										
55										

This information pertains only to this boring and is not necessarily indicative of the whole site.

KC ENGINEERING CO.

Figure 8

LOG OF TEST BORING
BORING NO.: 6

PROJECT: Solano Landing Mixed-Use Project
CLIENT: Solano Landing, LLC
LOCATION: 2316 Rockville Road, Fairfield, CA
DRILLER: California Geo-Tech
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ : 12.5'

PROJECT NO.: VV5518
DATE: 02/21/23
ELEVATION: n/a
LOGGED BY: DS
BORING DIAMETER: 4"
FINAL: ▼ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Brown CLAY; moist, very stiff.	CL					
	6-1					17			2.5	
5				Light Brown CLAY w/ Trace Silt; moist to very moist, very stiff.	CL					
	6-2					16	102.1	23.1	1.5	
10				Yellowish Brown CLAY w/ Silt; very moist to wet, firm to stiff. ▽	CL					
	6-3					8	93.2	28.3	0.25	
15				Yellowish Brown CLAY w/ Silt; wet, firm to stiff.	CL					
	6-4					8	88.8	32.2	0.25	
				Boring Terminated @ 18.5'. Groundwater Encountered @ 12.5'.						
20										
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.

KC ENGINEERING CO.

Figure 9

LOG OF TEST BORING
BORING NO.: 7

PROJECT: Solano Landing Mixed-Use Project
CLIENT: Solano Landing, LLC
LOCATION: 2316 Rockville Road, Fairfield, CA
DRILLER: California Geo-Tech
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ : 12.5'

PROJECT NO.: VV5518
DATE: 02/21/23
ELEVATION: n/a
LOGGED BY: DS
BORING DIAMETER: 4"
FINAL: ▽ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Brown CLAY; moist to very moist, soft to firm upper 2' then very stiff.	CH					
	7-1					16	107.0	20.8	1.5	LL=53 PI=31 UCC=4,533 psf
5										
	7-2			Reddish Brown Clayey SAND w/ Gravels; moist to very moist, medium dense.	SM	18	118.0	11.3		%<200=14
10				Brown & Gray SAND w/ Silt & Gravel; wet, medium dense. (gravels up to 2") ▽	SW-SM					
	7-3					14	113.1	15.6		%<200=7
15				Brown & Gray GRAVEL w/ Sand; wet, loose.	GW					
	7-4					7				%<200=4.6
				Boring Terminated @ 18.5'. Groundwater Encountered @ 12.5'.						
20										
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.

KC ENGINEERING CO.

Figure 10

LOG OF TEST BORING
BORING NO.: 8

PROJECT: Solano Landing Mixed-Use Project
CLIENT: Solano Landing, LLC
LOCATION: 2316 Rockville Road, Fairfield, CA
DRILLER: California Geo-Tech
DRILL RIG: Mobile B-24
DEPTH TO WATER: INITIAL ▽ :

PROJECT NO.: VV5518
DATE: 02/21/23
ELEVATION: n/a
LOGGED BY: DS
BORING DIAMETER: 4"
FINAL: ▼ : AFTER: HRS

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Light Brown CLAY; moist, very stiff.	CL/CH					
	8-1					24	108.3	20.5	3.0	ϕ=25° c=993 psf
5										
	8-2			As Above.		18	106.9	21.3	2.25	
10				Yellowish Brown Silty CLAY; very moist, stiff.	CL/CH					
	8-3					12	93.3	29.8	1.75	
				Boring Terminated @ 13.5'. No Groundwater Encountered.						
15										
20										
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYMBOLS		TYPICAL NAMES
COARSE GRAINED SOILS More than half of material is retained on the No. 200 Sieve	GRAVEL More than half of coarse fraction is larger than No. 4 sieve	Clean gravels (<5% fines)	GW		Well graded gravels, gravel-sand mixtures, little or no fines (Cu>4 & 1<Cc<3)
			GP		Poorly graded gravels, gravel-sand mixtures, little or no fines (Cu < 4 and/or 1>Cc>3)
		Gravel with fines (>12% fines)	GM		Silty gravels and gravel-sand-silt mixtures (PI<4 or below "A" line)
			GC		Clayey gravels and gravel-sand-clay mixtures (PI>7 & on or above "A" line)
	SAND Half or more of the coarse fraction is smaller than No. 4 sieve	Clean sands (<5% fines)	SW		Well graded sands, gravelly sands, little or no fines (Cu>6 & 1<Cc<3)
			SP		Poorly graded sands, gravelly sands, little or no fines (Cu<6 and/or 1>Cc>3)
		Sand with fines (>12% fines)	SM		Silty sands and gravel-sand-silt mixtures (PI<4 or below "A" line)
			SC		Clayey sands and gravel-sand-clay mixtures (PI>7 & on or above "A" line)
FINE GRAINED SOILS Half or more of the material passes the No. 200 Sieve	SILTS AND CLAYS Liquid Limit is less than 50%		ML		Inorganic silts with gravel and sand having slight plasticity (PI<4 or below "A" line)
			CL		Inorganic clays of low to med. plasticity with gravel and sand (PI>7 & on or above "A" line)
			OL		Organic silts and clays of low plasticity
	SILTS AND CLAYS Liquid Limit is 50% or more		MH		Inorganic elastic silts (PI below "A" line)
			CH		Inorganic clays of high plasticity, fat clays (PI on or above "A" line)
			OH		Organic silts and clays of medium to high plasticity
HIGHLY ORGANIC SOILS			Pt		Peat and other highly organic soils

MTI-KC ENGINEERING COMPANY
865 Cotting Lane, Ste A, Vacaville, CA 95688
8798 Airport Road, Redding, CA 96002

SAMPLER AND LAB TESTING LEGEND

- Auger
- Bulk Sample, taken from auger cuttings
- California Sampler
- Bulk/Grab Sample
- Pitcher
- Standard Penetration Test
- Shelby Tube
- No Recovery

LL=Liquid Limit (%)
PI=Plasticity Index
¦ =Friction Angle
C=Cohesion
UCC=Unconfined Compression
R value=Resistance Value
Consol=Consolidation Test

SOIL GRAIN SIZE

U.S. STANDARD SIEVE OPENINGS

	#200	#40	#10	#4	¾"	3"	12"
CLAY / SILT	SAND: FINE	SAND: MEDIUM	SAND: COARSE	GRAVEL: FINE	GRAVEL: COARSE	COBBLES	BOULDERS
0.002	0.075	0.425	2.00	4.75	19.0	75	300

SOIL GRAIN SIZE IN MILLIMETERS

RELATIVE DENSITY (Coarse-grained soils)

SANDS & GRAVELS	BLOWS/FOOT[1]
Very Loose	0 – 4
Loose	4 – 10
Medium Dense	10 – 30
Dense	30 – 50
Very Dense	> 50

CONSISTENCY (Fine-grained soils)

SILTS & CLAYS	STRENGTH[2]	BLOWS/FOOT[1]
Very Soft	< 500	0 – 2
Soft	500 – 1,000	2 – 4
Firm	1,000 – 2,000	4 – 8
Stiff	2,000 – 4,000	8 – 15
Very Stiff	4,000 – 8,000	15 – 30
Hard	> 8,000	>30

1 – Number of blows of 140 pound hammer falling 30 inches to drive a 2-inch O.D. split spoon sampler (ASTM D1586)
2 – Unconfined compressive strength in lb/ft² as determined by lab testing or approximated by the standard penetration test (ASTM D1586) or pocket penetrometer.

WEATHERING (Bedrock)

Fresh	No visible sign of decomposition or discoloration; rings under hammer impact
Slightly weathered	Slight discoloration inwards from open fractures; little or no effect on normal cementation; otherwise similar to Fresh
Moderately weathered	Discoloration throughout; weaker minerals decomposed; strength somewhat less than fresh rock but cores can not be broken by hand or scraped with knife; texture preserved; cementation little to not affected; fractures may contain filling
Highly weathered	Most minerals somewhat decomposed; specimens can be broken by hand with effort or shaved with knife; texture becoming indistinct but fabric preserved; faint fractures
Completely weathered	Minerals decomposed to soil but fabric and structure preserved; specimens can be easily crumbled or penetrated

STRENGTH (Bedrock)

Plastic	Very low strength
Friable	Crumbles easily by rubbing with fingers
Weak	An unfractured specimen will crumble under light hammer blows
Moderately strong	Specimen will withstand a few heavy hammer blows before breaking
Strong	Specimen will withstand a few heavy ringing blows and will yield with difficulty only dust and small flying fragments
Very strong	Specimen will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments

BEDDING (Bedrock)	SPACING (inches)
Very thickly bedded	> 48
Thickly bedded	24 to 48
Thin bedded	2.5 to 24
Very thin bedded	5/8 to 2.5
Laminated	1/8 to 5/8
Thinly laminated	<1/8

FRACTURING (Bedrock)	SPACING (inches)
Very little fractured	> 48
Occasionally fractured	12 to 48
Moderately fractured	6 to 12
Closely fractured	1 to 6
Intensely fractured	5/8 to 1
Crushed	<5/8

Materials Testing, Inc.

8798 Airport Road
Redding, California 96002
(530) 222-1116, fax 222-1611

865 Cotting Lane, Suite A
Vacaville, California 95688
(707) 447-4025, fax 447-4143

Client: Solano Landing, LLC
506 Coach Street
Vallejo, CA 94590

Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA

Date: 03/15/2023
Client No.: VV5518
Report No.: 0300-001
Submitted By: KC Engineering
Date Submitted: 02/23/2023

Density of Soil in Place by the Drive-Cylinder Method (ASTM D2937) and Liquid Limit, Plastic Limit & Plasticity Index of Soils (ASTM D4318)

Sample #	Description	Dry Density p.c.f.	Moisture Content %	Liquid Limit	Plastic Limit	Plastic Index
1-1 @ 3.0'	Dark Brown Clay (visual)	106.4	20.5	41	18	23
1-3 @ 13.0'	Light Olive Brown Clayey Sand with Gravel (visual)	105.5	21.8	---	---	---
1-4a @ 17.5'	Light Olive Brown Sandy Clay (visual)	92.0	29.0	---	---	---
1-4b @ 18.0'	Dark Brown Sandy Clay with Gravel (visual)	92.2	27.8	---	---	---
1-5 @ 23.0'	Dark Brown Sandy Clay with Gravel (visual)	96.9	25.2	---	---	---
1-6 @ 28.0'	Dark Brown Sandy Clay with Gravel (visual)	99.5	21.7	---	---	---
2-1 @ 3.0'	Dark Brown Clay (visual)	106.4	20.5	43	20	23
2-2 @ 8.0'	Light Brown Clay (visual)	104.0	21.4	---	---	---
2-3 @ 13.0'	Light Olive Brown Clay with Sand (visual)	93.9	27.6	---	---	---
2-4 @ 20.0'	Light Olive Brown Sandy Clay (visual)	94.3	26.9	---	---	---
3-1 @ 3.0'	Brown Clay (visual)	107.4	20.7	---	---	---

Tested by John Hubbard.
The samples were tested according to the referenced standard test procedures and relate only to the items inspected or tested.
Results are not transferable and shall not be reproduced, except in full, without written permission from MTI.

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Client: Solano Landing, LLC
506 Coach Street
Vallejo, CA 94590

Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA

Date: 03/15/2023
Client No.: VV5518
Report No.: 0300-001
Submitted By: KC Engineering
Date Submitted: 02/23/2023

Density of Soil in Place by the Drive-Cylinder Method (ASTM D2937) and Liquid Limit, Plastic Limit & Plasticity Index of Soils (ASTM D4318)

Sample #	Description	Dry Density p.c.f.	Moisture Content %	Liquid Limit	Plastic Limit	Plastic Index
3-2 @ 8.0'	Brown Clay (visual)	102.8	23.0	---	---	---
3-3 @ 13.0'	Light Olive Clay (visual)	97.0	25.8	---	---	---
4-1 @ 3.0'	Brown Clay (visual)	105.8	20.2	---	---	---
4-2 @ 8.0'	Brown Clay (visual)	107.0	22.2	---	---	---
4-3 @ 13.0'	Light Olive Clay with Sand (visual)	89.7	30.9	---	---	---
5-1 @ 3.0'	Brown Clay (visual)	109.9	18.9	44	19	25
5-2 @ 8.0'	Light Brown Clay (visual)	100.3	23.1	---	---	---
5-3 @ 13.0'	Yellowish Brown Sandy Clay (visual)	98.3.	25.4	---	---	---
5-4 @ 18.0'	Yellowish Brown Clay with Sand (visual)	90.2	31.3	---	---	---
5-5 @ 23.0'	Yellowish Brown Sandy Clay (visual)	88.0	31.3	---	---	---
5-6 @ 28.0'	Grayish Green Sandy Clay (visual)	84.5	34.2	---	---	---

Tested by John Hubbard.
The samples were tested according to the referenced standard test procedures and relate only to the items inspected or tested. Results are not transferable and shall not be reproduced, except in full, without written permission from MTI.

Materials Testing, Inc.

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Client: Solano Landing, LLC
506 Coach Street
Vallejo, CA 94590

Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA

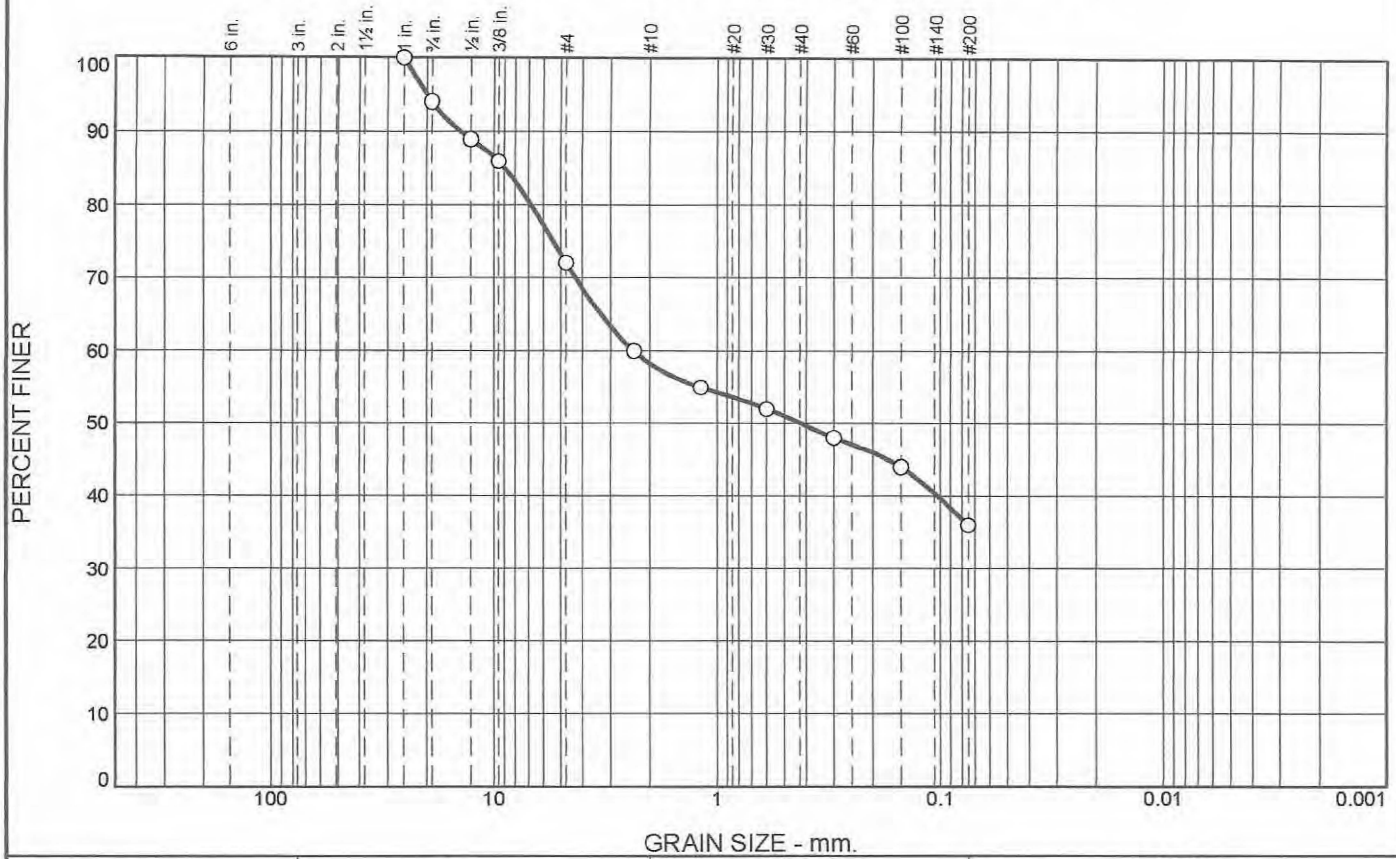
Date: 03/15/2023
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Report No.: 0300-001
Submitted By: KC Engineering
Date Submitted: 02/23/2023

Density of Soil in Place by the Drive-Cylinder Method (ASTM D2937) and Liquid Limit, Plastic Limit & Plasticity Index of Soils (ASTM D4318)

Sample #	Description	Dry Density p.c.f.	Moisture Content %	Liquid Limit	Plastic Limit	Plastic Index
5-8 @ 38.0'	Grayish Green Sandy Clay (visual)	110.6	19.6	---	---	---
6-2 @ 8.0'	Light Brown Clay with Silt (visual)	102.1	23.1	---	---	---
6-3 @ 13.0'	Yellowish Brown Clay with Silt (visual)	93.2	28.3	---	---	---
6-4 @ 18.0'	Yellowish Brown Clay with Silt (visual)	88.8	32.2	---	---	---
7-1 @ 3.0'	Brown Clay (visual)	107.0	20.8	53	22	31
7-2 @ 8.0'	Reddish Brown Clayey Sand with Gravel (visual)	118.0	11.3	---	---	---
7-3 @ 13.0'	Brown and Gray Sand with Silt and Gravel (visual)	113.1	15.6	---	---	---
8-1 @ 3.0'	Light Brown Clay (visual)	108.3	20.5	---	---	---
8-2 @ 8.0'	Light Brown Clay (visual)	106.9	21.3	---	---	---
8-3 @ 13.0'	Yellowish Brown Silty Clay (visual)	93.3	29.8	---	---	---

Tested by John Hubbard.
The samples were tested according to the referenced standard test procedures and relate only to the items inspected or tested.
Results are not transferable and shall not be reproduced, except in full, without written permission from MTI.

PARTICLE SIZE DISTRIBUTION REPORT



% +3"	% Gravel	% Sand		% Fines	
		Coarse	Fine	Silt	Clay
0	42	8	14	36	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100		
3/4"	94		
1/2"	89		
3/8"	86		
#4	72		
#8	60		
#16	55		
#30	52		
#50	48		
#100	44		
#200	36		

* (no specification provided)

Material Description

Light Olive Brown Clayey Sand with Gravel (visual)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 14.0851 D_{85}= 8.8928 D_{60}= 2.3600
D_{50}= 0.4240 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SC AASHTO=

Remarks

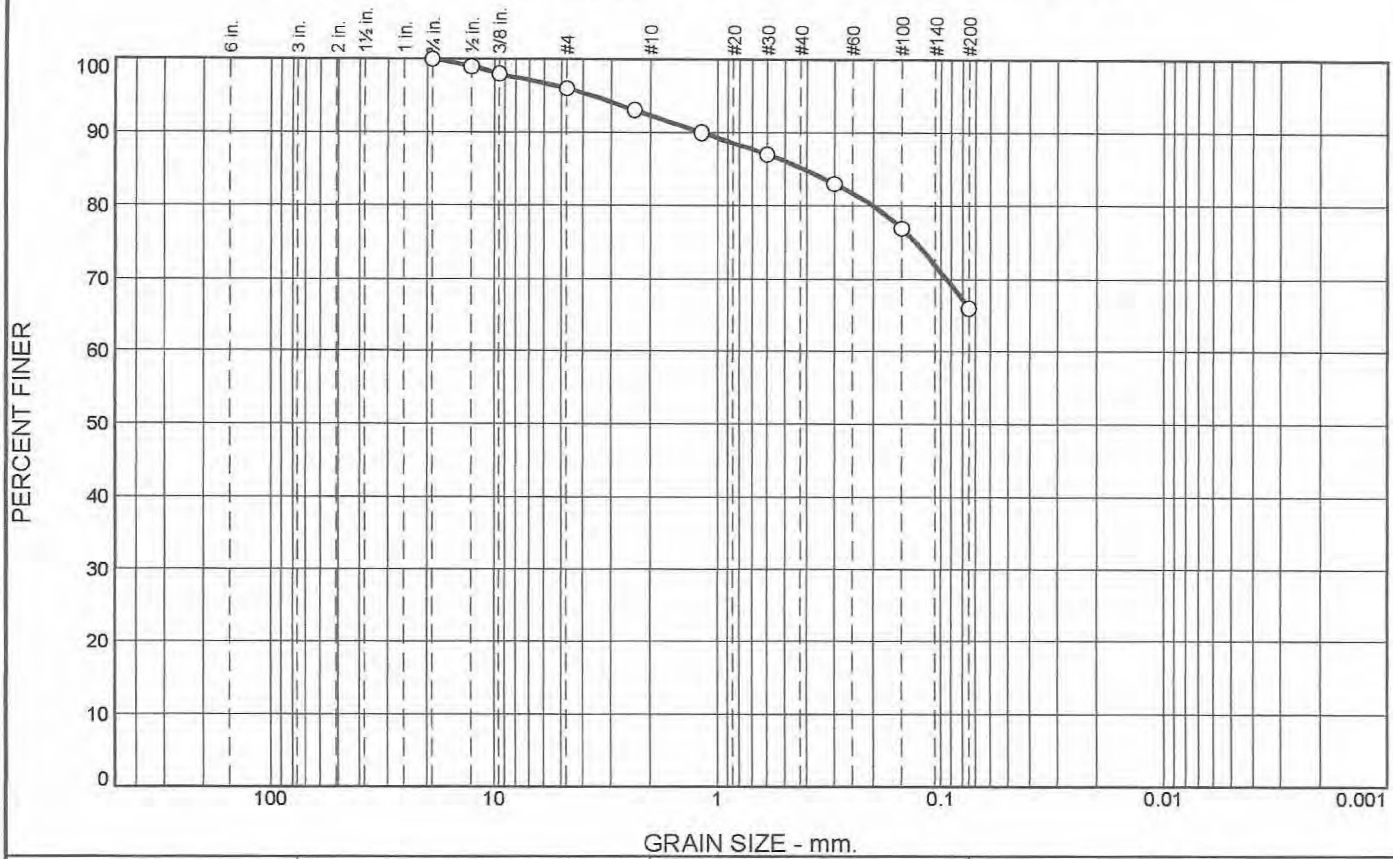
Material tested in accordance with ASTM D6913.

Location: 1-3
Sample Number: 3 **Depth:** 13.0' **Date:** 03/15/2023

Client: Solano Landing, LLC
Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Project No: VV5518 **Figure** 0300-002

Tested By: John Hubbard

PARTICLE SIZE DISTRIBUTION REPORT



% +3"	% Gravel	% Sand		% Fines	
		Coarse	Fine	Silt	Clay
0	8	7	19	66	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100		
1/2"	99		
3/8"	98		
#4	96		
#8	93		
#16	90		
#30	87		
#50	83		
#100	77		
#200	66		

* (no specification provided)

Material Description

Light Olive Brown Sandy Clay (visual)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.1800 D_{85}= 0.4149 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

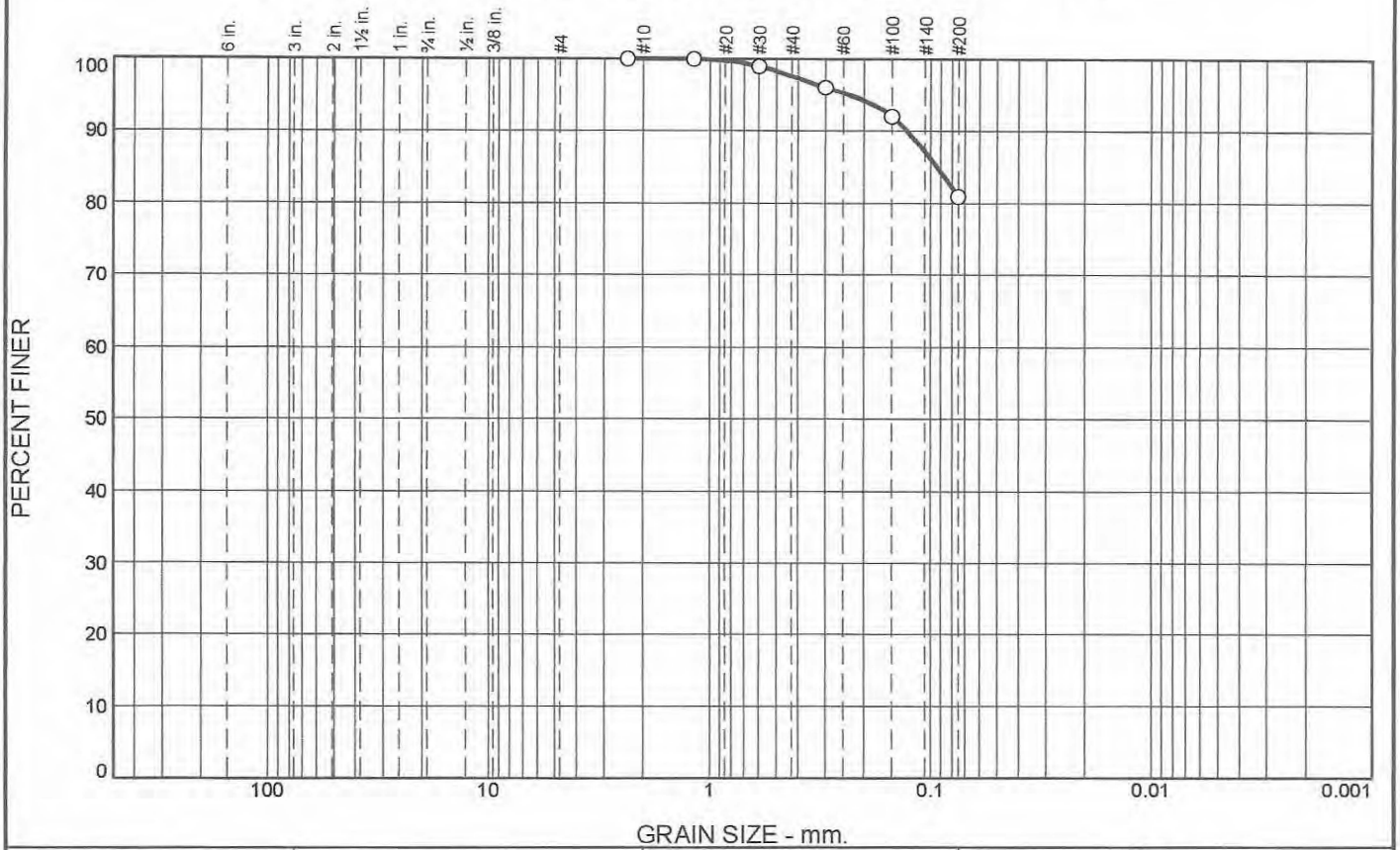
Material tested in accordance with ASTM D6913.

Location: 1-4a
Sample Number: 4 **Depth:** 17.5' **Date:** 03/15/2023

Client: Solano Landing, LLC
Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Project No: VV5518 **Figure** 0300-003

Tested By: Johm Hubbard

PARTICLE SIZE DISTRIBUTION REPORT



% +3"	% Gravel	% Sand		% Fines	
		Coarse	Fine	Silt	Clay
0	0	2	17	81	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#8	100		
#16	100		
#30	99		
#50	96		
#100	92		
#200	81		

* (no specification provided)

Material Description

Light Olive Brown Clay with Sand (visual)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.1275 D_{85}= 0.0934 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

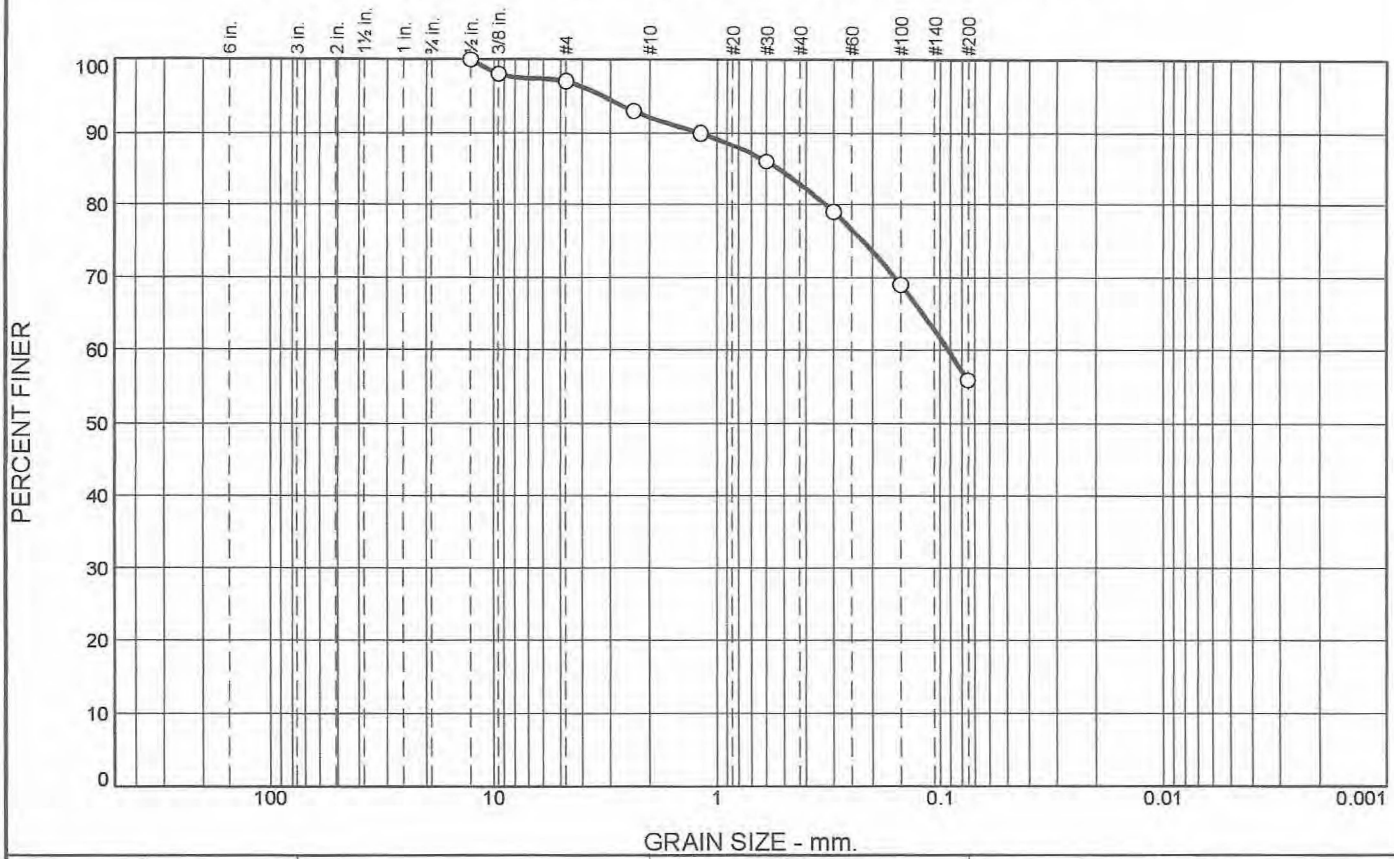
Material tested in accordance with ASTM D6913.

Location: 2-3
Sample Number: 10 **Depth:** 13.0' **Date:** 03/15/2023

Client: Solano Landing, LLC
Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Project No: VV5518 **Figure** 0300-004

Tested By: John Hubbard

PARTICLE SIZE DISTRIBUTION REPORT



% +3"	% Gravel	% Sand		% Fines	
		Coarse	Fine	Silt	Clay
0	8	9	27	56	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2"	100		
3/8"	98		
#4	97		
#8	93		
#16	90		
#30	86		
#50	79		
#100	69		
#200	56		

* (no specification provided)

Material Description

Light Olive Brown Sandy Clay (visual)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.1800 D_{85}= 0.5318 D_{60}= 0.0920
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

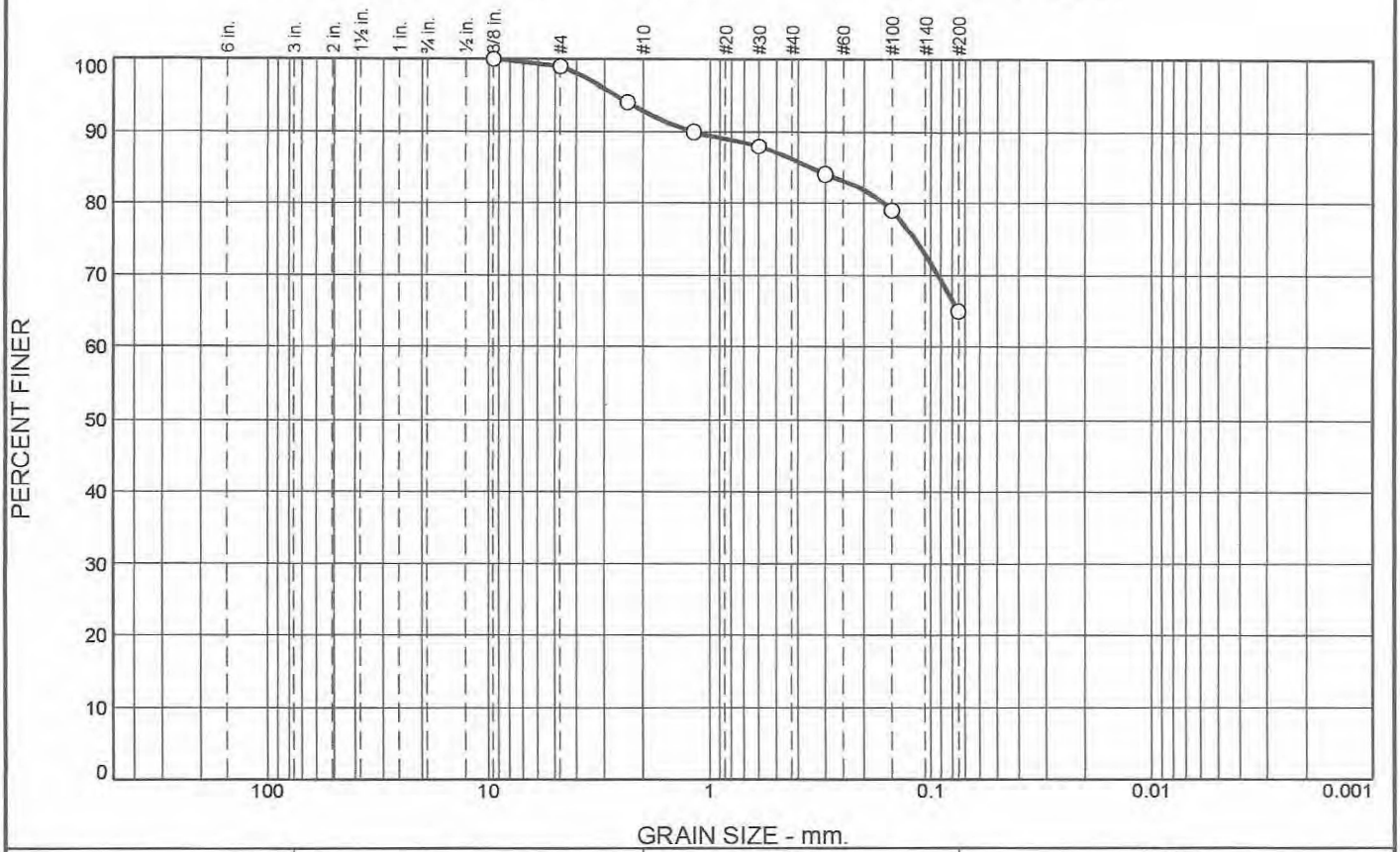
Material tested in accordance with ASTM D6913.

Location: 2-4
Sample Number: 11 **Depth:** 20.0' **Date:** 03/15/2023

Client: Solano Landing, LLC
Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Project No: VV5518 **Figure** 0300-005

Tested By: John Hubbard

PARTICLE SIZE DISTRIBUTION REPORT



% +3"	% Gravel	% Sand		% Fines	
		Coarse	Fine	Silt	Clay
0	7	7	21	65	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100		
#4	99		
#8	94		
#16	90		
#30	88		
#50	84		
#100	79		
#200	65		

* (no specification provided)

Material Description

Yellowish Brown Sandy Clay (visual)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.1800 D_{85}= 0.3565 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

Material tested in accordance with ASTM D6913.

Location: 5-3
Sample Number: 21 **Depth:** 13.0' **Date:** 03/15/2023

Client: Solano Landing, LLC
Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Project No: VV5518 **Figure** 0300-006

Tested By: John Hubbard

PARTICLE SIZE DISTRIBUTION REPORT



% +3"	% Gravel	% Sand		% Fines	
		Coarse	Fine	Silt	Clay
0	47	22	17	14	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100		
1/2"	90		
3/8"	82		
#4	69		
#8	56		
#16	46		
#30	38		
#50	25		
#100	19		
#200	14		

* (no specification provided)

Material Description

Reddish Brown Clayey Sand with Gravel (visual)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 12.7000 D_{85}= 10.6439 D_{60}= 2.9312
D_{50}= 1.6186 D_{30}= 0.3964 D_{15}= 0.0854
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Material tested in accordance with ASTM D6913.

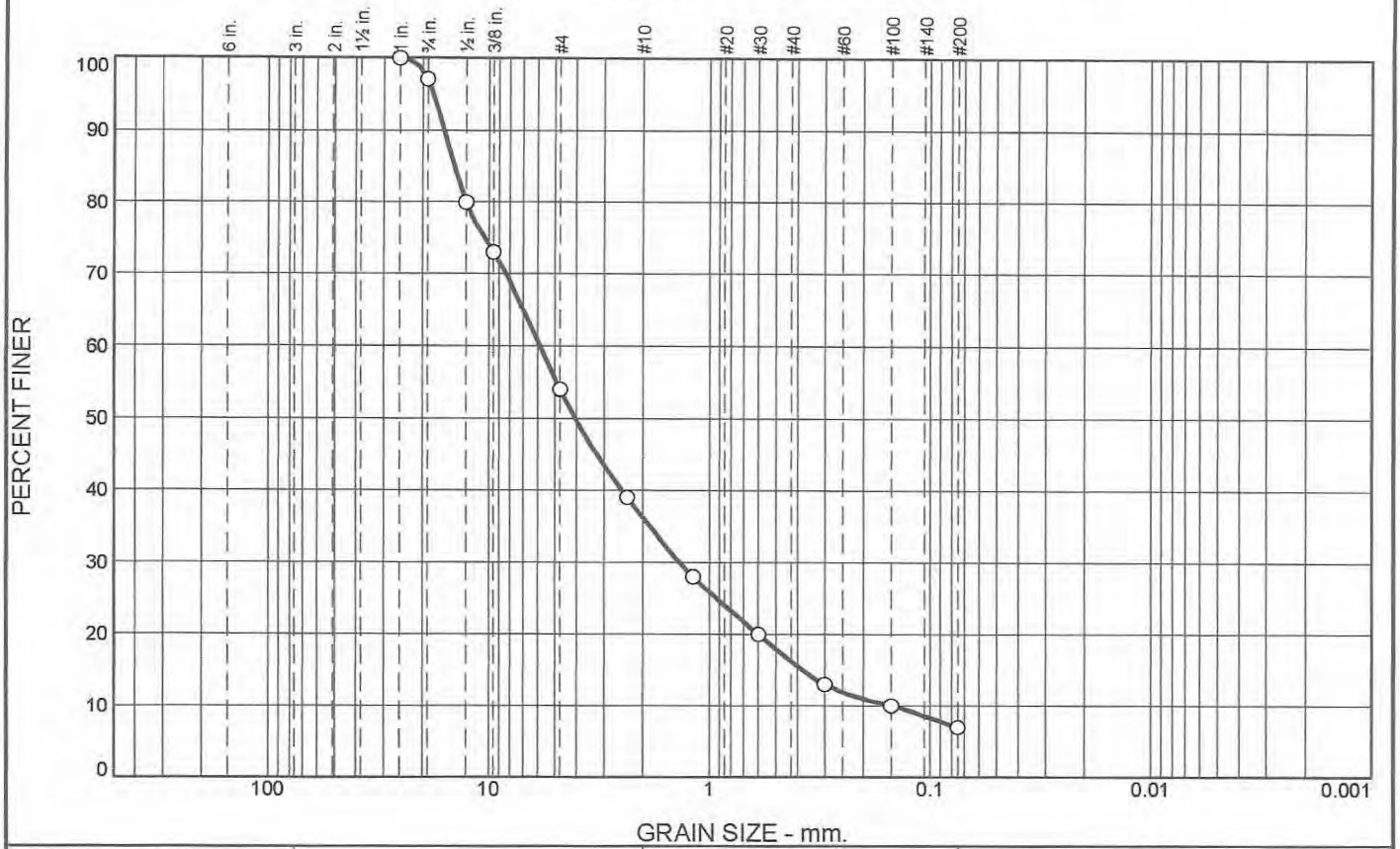
Location: 7-2
Sample Number: 32 **Depth:** 8.0'

Date: 03/15/2023

Client: Solano Landing, LLC
Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Project No: VV5518 **Figure** 0300-007

Tested By: John Hubbard

PARTICLE SIZE DISTRIBUTION REPORT



% +3"	% Gravel	% Sand		% Fines	
		Coarse	Fine	Silt	Clay
0	64	20	9	7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100		
3/4"	97		
1/2"	80		
3/8"	73		
#4	54		
#8	39		
#16	28		
#30	20		
#50	13		
#100	10		
#200	7.0		

* (no specification provided)

Material Description

Brown and Gray Sand with Silt and Gravel (visual)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 15.9171 D_{85}= 14.3135 D_{60}= 5.8712
D_{50}= 4.0539 D_{30}= 1.3611 D_{15}= 0.3793
D_{10}= 0.1500 C_u= 39.14 C_c= 2.10

Classification

USCS= SW-SM AASHTO=

Remarks

Material tested in accordance with ASTM D6913.

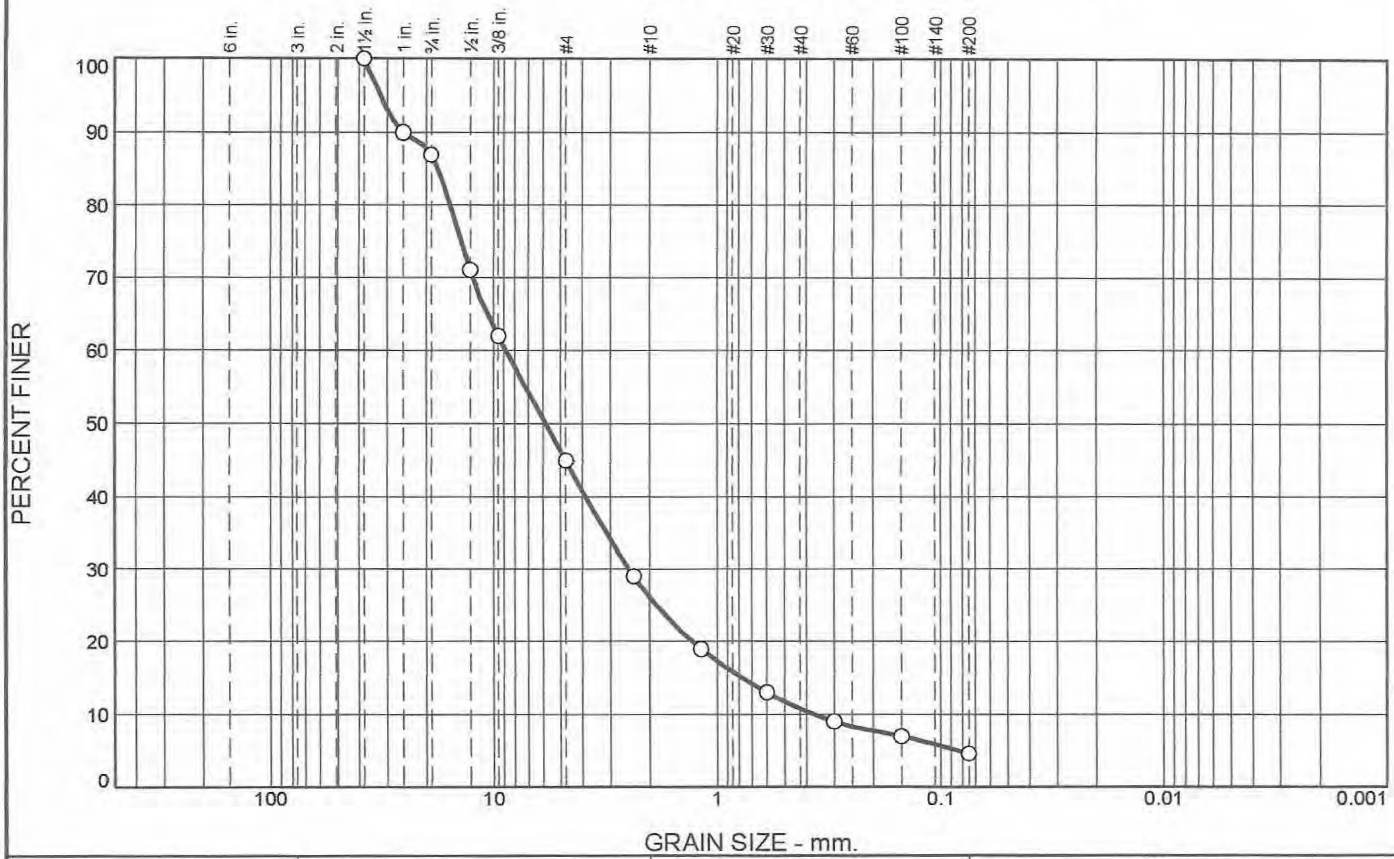
Location: 7-3
Sample Number: 33 **Depth:** 13.0' **Date:** 03/15/2023

MATERIALS TESTING INCORPORATED

Client: Solano Landing, LLC
Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Project No: VV5518 **Figure** 0300-008

Tested By: John Hubbard

PARTICLE SIZE DISTRIBUTION REPORT



% +3"	% Gravel	% Sand		% Fines	
		Coarse	Fine	Silt	Clay
0	74	15	6	5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 1/2"	100		
1"	90		
3/4"	87		
1/2"	71		
3/8"	62		
#4	45		
#8	29		
#16	19		
#30	13		
#50	9		
#100	7		
#200	4.6		

* (no specification provided)

Material Description

Brown and Gray Gravel with Sand (visual)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 25.4000 D_{85}= 17.7225 D_{60}= 8.8192
D_{50}= 5.8573 D_{30}= 2.4831 D_{15}= 0.7753
D_{10}= 0.3730 C_u= 23.65 C_c= 1.87

Classification

USCS= GW AASHTO=

Remarks

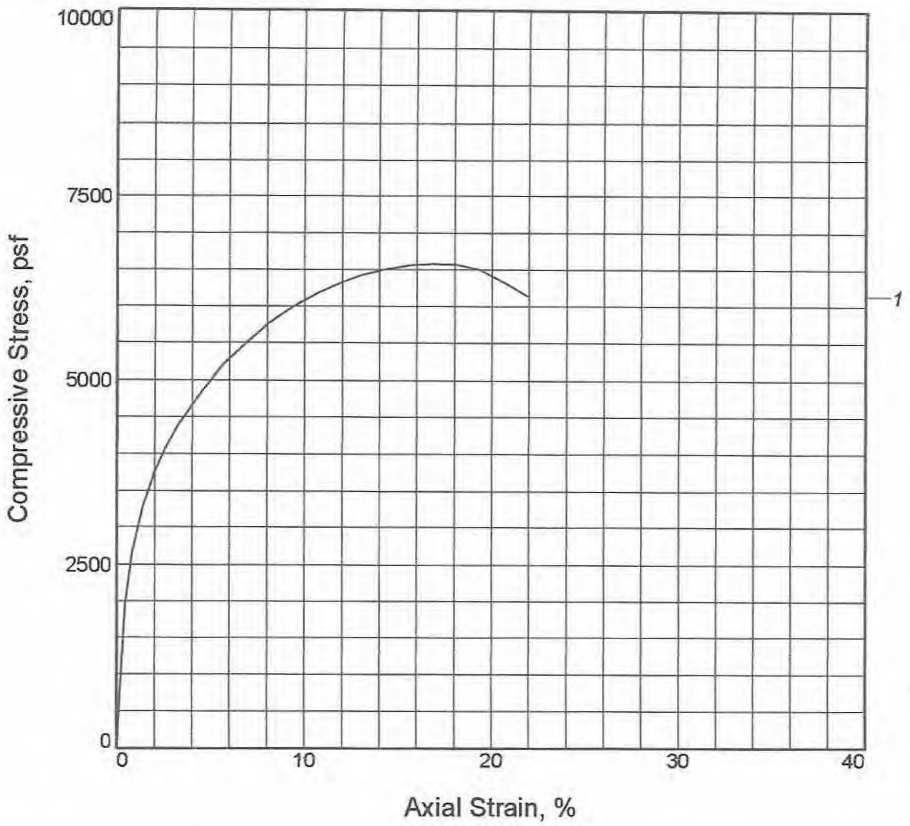
Material tested in accordance with ASTM D6913.

Location: 7-4
Sample Number: 34 **Depth:** 18.0' **Date:** 03/15/2023

Client: Solano Landing, LLC
Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Project No: VV5518 **Figure** 0300-009

Tested By: John Hubbard

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	6577			
Undrained shear strength, psf	3289			
Failure strain, %	16.9			
Strain rate, in./min.	0.071			
Water content, %	20.5			
Wet density, pcf	128.2			
Dry density, pcf	106.4			
Saturation, %	85.2			
Void ratio	0.6964			
Specimen diameter, in.	2.41			
Specimen height, in.	5.70			
Height/diameter ratio	2.37			

Description: Dark Brown Clay (visual)

LL = 41	**PL** = 18	**PI** = 23	**GS**= 2.89	**Type:** Tube

Project No.: VV5518
Date Sampled: 03/15/2023

Remarks:
Material tested in accordance with ASTM D2166.
Type of Failure - Bulge, Cone and Split

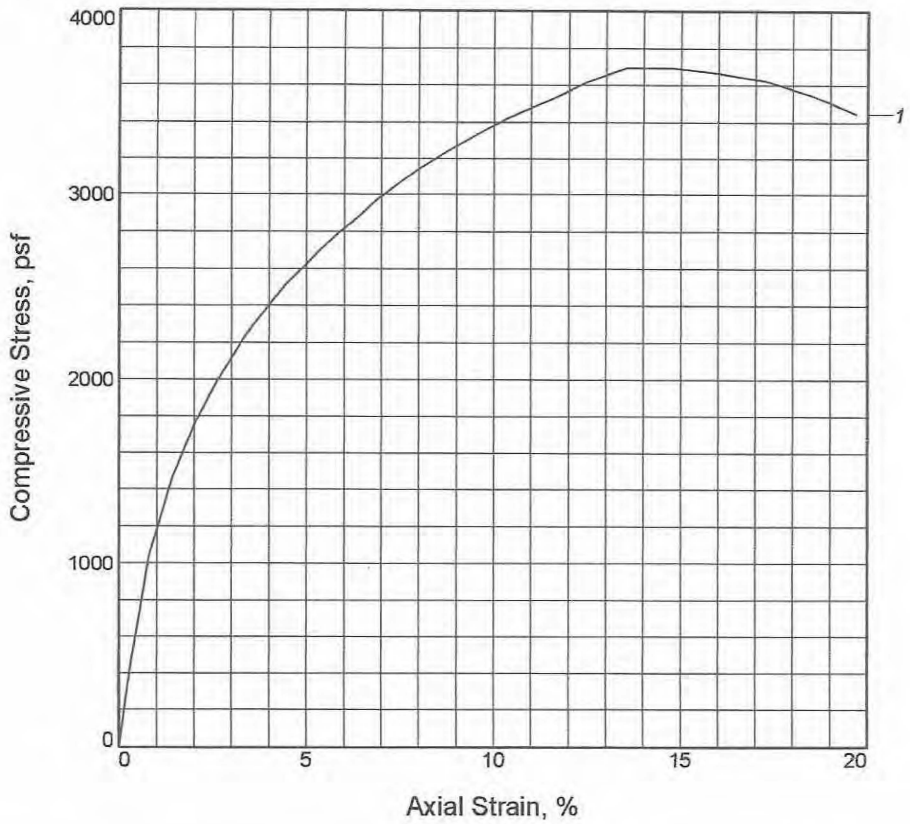
Figure 0300-010

Client: Solano Landing, LLC

Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Location: 1-1
Sample Number: 2 **Depth:** 3.0'

Tested By: Travis Fiscus

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	3696			
Undrained shear strength, psf	1848			
Failure strain, %	13.5			
Strain rate, in./min.	0.725			
Water content, %	23.0			
Wet density, pcf	126.4			
Dry density, pcf	102.8			
Saturation, %	93.0			
Void ratio	0.6887			
Specimen diameter, in.	2.41			
Specimen height, in.	5.80			
Height/diameter ratio	2.41			

Description: Brown Clay (visual)

LL =	**PL =**	**PI =**	**GS=** 2.78	**Type:** Tube

Project No.: VV5518
Date Sampled: 03/15/2023

Remarks:
Material tested in accordance with ASTM D2166.
Type of Failure - Bulge and Shear

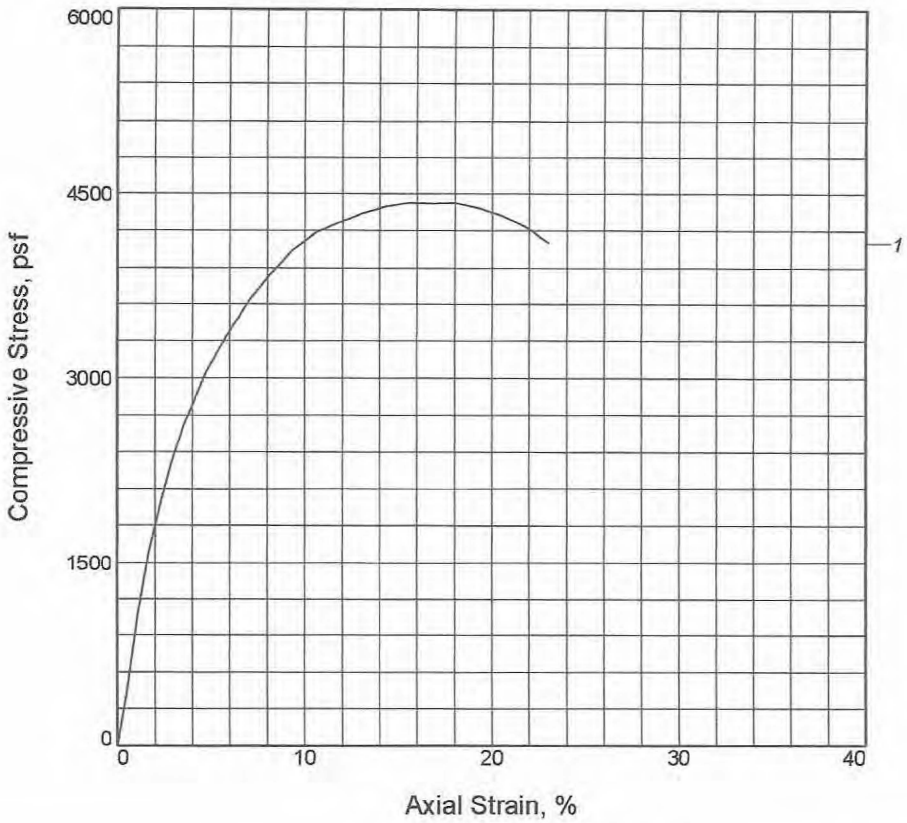
Figure 0300-011

Client: Solano Landing, LLC

Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Location: 3-2
Sample Number: 14 **Depth:** 8.0'

Tested By: Travis Fiscus

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	4423			
Undrained shear strength, psf	2211			
Failure strain, %	18.0			
Strain rate, in./min.	0.070			
Water content, %	20.2			
Wet density, pcf	127.2			
Dry density, pcf	105.8			
Saturation, %	97.9			
Void ratio	0.5397			
Specimen diameter, in.	2.41			
Specimen height, in.	5.60			
Height/diameter ratio	2.32			

Description: Brown Clay (visual)

LL =	PL =	PI =	GS= 2.61	Type: Tube

Project No.: VV5518
Date Sampled: 03/15/2023

Remarks:
Material tested in accordance with ASTM D2166.
Type of Failure - Bulge, Shear, Cone and Shear

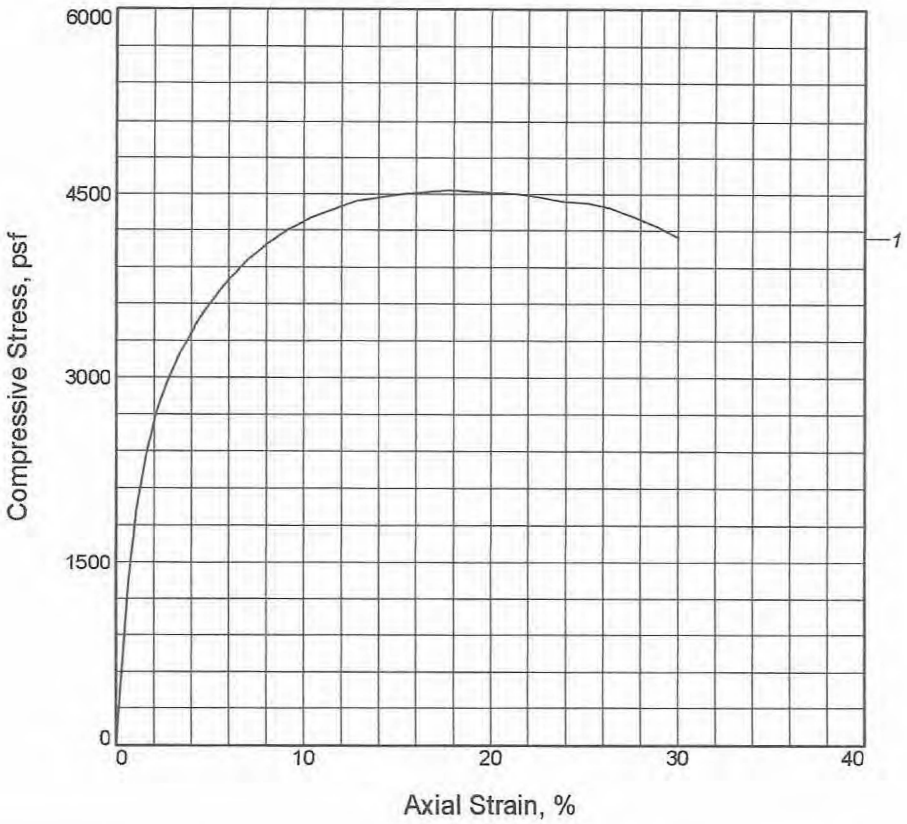
Figure 0300-012

Client: Solano Landing, LLC

Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Location: 4-1
Sample Number: 16 **Depth:** 3.0'

Tested By: Travis Fiscus

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	4533			
Undrained shear strength, psf	2266			
Failure strain, %	17.8			
Strain rate, in./min.	0.068			
Water content, %	20.8			
Wet density, pcf	129.3			
Dry density, pcf	107.0			
Saturation, %	101.7			
Void ratio	0.5397			
Specimen diameter, in.	2.41			
Specimen height, in.	5.40			
Height/diameter ratio	2.24			

Description: Brown Clay (visual)

LL = 53	**PL** = 22	**PI** = 31	**GS**= 2.64	**Type:** Tube

Project No.: VV5518
Date Sampled: 03/15/2023

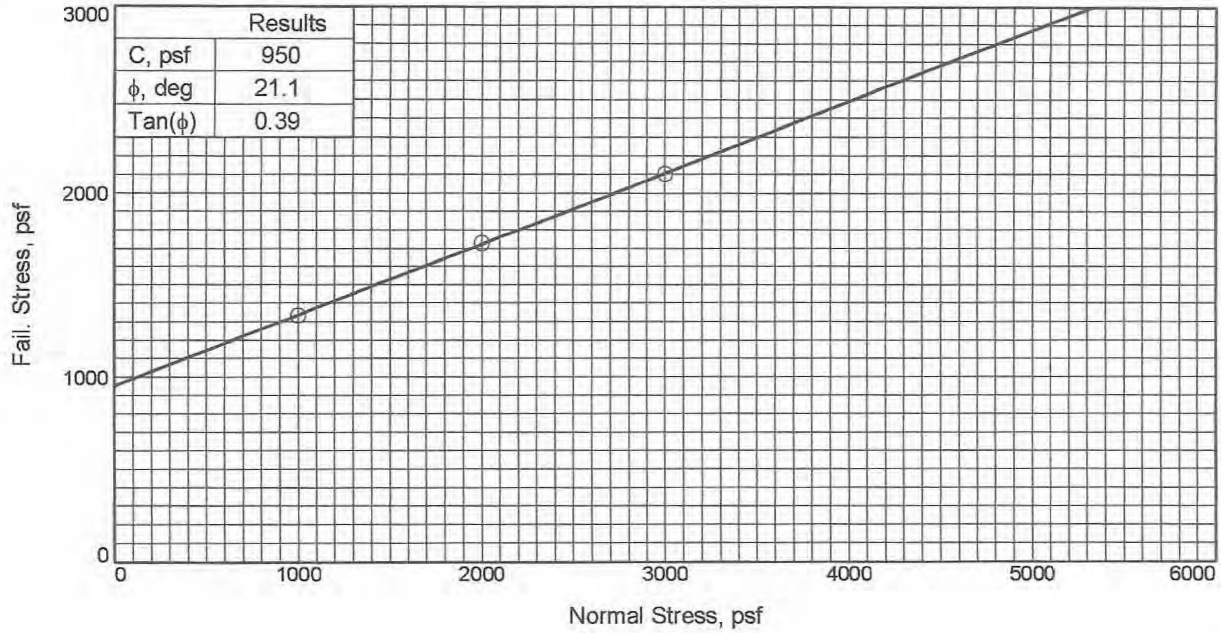
Remarks:
Material tested in accordance with ASTM D2166.
Type of Failure - Bulge, Cone and Shear

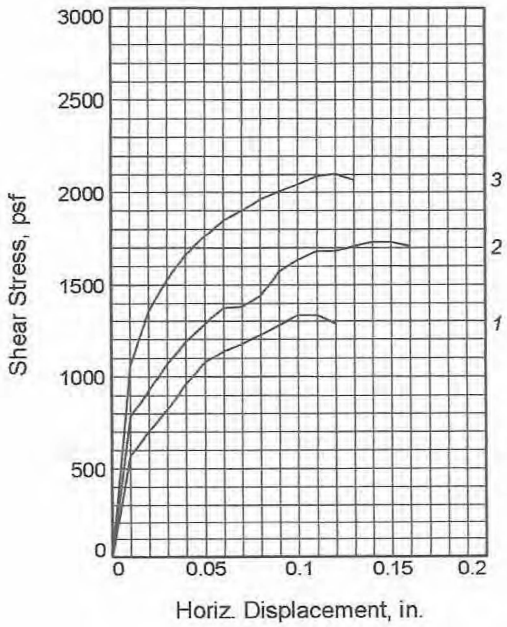
Figure 0300-013

Client: Solano Landing, LLC

Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Location: 7-1
Sample Number: 31 **Depth:** 3.0'

Tested By: Travis Fiscus





Sample No.		1	2	3
Initial	Water Content, %	20.7	20.7	20.7
	Dry Density, pcf	97.6	97.3	100.7
	Saturation, %	79.5	78.9	86.0
	Void Ratio	0.6892	0.6947	0.6366
	Diameter, in.	2.41	2.41	2.41
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	22.8	21.3	20.7
	Dry Density, pcf	102.6	104.2	106.8
	Saturation, %	99.2	96.8	100.6
	Void Ratio	0.6058	0.5822	0.5425
	Diameter, in.	2.41	2.41	2.41
	Height, in.	0.95	0.93	0.94
Normal Stress, psf		1000	2000	3000
Fail. Stress, psf		1332	1727	2102
Displacement, in.		0.10	0.14	0.12
Ult. Stress, psf				
Displacement, in.				
Strain rate, in./min.		0.002	0.002	0.002

Sample Type: Tube
Description: Brown Clay (visual)

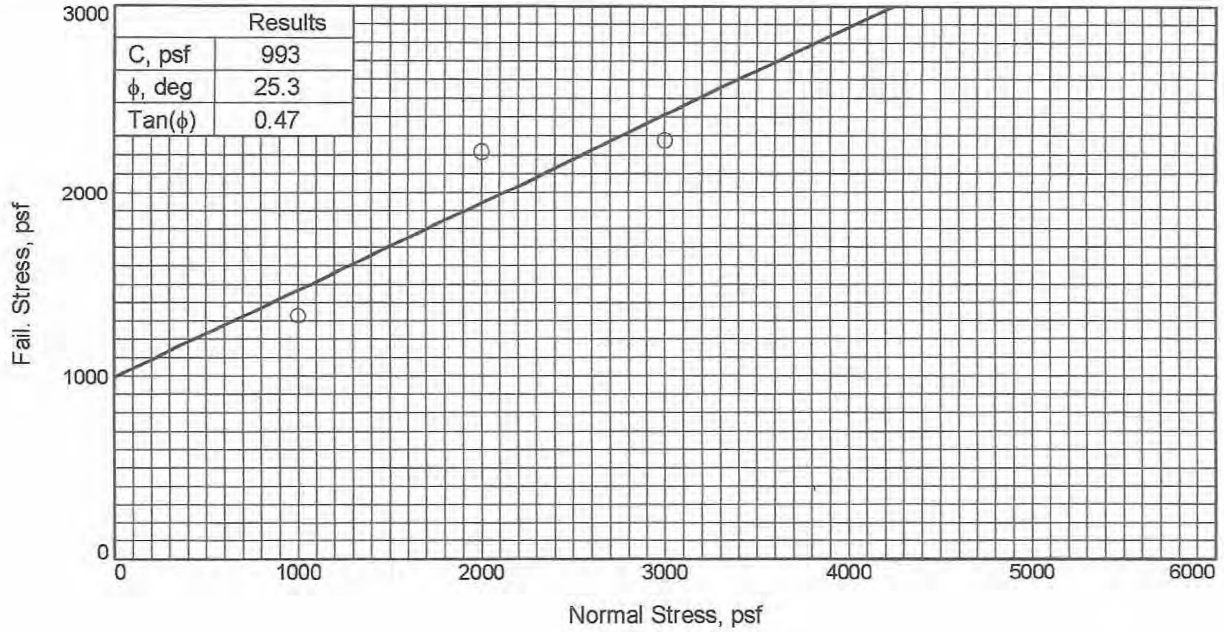
Specific Gravity= 2.64
Remarks: Material tested in accordance with ASTM D3080.

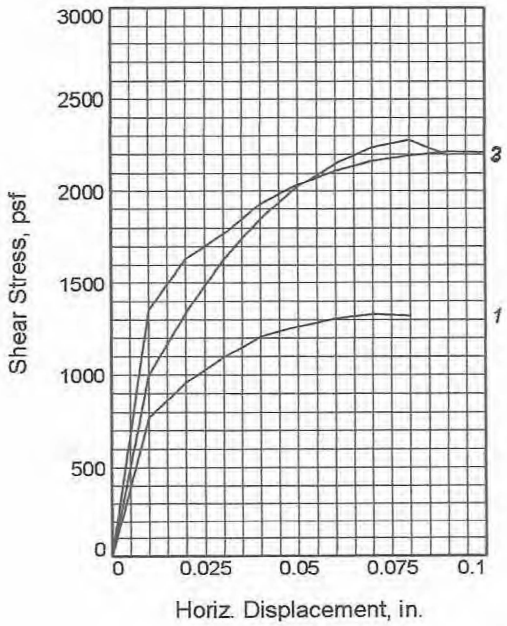
Figure 0300-014

Client: Solano Landing, LLC

Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Location: 3-1
Sample Number: 13 **Depth:** 3.0'
Proj. No.: VV5518 **Date Sampled:** 03/15/2023

Tested By: Jack Bianchin





Sample No.		1	2	3
Initial	Water Content, %	20.5	20.5	20.5
	Dry Density, pcf	104.1	128.8	99.4
	Saturation, %	87.2	171.0	77.8
	Void Ratio	0.6436	0.3282	0.7217
	Diameter, in.	2.41	2.10	2.41
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	22.5	23.1	22.0
	Dry Density, pcf	105.9	136.8	106.7
	Saturation, %	100.0	253.0	99.9
	Void Ratio	0.6157	0.2504	0.6027
	Diameter, in.	2.41	2.10	2.41
	Height, in.	0.98	0.94	0.93
Normal Stress, psf		1000	2000	3000
Fail. Stress, psf		1329	2216	2276
Displacement, in.		0.07	0.09	0.08
Ult. Stress, psf				
Displacement, in.				
Strain rate, in./min.		0.002	0.002	0.002

Sample Type: Tube
Description: Light Brown Clay (visual)

Specific Gravity= 2.74
Remarks: Material tested in accordance with ASTM D3080.

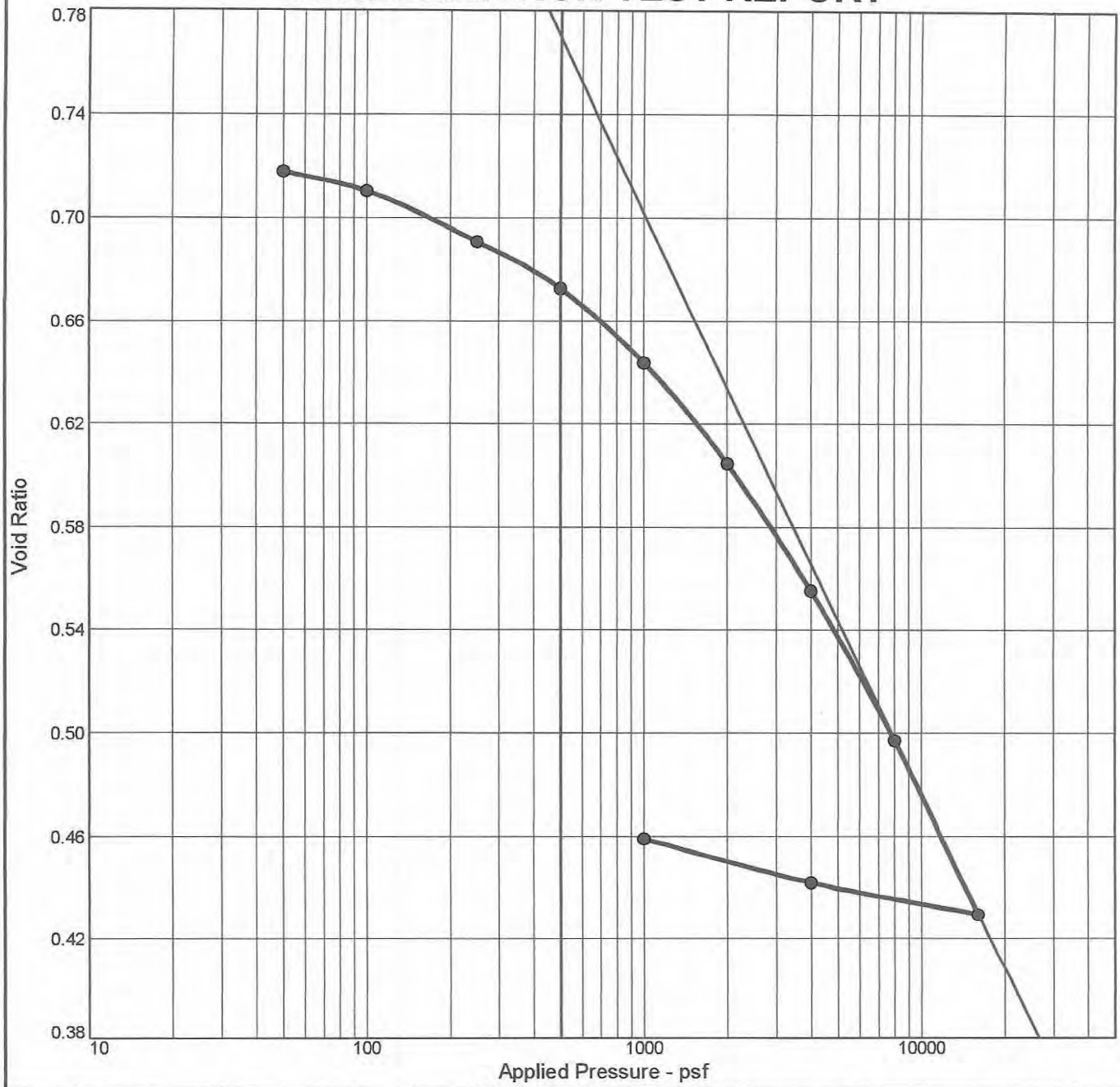
Figure 0300-015

Client: Solano Landing, LLC

Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA
Location: 8-1
Sample Number: 35 **Depth:** 3.0'
Proj. No.: VV5518 **Date Sampled:** 03/15/2023

Tested By: Jack Bianchin

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
98.4 %	27.6 %	93.9			2.60	1557	1638	0.23	0.03	0.729

MATERIAL DESCRIPTION	USCS	AASHTO
Light Olive Brown Sandy Clay (visual)		

Project No. VV5518 **Client:** Solano Landing, LLC

Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA

Location: 2-3 **Depth:** 13.0' **Sample Number:** 10

Remarks:
Material tested in accordance with ASTM D2435.

Figure 0300-016

Materials Testing, Inc.

8798 Airport Road
Redding, California 96002
(530) 222-1116, fax 222-1611

865 Cotting Lane, Suite A
Vacaville, California 95688
(707) 447-4025, fax 447-4143

Client: Solano Landing, LLC
506 Coach Street
Vallejo, CA 94590

Project: Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA

Page: 1 of 1
Client No: VV5518
Figure No: 0300-017
Date: 03/15/2023
Submitted by: KC Engineering
Date Submitted: 02/23/2023

"R" VALUE TEST REPORT
(CTM 301)

Sample: 12
Description: Brown Clay (visual)
Location: Subgrade 0.0'-3.0'

SIEVE ANALYSIS

Sieve Size	3"	2"	1-1/2"	1"	3/4"	1/2"	3/8"	#4
As Received (% Pass)	---	---	---	---	---	---	---	100
As Used (% Pass)	---	---	---	---	---	---	---	100

RESISTANCE VALUE

Specimen Number	Dry Unit Weight, PCF	Moisture (%)	Exudation Pressure (PSI)	Expansion Pressure Dial Reading & PSF		R-Value
1	107.7	18.9	496	159	688	21
2	104.5	21.0	369	22	150	9
3	97.5	24.5	212	0	0	4

R-Value @ 300 PSI Exudation Pressure = **6**

Notes:

Tested by John Hubbard.

The samples were tested according to the referenced standard test procedures and relate only to the items inspected or tested. Results are not transferable and shall not be reproduced, except in full, without written permission from MTI.

Materials Testing, Inc.

8798 Airport Road
Redding, California 96002
(530) 222-1116, fax 222-1611

865 Cotting Lane, Suite A
Vacaville, California 95688
(707) 447-4025, fax 447-4143

Client:	Solano Landing, LLC 506 Coach Street Vallejo, CA 94590	Client No: Report No: Date:	VV5518 0300-018 03/15/2023
Subject: Location:	Solano Landing Mixed-Use Project 2316 Rockville Road, Fairfield, CA	Submitted By: Submitted Date:	Client 02/23/2023

EXPANSION INDEX
(ASTM D4829)

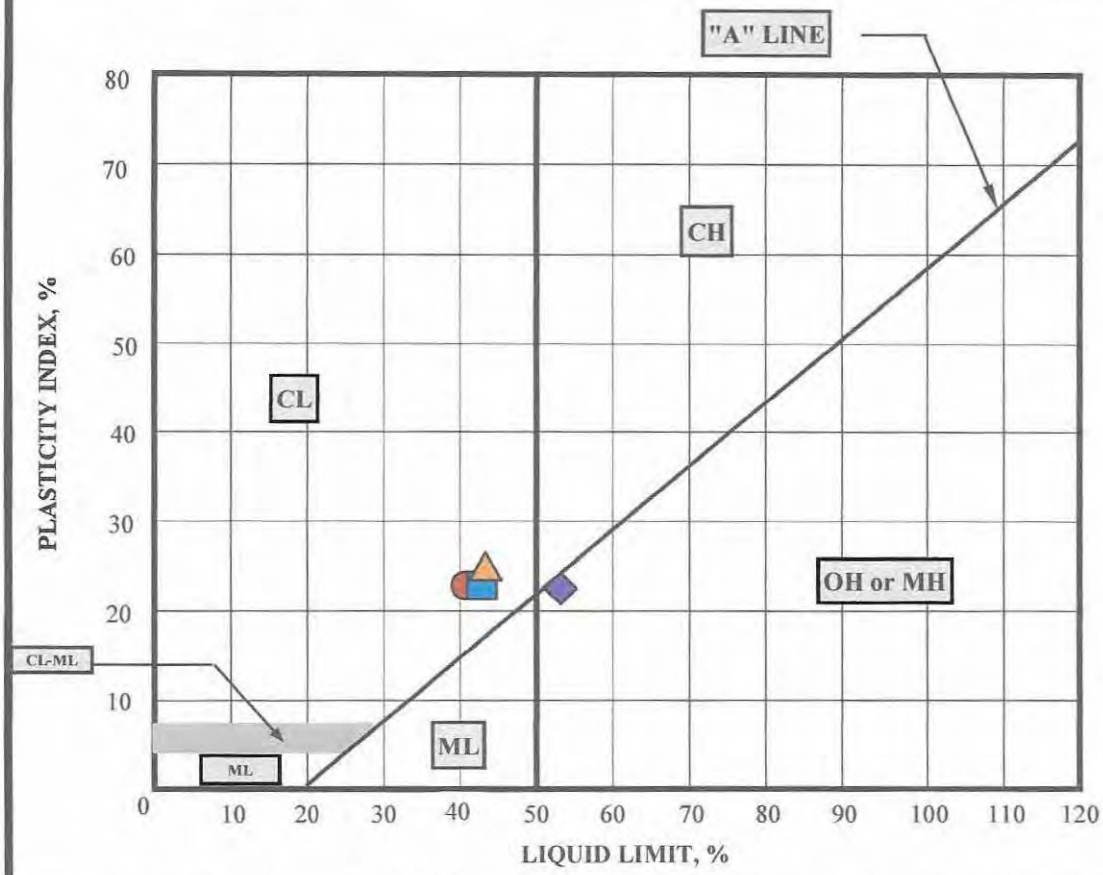
Sample #:	12
Soil Description:	Brown Clay (visual)
Initial Moisture Content (%):	10.8
Moisture Content after Test (%):	25.9
Initial Dry Density (lb/ft^3):	99.7
After Test Wet Density (lb/ft^3):	125.6
Degree of Saturation (%):	48.1
Expansion Index:	**74**

Table 1 Classification of Potential Expansion of Soils Using EI (ASTM D4829-11)

Expansion Index, EI	Potential Expansion
0 - 20	Very Low
21 – 50	Low
51 – 90	Medium
91 – 130	High
>130	Very High

Tested by John Hubbard.

The samples were tested according to the referenced standard test procedures and relate only to the items inspected or tested. Results are not transferable and shall not be reproduced, except in full, without written permission from MTI.



KEY SYMBOL	SAMPLE NUMBER	DEPTH	NATURAL MOISTURE CONTENT, %	LIQUID LIMIT, LL, %	PLASTIC LIMIT, PL, %	PLASTICITY INDEX, PI, %	LIQUIDITY INDEX	UNIFIED SOIL CLASSIFICATION SYMBOL
●	1-1	3.0'	N/A	41	18	23	N/A	CL
■	2-1	3.0'	N/A	43	20	23	N/A	CL
▲	5-1	3.0'	N/A	44	19	25	N/A	CL
◆	7-1	3.0'	N/A	53	22	31	N/A	CH

Note: Atterberg Limits tested in accordance with ASTM D4318.

Materials Testing, Inc.

PLASTICITY CHART AND DATA

Solano Landing Mixed-Use Project
2316 Rockville Road, Fairfield, CA

Client No:	Date:	Report No:
VV5518	3/15/2023	0300-019

Sunland Analytical
11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 03/01/2023
Date Submitted 02/24/2023

To: David Cymanski
K.C. Engineering
865 Cotting Lane Suite A
Vacaville, CA 95688

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager RH

The reported analysis was requested for the following location:
Location : VV5518 Site ID : PAD @ 0-3.
Thank you for your business.

* For future reference to this analysis please use SUN # 89093-185036.

EVALUATION FOR SOIL CORROSION

Soil pH	6.10		
Minimum Resistivity	2.14 ohm-cm (x1000)		
Chloride	3.4 ppm	0.00034	%
Sulfate-SO4	17.6ppm	0.00176	%

METHODS
pH and Min.Resistivity CA DOT Test #643 Mod.(Sm.Cell)
Sulfate-SO4 ASTM C1580, Chloride CA DOT Test #422m

ASCE 7 Hazards Report

Address:
2316 Rockville Rd
Fairfield, California
94534

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Latitude: 38.243843
Longitude: -122.12084
Elevation: 0 ft (NAVD 88)





ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Seismic

Site Soil Class: D - Stiff Soil

Results:

S_S :	1.549	S_{D1} :	1.02
S_1 :	0.6	T_L :	8
F_a :	1	PGA :	0.615
F_v :	1.7	PGA_M :	0.676
S_{MS} :	1.549	F_{PGA} :	1.1
S_{M1} :	1.53	I_e :	1
S_{DS} :	1.033	C_v :	1.41

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Wed Mar 15 2023

Date Source: USGS Seismic Design Maps

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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Appendix E

Noise and Vibration Study

NOISE AND VIBRATION IMPACT ANALYSIS

SOLANO LANDING PROJECT

SOLANO COUNTY, CALIFORNIA

LSA

March 2023

NOISE AND VIBRATION IMPACT ANALYSIS

SOLANO LANDING PROJECT

SOLANO COUNTY, CALIFORNIA

Submitted to:

Solano Landing, LLC
506 Couch Street
Vallejo, California 94590

Prepared by:

LSA
157 Park Place
Point Richmond, California 94801
(510) 236-6810

Project No. 20230890

March 2023

TABLE OF CONTENTS

FIGURES AND TABLES ii
LIST OF ABBREVIATIONS AND ACRONYMS iii
INTRODUCTION 4
Project Location and Description 4
Existing Land Uses in the Project Area 5
NOISE AND VIBRATION FUNDAMENTALS 8
Characteristics of Sound 8
Measurement of Sound 8
Physiological Effects of Noise 9
Fundamentals of Vibration 11
REGULATORY SETTING 13
Applicable Noise Standards 13
California Code of Regulations 13
County of Solano 13
Federal Transit Administration 15
Applicable Vibration Standards 15
Federal Transit Administration 15
OVERVIEW OF THE EXISTING NOISE ENVIRONMENT 17
Ambient Noise Measurements 17
Existing Aircraft Noise 17
PROJECT IMPACT ANALYSIS 20
Short-Term Construction Noise Impacts 20
Short-Term Construction Vibration Impacts 23
Long-Term Off-Site Traffic Noise Impacts 25
Stationary Operational Noise Impacts to Off-Site Receivers 26
Long-Term Traffic-Related Vibration Impacts 26
LAND USE COMPATIBILITY 28
Exterior Noise Assessment 28
Interior Noise Assessment 28
REFERENCES 29

APPENDICES

A: NOISE MONITORING DATA
B: CONSTRUCTION NOISE CALCULATIONS
C: FHWA TRAFFIC MODEL PRINTOUTS

FIGURES AND TABLES

FIGURES

Figure 1: Project Location 6
Figure 2: Site Plan 7
Figure 3: Noise Monitoring Locations 19

TABLES

Table A: Definitions of Acoustical Terms 10
Table B: Common Sound Levels and Their Noise Sources 11
Table C: Land Use Noise Compatibility Guidelines 14
Table D: Noise Standard for New Uses Affected by Traffic and Railroad Noise 15
Table E: Detailed Assessment Daytime Construction Noise Criteria 15
Table F: Interpretation of Vibration Criteria for Detailed Analysis 16
Table G: Construction Vibration Damage Criteria 16
Table H: Long-Term Ambient Noise Level Measurements 17
Table I: Typical Construction Equipment Noise Levels 21
Table J: Potential Construction Noise Impacts at Nearest Receptor 22
Table K: Vibration Source Amplitudes for Construction Equipment 23
Table L: Potential Construction Vibration Annoyance Impacts at Nearest Receptor 24
Table M: Potential Construction Vibration Damage Impacts at Nearest Receptor 24
Table N: Traffic Noise Levels Without and With Proposed Project 27

LIST OF ABBREVIATIONS AND ACRONYMS

County	County of Solano
CNEL	Community Noise Equivalent Level
dB	decibel(s)
dBA	A-weighted decibel(s)
FHWA	Federal Highway Administration
ft	foot/feet
FTA	Federal Transit Administration
FTA Manual	FTA *Transit Noise and Vibration Impact Assessment Manual*
in/sec	inch/inches per second
L_{dn}	day-night average noise level
L_{eq}	equivalent continuous sound level
L_{max}	maximum instantaneous sound level
PPV	peak particle velocity
project	Solano Landing Project
RMS	root-mean-square
sf	square feet
VdB	vibration velocity decibels

INTRODUCTION

This noise and vibration impact analysis has been prepared to evaluate the potential noise and vibration impacts and reduction measures associated with the proposed Solano Landing Project (project) in Solano County, California. This report is intended to satisfy the County of Solano's (County) requirement for a project-specific noise impact analysis by examining the impacts of the project site and evaluating noise reduction measures that the project may require.

PROJECT LOCATION AND DESCRIPTION

The 24.42-acre project site is at 2316 Rockville Road (Assessor's Parcel Number 0027-200-150), in Solano County, California. The project site is currently undeveloped and would be accessible via Suisun Valley Road and Rockville Road (see Figure 1, Regional Project Location, and Figure 2, Site Plan).

The proposed project would include the construction of a total of 32,141 square feet (sf) of development. The development of the property will be as follows.

- Boutique Market: The Market will be known as the "Icehouse Market". The market will help to preserve some of the history of the property through its name as well as the iconic red building that has been known as the "Icehouse". The market would be 5,496 sf, which would sell locally grown products, wines, and beers produced in the Suisun Valley and promoted on the property. The market would help celebrate and further the Suisun Valley's agricultural traditions and help satisfy the local regional demand for fresh locally grown food. The market would have a deli with a custom lunch menu including sandwiches, meats, salads, and other simple lunch items. The Market would also have a barista and assortment of coffee related items. The hours of operation for the market would be Monday through Sunday, 7:00 a.m. to 8:00 p.m.

- Tasting Rooms: There would be six stand-alone tasting rooms with each being 1,500 sf. Three of the six tasting rooms would feature wines from wineries and/or breweries that are locally vinted or brewed in Solano County. The remaining three tasting rooms would have high-quality wines from outside Solano County that would only enhance the Suisun Valley wines. Grapes would be locally sourced from on-site, Solano County, and bordering counties. Food and wine pairings are proposed for the tasting rooms, consistent with approval of similar requests and during agricultural promotional events. The hours of operation for the tasting rooms would be Thursday through Sunday, 10:00 a.m. to 5:00 p.m.

- Multi-Purpose/Dining Hall: The Multi-Purpose/Dining Hall will be 3,655 sf. This facility would host no more than 24 events per year and will host a maximum of 300 guests at one time. The Multi-Purpose/Dining Hall would support the hotel and other property-related events, as well as educational seminars related to agriculture, vineyards, and safety. The hours of operation of this facility would be event specific and no event would go past 10:00 p.m.

- Restaurant: The restaurant would be 7,462 sf. It would incorporate local produce, meats, and poultry into its menu. The restaurant would have a beer and wine license. The hours of

operation for the restaurant would be Wednesday through Monday (closed on Tuesday): 10:00 a.m.– 3:00 p.m. for lunch, and 5:30 p.m. – 10:00 p.m. for dinner.

- Hotel Concierge: The Hotel Concierge building would be 1,728 sf. This building would be used for administering the daily needs of the Boutique Hotel. The hours of operation for the hotel concierge would be Monday through Sunday, 24 hours per day.

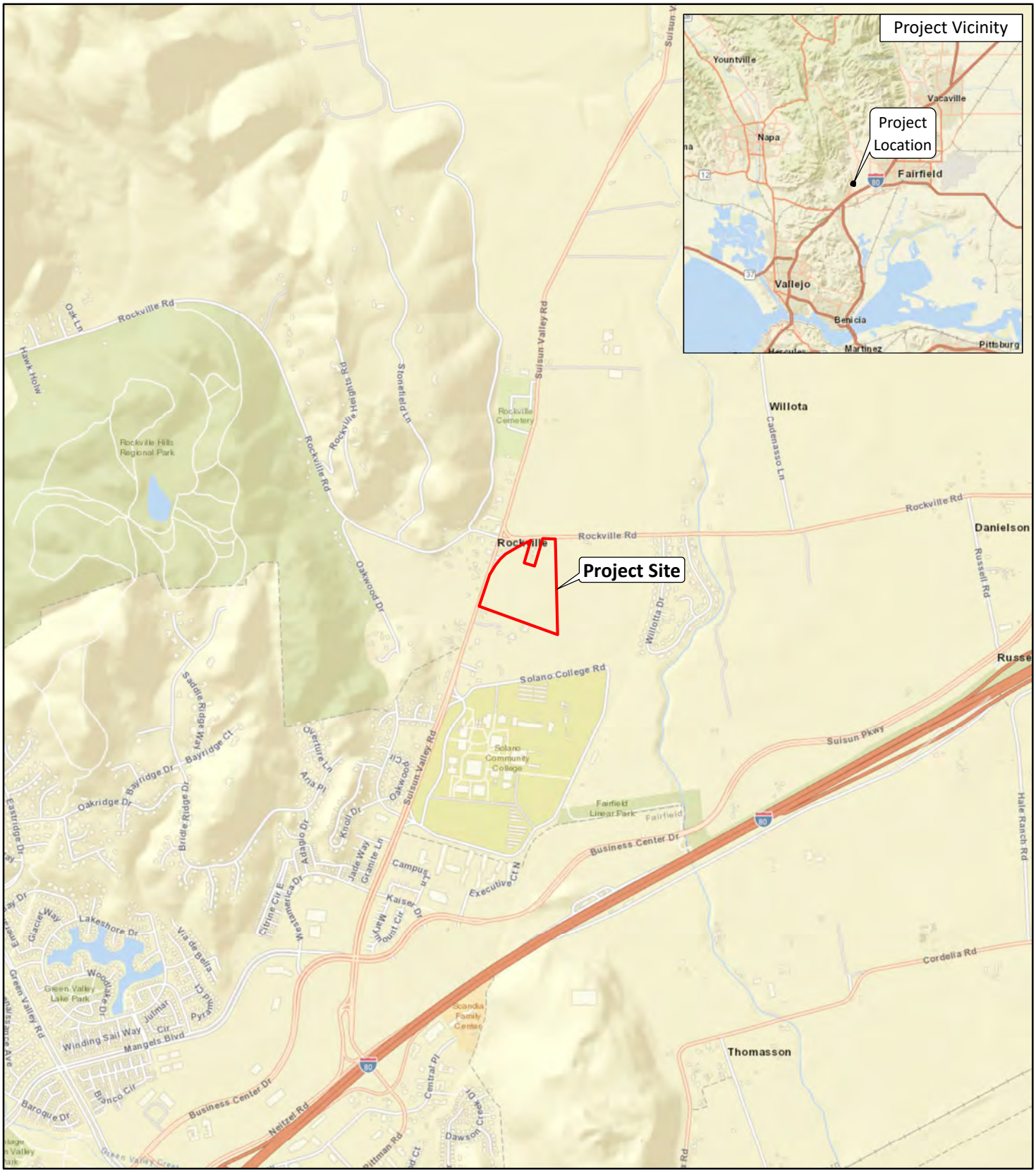
- Boutique Hotel: The Boutique hotel would consist of 10 prefabricated, standalone cottages with approximate square footage of 480 per unit for a total of 4,800 sf. The hotel would be owner/operated by the current landowners. The hours of operation for the hotel would be Monday through Sunday, 24 hours per day.

EXISTING LAND USES IN THE PROJECT AREA

The project site is surrounded primarily by residential uses. The areas adjacent to the project site include the following uses.

- **North:** Existing single-family residences and commercial uses
- **East:** Existing single-family residence along Rockville Road and undeveloped land
- **South:** Existing single-family residences
- **West:** Existing single-family residences along Suisun Valley Road

The closest sensitive receptors to the project site include single-family homes located immediately adjacent to the project site boundary, approximately 5 feet away.



LSA

LEGEND

Project Site

FIGURE 1

N

0 1000 2000

FEET

Solano Landing Project
Fairfield, Solano County, California

Project Location

SOURCE: Esri World Street Map (2023).

I:\20220500\GIS\MXD\Biological Resources Report\Figure 1_Project Location.mxd (1/18/2023)



LSA

FIGURE 2

N

0 75 150

FEET

SOURCE: Cleaver Design Associates

I:\20230890\G\Site_Plan.ai (3/7/2023)

Solano Landing Project
Fairfield, Solano County, California

Site Plan

NOISE AND VIBRATION FUNDAMENTALS

CHARACTERISTICS OF SOUND

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect the ability to hear. Pitch is the number of complete vibrations, or cycles per second, of a sound wave, which results in the tone's range from high to low. Loudness is the strength of a sound, and it describes a noisy or quiet environment; it is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves combined with the reception characteristics of the human ear. Sound intensity is the average rate of sound energy transmitted through a unit area perpendicular to the direction in which the sound waves are traveling. This characteristic of sound can be precisely measured with instruments. The analysis of a project defines the noise environment of the project area in terms of sound intensity and its effect on adjacent sensitive land uses.

MEASUREMENT OF SOUND

Sound intensity is measured with the A-weighted decibel (dBA) scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound, similar to the human ear's de-emphasis of these frequencies. Decibels (dB), unlike the linear scale (e.g., inches or pounds), are measured on a logarithmic scale representing points on a sharply rising curve.

For example, 10 dB is 10 times more intense than 0 dB, 20 dB is 100 times more intense than 0 dB, and 30 dB is 1,000 times more intense than 0 dB. Thirty decibels (30 dB) represents 1,000 times as much acoustic energy as 0 dB. The decibel scale increases as the square of the change, representing the sound pressure energy. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the sound's loudness. Ambient sounds generally range from 30 dB (very quiet) to 100 dB (very loud).

Sound levels are generated from a source, and their decibel level decreases as the distance from that source increases. Sound levels dissipate exponentially with distance from their noise sources. For a single point source, sound levels decrease approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source (e.g., highway traffic or railroad operations), the sound decreases 3 dB for each doubling of distance in a hard site environment. Line-source sound levels decrease 4.5 dB for each doubling of distance in a relatively flat environment with absorptive vegetation.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. The equivalent continuous sound level (L_{eq}) is the total sound energy of time-varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq} and Community Noise Equivalent Level (CNEL) or the day-night average noise level (L_{dn}) based on A-weighted decibels. CNEL is the time-weighted average noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noises occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during relaxation hours. CNEL and L_{dn} are within 1 dBA of each other and are normally interchangeable. The County uses the CNEL noise scale for long-term traffic noise impact assessment.

Other noise rating scales of importance when assessing the annoyance factor include the maximum instantaneous noise level (L_{max}), which is the highest sound level that occurs during a stated time period. The noise environments discussed in this analysis for short-term noise impacts are specified in terms of maximum levels denoted by L_{max}, which reflects peak operating conditions and addresses the annoying aspects of intermittent noise. It is often used together with another noise scale, or noise standards in terms of percentile noise levels, in noise ordinances for enforcement purposes. For example, the L_{10} noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level. Half the time the noise level exceeds this level, and half the time it is less than this level. The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, the L_{eq} and L_{50} are approximately the same.

Noise impacts can be described in three categories. The first category includes audible impacts, which are increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3 dB or greater because this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1 dB and 3 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category includes changes in noise levels of less than 1 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to sound levels higher than 85 dBA. Exposure to high sound levels affects the entire system, with prolonged sound exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of sound exposure above 90 dBA would result in permanent cell damage. When the sound level reaches 120 dBA, a tickling sensation occurs in the human ear, even with short-term exposure. This level of sound is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by a feeling of pain in the ear (i.e., the threshold of pain). A sound level of 160–165 dBA will result in dizziness or a

loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying, less developed areas.

Table A lists definitions of acoustical terms, and Table B shows common sound levels and their sources.

Table A: Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit of sound measurement that denotes the ratio between two quantities that are proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in 1 second (i.e., the number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. (All sound levels in this report are A-weighted unless reported otherwise.)
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels that are equaled or exceeded by a fluctuating sound level 1%, 10%, 50%, and 90% of a stated time period, respectively.
Equivalent Continuous Noise Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time-varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 dBA to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all-encompassing noise associated with a given environment at a specified time. Usually a composite of sound from many sources from many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, and tonal or informational content, as well as the prevailing ambient noise level.

Source: *Handbook of Acoustical Measurements and Noise Control* (Harris 1991).

Table B: Common Sound Levels and Their Noise Sources

Noise Source	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Evaluations
Near Jet Engine	140	Deafening	128 times as loud
Civil Defense Siren	130	Threshold of Pain	64 times as loud
Hard Rock Band	120	Threshold of Feeling	32 times as loud
Accelerating Motorcycle at a Few Feet Away	110	Very Loud	16 times as loud
Pile Driver; Noisy Urban Street/ Heavy City Traffic	100	Very Loud	8 times as loud
Ambulance Siren; Food Blender	95	Very Loud	—
Garbage Disposal	90	Very Loud	4 times as loud
Freight Cars; Living Room Music	85	Loud	—
Pneumatic Drill; Vacuum Cleaner	80	Loud	2 times as loud
Busy Restaurant	75	Moderately Loud	—
Near Freeway Auto Traffic	70	Moderately Loud	Reference level
Average Office	60	Quiet	One-half as loud
Suburban Street	55	Quiet	—
Light Traffic; Soft Radio Music in Apartment	50	Quiet	One-quarter as loud
Large Transformer	45	Quiet	—
Average Residence without Stereo Playing	40	Faint	One-eighth as loud
Soft Whisper	30	Faint	—
Rustling Leaves	20	Very Faint	—
Human Breathing	10	Very Faint	Threshold of Hearing
—	0	Very Faint	—

Source: Compiled by LSA (2022).

FUNDAMENTALS OF VIBRATION

Vibration refers to ground-borne noise and perceptible motion. Ground-borne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be discernible, but without the effects associated with the shaking of a building there is less adverse reaction. Vibration energy propagates from a source through intervening soil and rock layers to the foundations of nearby buildings. The vibration then propagates from the foundation throughout the remainder of the structure. Building vibration may be perceived by occupants as the motion of building surfaces, the rattling of items sitting on shelves or hanging on walls, or a low-frequency rumbling noise. The rumbling noise is caused by the vibration of walls, floors, and ceilings that radiate sound waves. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by 10 dB or less. This is an order of magnitude below the damage threshold for normal buildings.

Typical sources of ground-borne vibration are construction activities (e.g., blasting, pile-driving, and operating heavy-duty earthmoving equipment), steel-wheeled trains, and occasional traffic on rough roads. Problems with both ground-borne vibration and noise from these sources are usually localized to areas within approximately 100 feet (ft) from the vibration source, although there are examples of ground-borne vibration causing interference out to distances greater than 200 ft. When roadways are smooth, vibration from traffic, even heavy trucks, is rarely perceptible. It is assumed for most projects that the roadway surface will be smooth enough that ground-borne vibration from

street traffic will not exceed the impact criteria; however, construction of the project could result in ground-borne vibration that may be perceptible and annoying.

Ground-borne noise is not likely to be a problem because noise arriving via the normal airborne path will usually be greater than ground-borne noise.

Ground-borne vibration has the potential to disturb people and damage buildings. Although it is very rare for train-induced ground-borne vibration to cause even cosmetic building damage, it is not uncommon for construction processes such as blasting and pile-driving to cause vibration of sufficient amplitudes to damage nearby buildings. Ground-borne vibration is usually measured in terms of vibration velocity, either the root-mean-square (RMS) velocity or peak particle velocity (PPV). The RMS is best for characterizing human response to building vibration, and PPV is used to characterize the potential for damage. Decibel notation acts to compress the range of numbers required to describe vibration. Vibration velocity level in decibels is defined as:

$$L_v = 20 \log_{10} [V/V_{ref}]$$

where "L_v" is the vibration velocity in decibels (VdB), "V" is the RMS velocity amplitude, and "V_{ref}" is the reference velocity amplitude, or 1×10^{-6} inches/second (in/sec) used in the United States.

REGULATORY SETTING

APPLICABLE NOISE STANDARDS

The applicable noise standards governing the project site include the criteria in the California Code of Regulations and the Noise section of the Health and Safety Chapter of the County's General Plan.

California Code of Regulations

Interior noise levels for residential habitable rooms are regulated by Title 24 of the California Code of Regulations, California Noise Insulation Standards. Title 24, Chapter 12, Section 1206.4, of the 2019 California Building Code requires that interior noise levels attributable to exterior sources not exceed 45 CNEL in any habitable room. A habitable room is a room used for living, sleeping, eating, or cooking. Bathrooms, closets, hallways, utility spaces, and similar areas are not considered habitable rooms for this regulation (Title 24 California Code of Regulations, Chapter 12, Section 1206.4).

County of Solano

General Plan

The Solano County General Plan establishes acceptable noise level criteria for transportation and non-transportation (stationary) noise sources under Chapter 5, Health and Safety. Table C shows the acceptable noise levels for various land use categories and is used when determining a proposed project's noise impact. Table D provides acceptable outdoor and interior noise levels for land uses.

The Solano County General Plan states the following noise level performance criterion for new projects that are affected by or include non-transportation noise sources, such as those attributed to commercial uses: All uses of land and structures shall be conducted in a manner, and provide adequate controls and operational management to prevent noise that exceeds 65 dBA at any property line.

The project contractor(s) shall limit all noise producing construction related activities, including the operating of any tools or equipment used in construction, grading or demolition work, to between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday. No activity shall take place on Sunday, except by written permission of the Director of Resource Management.

Table C: Land Use Noise Compatibility Guidelines

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)			
	Normally Acceptable[1]	Conditionally Acceptable[2]	Normally Unacceptable[3]	Clearly Unacceptable[4]
Residential – Low Density Single Family, Duplex, Mobile Home	<60	55-70	70-75	75+
Residential – Multifamily	<65	60-70	70-75	75+
Transient Lodging – Motel, Hotel	<65	60-70	70-80	80+
Schools, libraries, Churches, Hospitals, Nursing Homes	<70	60-70	70-80	80+
Auditoriums, Concert Halls, Amphitheaters	-	<70	65+	-
Sports Arena, Outdoor Spectator Sports	-	<75	70+	-
Playgrounds, Neighborhood Parks	<70	-	67.5-75	72.5+
Gold Courses, Riding Stables, Water Recreation, Cemeteries	<75	-	70-80	80+
Office Building, Business Commercial, and Professional	<70	67.5-77.5	75+	-
Industrial, Manufacturing Utilities, Agriculture	<75	70-80	75+	-

Source: County of Solano (2015).

Notes:

1 Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

2 New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

3 New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor areas must be shielded.

4 New construction or development should generally not be undertaken.

5 These standards are not applicable for development within the airport compatibility review area. Development in the airport compatibility review areas are subject to standards in the applicable airport land use plan.

CNEL = Community Noise Equivalent Level

dBA = A-Weighted decibel

L_{eq} = equivalent continuous sound level

L_{dn} = day-night average noise level

Table D: Noise Standard for New Uses Affected by Traffic and Railroad Noise

Land Use Category	Sensitive Outdoor Area (dBA L_{dn})	Sensitive Interior[1] Area (dBA L_{dn})	Notes
All Residential	65	45	2
Transient Lodging	65	45	2,3
Hospitals and Nursing Homes	65	45	2,3,4
Theaters and Auditoriums	-	35	3
Churches, Meeting Halls, Schools, Libraries, etc.	65	40	3
Office Buildings	65	45	3
Commercial Buildings	-	50	3
Playgrounds, Parks, etc.	70	-	-
Industry	65	50	3

Source: County of Solano (2015).
Notes:
1 Interior-noise-level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.
2 If these uses are affected by nighttime railroad passages, the potential for sleep disturbance shall be addressed.
3 Where there are no sensitive exterior spaces proposed for these uses, only the interior-noise-level standard shall apply.
4 Hospitals are often noise-generating uses. The exterior-noise-level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
dBA = A-Weighted decibel
L_{dn} = day-night average noise level

Federal Transit Administration

Although the County does not have daytime construction noise level limits for activities that occur within the specified hours in Section 11.80.030(D)(7) to determine potential California Environmental Quality Act noise impacts, construction noise was assessed using criteria from the *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018) (FTA Manual). Table E shows the Federal Transit Administration's (FTA) Detailed Assessment Construction Noise Criteria based on the composite noise levels per construction phase.

Table E: Detailed Assessment Daytime Construction Noise Criteria

Land Use	Daytime 8-hour L_{eq} (dBA)
Residential	80
Commercial	85
Industrial	90

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
dBA = A-weighted decibels
L_{eq} = equivalent continuous sound level

APPLICABLE VIBRATION STANDARDS

Federal Transit Administration

Vibration standards included in the FTA Manual are used in this analysis for ground-borne vibration impacts on human annoyance. The criteria for environmental impact from ground-borne vibration

and noise are based on the maximum levels for a single event. Table F provides the criteria for assessing the potential for interference or annoyance from vibration levels in a building.

Table G lists the potential vibration building damage criteria associated with construction activities, as suggested in the FTA Manual. FTA guidelines show that a vibration level of up to 0.5 in/sec in PPV is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster) and would not result in any construction vibration damage. For non-engineered timber and masonry buildings, the construction building vibration damage criterion is 0.2 in/sec in PPV.

Table F: Interpretation of Vibration Criteria for Detailed Analysis

Land Use	Max L_v (VdB)[1]	Description of Use
Workshop	90	Vibration that is distinctly felt. Appropriate for workshops and similar areas not as sensitive to vibration.
Office	84	Vibration that can be felt. Appropriate for offices and similar areas not as sensitive to vibration.
Residential Day	78	Vibration that is barely felt. Adequate for computer equipment and low-power optical microscopes (up to 20×).
Residential Night and Operating Rooms	72	Vibration is not felt, but ground-borne noise may be audible inside quiet rooms. Suitable for medium-power microscopes (100×) and other equipment of low sensitivity.

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] As measured in 1/3-octave bands of frequency over a frequency range of 8 to 80 Hertz.
FTA = Federal Transit Administration
Max = maximum
L_v = velocity in decibels
VdB = vibration velocity decibels

Table G: Construction Vibration Damage Criteria

Building Category	PPV (in/sec)
Reinforced concrete, steel, or timber (no plaster)	0.50
Engineered concrete and masonry (no plaster)	0.30
Non-engineered timber and masonry buildings	0.20
Buildings extremely susceptible to vibration damage	0.12

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
FTA = Federal Transit Administration
PPV = peak particle velocity
in/sec = inch/inches per second

OVERVIEW OF THE EXISTING NOISE ENVIRONMENT

The primary existing noise sources in the project area are transportation facilities. Local traffic on the roadways in the vicinity of the project (Suisun Valley Road and Rockville Road) is a steady source of ambient noise.

AMBIENT NOISE MEASUREMENTS

One long-term (24-hour) noise level measurement was conducted on February 9 and 10, 2023, using a Larson Davis Spark 706RC Dosimeter. Short-term (15-minute) noise level measurements were conducted on February 9, 2023, using a Larson Davis LxT. Table H provides a summary of the measured hourly noise levels from the long-term noise level measurements. Hourly noise levels at surrounding sensitive uses are as low as 31.1 dBA L_{eq} during nighttime hours and 44.0 dBA L_{eq} during daytime hours. Noise monitoring data results are provided in Appendix A. Figure 3 shows the noise monitoring locations.

Table H: Long-Term Ambient Noise Level Measurements

Location		Daytime Noise Levels[1] (dBA L_{eq})	Evening Noise Levels[2] (dBA L_{eq})	Nighttime Noise Levels[3] (dBA L_{eq})	Daily Noise levels (dBA CNEL)
LT-1	Near southwest corner of project site, on a tree, approximately 50 ft away from Suisun Valley Road centerline.	65.6 – 69.2	63.2 – 64.6	52.7 – 64.6	68.7
ST-1[4]	Near southeast corner of project site, approximately 1,200 ft away from Suisun Valley Road centerline.	44.0 – 47.6	41.6 – 43.0	31.1 – 43.0	47.1
ST-2[4]	Near northeast corner of project site, by powerline, south of Rockville Road, approximately 25 ft away from Rockville Rd centerline.	66.7 – 70.3	64.3 – 65.7	53.8 – 65.7	69.8
ST-3[4]	Near northwest boundary of project site, opposite Munson Construction office.	54.9 – 58.5	52.5 – 53.9	42.0 – 53.9	58.0

Source: Compiled by LSA (2023).
Note: Noise measurements were conducted from February 9 to February 10, 2023, starting at 3:00 p.m.
[1] Daytime Noise Levels = Noise levels during the hours from 7:00 a.m. to 7:00 p.m.
[2] Evening Noise Levels = Noise levels during the hours from 7:00 p.m. to 10:00 p.m.
[3] Nighttime Noise Levels = Noise levels during the hours from 10:00 p.m. to 7:00 a.m.
[4] Short-term measurement data estimated based on corresponding long-term.
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibels
ft = feet
L_{eq} = equivalent continuous sound level

EXISTING AIRCRAFT NOISE

Airport-related noise levels are primarily associated with aircraft engine noise made while aircraft are taking off, landing, or running their engines while still on the ground. The closest airports to the proposed project site are Napa County Airport and Travis Air Force Base, approximately 8.6 miles west and east of the project site, respectively. The project site is not within the 65 dBA CNEL noise

contour for the airports and is not within the vicinity of a private airstrip. Although aircraft-related noise may be audible on the project site, the proposed project would not expose people residing or working in the project area to excessive noise levels due to the proximity of a public airport. This impact would be less than significant.



LSA

FIGURE 3

LEGEND

Project Site

ST-1 Short-term Noise Monitoring Location

LT-1 Long-term Noise Monitoring Location

N

0 125 250

FEET

Solano Landing Project

Fairfield, Solano County, California

Noise Monitoring Locations

SOURCE: Esri World Imagery (Vivid Advanced 06/2021).

I:\PUB2202\G\Noise_Locs.ai (3/7/2023)

PROJECT IMPACT ANALYSIS

SHORT-TERM CONSTRUCTION NOISE IMPACTS

Two types of short-term noise impacts could occur during the construction of the proposed project. First, construction crew commutes and the transport of construction equipment and materials to the site for the proposed project would incrementally increase noise levels on access roads leading to the site. Although there would be a relatively high single-event noise-exposure potential causing intermittent noise nuisance (passing trucks at 50 ft would generate up to 84 dBA L_{max}), the effect on longer-term ambient noise levels would be small when compared to existing daily traffic volumes on roadways accessing the project site. Because construction-related vehicle trips would not approach existing daily traffic volumes, traffic noise would not increase by 3 dBA CNEL. A noise level increase of less than 3 dBA would not be perceptible to the human ear in an outdoor environment. Therefore, short-term, construction-related impacts associated with worker commute and equipment transport to the project site would be less than significant.

The second type of short-term noise impact is related to noise generated during construction, which includes site preparation, grading, building construction, paving, and architectural coating on the project site. Construction is completed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table H lists typical construction equipment noise levels recommended for noise impact assessments, based on a distance of 50 ft between the equipment and a noise receptor, taken from the Federal Highway Administration (FHWA) *Roadway Construction Noise Model* (FHWA 2006).

In addition to the reference maximum noise level, the usage factor provided in Table I is used to calculate the hourly noise level impact for each piece of equipment based on the following equation:

$$L_{eq}(equip) = E.L. + 10\log(U.F.) - 20\log\left(\frac{D}{50}\right)$$

where: $L_{eq}(equip)$ = L_{eq} at a receiver resulting from the operation of a single piece of equipment over a specified time period.

E.L. = noise emission level of the particular piece of equipment at a reference distance of 50 ft.

U.F. = usage factor that accounts for the fraction of time that the equipment is in use over the specified period of time.

D = distance from the receiver to the piece of equipment.

Table I: Typical Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor (%)[1]	Maximum Noise Level (L_{max}) at 50 Feet[2]
Auger Drill Rig	20	84
Backhoes	40	80
Compactor (ground)	20	80
Compressor	40	80
Cranes	16	85
Dozers	40	85
Dump Trucks	40	84
Excavators	40	85
Flat Bed Trucks	40	84
Forklift	20	85
Front-end Loaders	40	80
Graders	40	85
Impact Pile Drivers	20	95
Jackhammers	20	85
Paver	50	77
Pickup Truck	40	55
Pneumatic Tools	50	85
Pumps	50	77
Rock Drills	20	85
Rollers	20	85
Scrapers	40	85
Tractors	40	84
Trencher	50	80
Welder	40	73

Source: *FHWA Roadway Construction Noise Model User's Guide,* Table 1 (FHWA 2006).
Note: Noise levels reported in this table are rounded to the nearest whole number.
[1] Usage factor is the percentage of time during a construction noise operation that a piece of construction equipment is operating at full power.
[2] Maximum noise levels were developed based on Specification 721.560 from the Central Artery/ Tunnel program to be consistent with the City of Boston's Noise Code for the "Big Dig" project.
FHWA = Federal Highway Administration
L_{max} = maximum instantaneous sound level

Each piece of construction equipment operates as an individual point source. Using the following equation, a composite noise level can be calculated when multiple sources of noise operate simultaneously:

$$Leq\ (composite) = 10 * \log_{10}\left(\sum_{1}^{n} 10^{\frac{Ln}{10}}\right)$$

Using the equations from the methodology above, the reference information in Table I, and the construction equipment list provided, LSA calculated the composite noise level of each construction phase. The project construction composite noise levels at a distance of 50 feet would range from 74 dBA L_{eq} to 88 dBA L_{eq}, with the highest noise levels occurring during the site preparation phase.

Once composite noise levels are calculated, reference noise levels can then be adjusted for distance using the following equation:

$$Leq\ (at\ distance\ X) = Leq\ (at\ 50\ feet) - 20 * \log_{10}\left(\frac{X}{50}\right)$$

In general, this equation shows that doubling the distance would decrease noise levels by 6 dBA, while halving the distance would increase noise levels by 6 dBA.

Table J shows the nearest sensitive uses to the project site, their distance from the center of construction activities, and composite noise levels expected during construction. These noise level projections do not consider intervening topography or barriers. Construction equipment calculations are provided in Appendix B.

Table J: Potential Construction Noise Impacts at Nearest Receptor

Receptor (Location)	Composite Noise Level (dBA L_{eq}) at 50 feet[1]	Distance (feet)	Composite Noise Level (dBA L_{eq})
Residences (North)	88	385	70
Residences (South and West)		590	66
Residences (East)		1100	61

Source: Compiled by LSA (2023).

[1] The composite construction noise level represents the site preparation phase, which is expected to result in the greatest noise level as compared to other phases.

dBA = A-weighted decibels

L_{eq} = equivalent continuous sound level

While construction noise will vary, it is expected that composite noise levels during construction at the nearest off-site sensitive residential use to the north would reach an average noise level of 70 dBA L_{eq} during daytime hours. These predicted noise levels would only occur when all construction equipment is operating simultaneously and, therefore, are assumed to be rather conservative in nature. While construction-related short-term noise levels have the potential to be higher than existing ambient noise levels in the project area under existing conditions, the noise impacts would no longer occur once project construction is completed.

As stated above, noise impacts associated with construction activities are regulated by the County's noise ordinance. The proposed project would comply with the construction hours specified in the County's General Plan, which states that construction activities are allowed between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday. No activity shall take place on Sunday, except by written permission of the Director of Resource Management.

As it relates to off-site uses, construction-related noise impacts would remain below the 80 dBA L_{eq} construction noise level criteria, as established by the FTA for residential land uses for the average daily condition as modeled from the center of the project site and therefore would be considered less than significant. Best construction practices presented at the end of this analysis shall be implemented to minimize noise impacts to surrounding receptors.

SHORT-TERM CONSTRUCTION VIBRATION IMPACTS

This construction vibration impact analysis discusses the level of human annoyance using vibration levels in RMS (VdB) and assesses the potential for building damages using vibration levels in PPV (in/sec). This is because vibration levels calculated in RMS are best for characterizing human response to building vibration, while calculating vibration levels in PPV is best for characterizing the potential for damage.

Table K shows the PPV and VdB values at 25 ft from the construction vibration source. As shown in Table K, bulldozers and other heavy-tracked construction equipment (expected to be used for this project) generate approximately 0.089 PPV in/sec or 87 VdB of ground-borne vibration when measured at 25 ft, based on the FTA Manual. The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project construction boundary (assuming the construction equipment would be used at or near the project setback line).

Table K: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L_V at 25 ft	
	PPV (in/sec)	L_V (VdB)[1]
Pile Driver (Impact), Typical	0.644	104
Pile Driver (Sonic), Typical	0.170	93
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large Bulldozer[2]	**0.089**	**87**
Caisson Drilling	0.089	87
Loaded Trucks[2]	**0.076**	**86**
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] RMS vibration velocity in decibels (VdB) is 1 µin/sec.
[2] Equipment shown in **bold** is expected to be used on site.

µin/sec = microinches per second
ft = foot/feet
FTA = Federal Transit Administration
in/sec = inch/inches per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity decibels

The formulae for vibration transmission are provided below, and Tables L and M provide a summary of off-site construction vibration levels.

$$L_vdB\ (D) = L_vdB\ (25\ ft) - 30\ Log\ (D/25)$$

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

As shown in Table F, above, the threshold at which vibration levels would result in annoyance would be 78 VdB for daytime residential uses. As shown in Table G, the FTA guidelines indicate that for a non-engineered timber and masonry building, the construction vibration damage criterion is 0.2 in/sec in PPV.

Table L: Potential Construction Vibration Annoyance Impacts at Nearest Receptor

Receptor (Location)	Reference Vibration Level (VdB) at 25 ft[1]	Distance (ft) [2]	Vibration Level (VdB)
Residences (North)	87	385	51
Residences (South and West)		590	46
Residences (East)		1,100	38

Source: Compiled by LSA (2023).
[1] The reference vibration level is associated with a large bulldozer, which is expected to be representative of the heavy equipment used during construction.
[2] The reference distance is associated with the average condition, identified by the distance from the center of construction activities to surrounding uses.
ft = foot/feet
VdB = vibration velocity decibels

Table M: Potential Construction Vibration Damage Impacts at Nearest Receptor

Receptor (Location)	Reference Vibration Level (PPV) at 25 ft[1]	Distance (ft)[2]	Vibration Level (PPV)
Residences (North)	0.089	5	0.995
Residences (South)		30	0.068
Residences (West)		100	0.011
Residences (East)		420	0.001

Source: Compiled by LSA (2023).
[1] The reference vibration level is associated with a large bulldozer, which is expected to be representative of the heavy equipment used during construction.
[2] The reference distance is associated with the peak condition, identified by the distance from the perimeter of construction activities to surrounding structures.
ft = foot/feet
PPV = peak particle velocity

Based on the information provided in Table L, vibration levels are expected to approach 51 VdB at the closest residential uses located immediately north of the project site, which is below the 78 VdB threshold for annoyance.

Based on the information provided in Table M, vibration levels are expected to approach 0.995 PPV in/sec at the nearest surrounding structures and would exceed the 0.2 PPV in/sec damage threshold considered safe for non-engineered timber and masonry buildings, which would result in a potentially significant impact. Vibration levels at all other buildings would be lower. Therefore, construction would not result in any vibration damage, and impacts would be less than significant with the incorporation of MM-NOI-1, as detailed below.

MM-NOI-1 Construction Vibration Damage. Due to the close proximity to surrounding structures, the County of Solano (County) Director of Community Development, or designee, shall verify prior to issuance of demolition or grading permits, that the approved plans require that the construction contractor shall implement the following mitigation measures during project construction activities to ensure that damage does not occur at surrounding structures:

- A 15-foot buffer between existing structures and the Project site area shall be clearly delineated with stakes, fencing or other conspicuous boundary markings, to outline the area in which the use of heavy equipment shall be avoided.

- The use of heavy construction shall be avoided within 15 feet of existing surrounding structures.

- However, if the use of heavy equipment is required within 15 feet of surrounding structures, the following measures should be employed:

    - Identify structures that are located within 15 feet (ft) of heavy construction activities and that have the potential to be affected by ground-borne vibration. This task shall be conducted by a qualified structural engineer as approved by the County's Director of Community Development, or designee.

    - Develop a vibration monitoring and construction contingency plan for approval by the Director of Community Development, or designee, to identify structures where monitoring would be conducted; set up a vibration monitoring schedule; define structure-specific vibration limits; and address the need to conduct photo, elevation, and crack surveys to document before and after construction conditions. Construction contingencies would be identified for when vibration levels approached the limits.

    - At a minimum, monitor vibration during initial demolition activities. Monitoring results may indicate the need for more or less intensive measurements.

    - When vibration levels approach limits, suspend construction and implement contingencies as identified in the approved vibration monitoring and construction contingency plan to either lower vibration levels or secure the affected structures.

LONG-TERM OFF-SITE TRAFFIC NOISE IMPACTS

The guidelines included in the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77 108) were used to evaluate highway traffic-related noise conditions along roadway segments in the project vicinity. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry, to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resultant noise levels are weighted and summed over 24-hour periods to determine the CNEL values. Table L provides the traffic noise levels for the existing with and without project and opening year with and without project scenarios. These noise levels represent the worst-case scenario, which assumes no shielding is provided between the traffic and the location where the noise contours are drawn.

The without and with project scenario traffic volumes were obtained from the *Traffic Impact Analysis for Solano Landing Project* (KD Anderson & Associates, Inc. 2023). Appendix C provides the specific assumptions used in developing these noise levels and model printouts. Table N shows that the increase in project-related traffic noise would be no greater than 0.3 dBA. Noise level increases less than 1.0 dBA are not perceptible to the human ear. Therefore, traffic noise impacts from project-related traffic on off-site sensitive receptors would be less than significant and no mitigation measures are required.

STATIONARY OPERATIONAL NOISE IMPACTS TO OFF-SITE RECEIVERS

The proposed uses are expected to include heating, ventilation, and air conditioning equipment. It is expected that the equipment installed at each facility would comply with the County's noise standards presented in Table D. Additionally, Typical activities at the patios and amphitheater are not expected to generate excessive noise levels and would only occur during daytime hours. The closest outdoor patio would be approximately 235 feet from the closest sensitive receptor. To achieve compliance with the County's threshold of 65 dBA L_{eq} at nearby sensitive receptors, noise levels at the outdoor patios and amphitheater should not exceed 78 dBA at 50 feet.

LONG-TERM TRAFFIC-RELATED VIBRATION IMPACTS

The proposed project would not generate vibration levels related to on-site operations. In addition, vibration levels generated from project-related traffic on the adjacent roadways are unusual for on-road vehicles because the rubber tires and suspension systems of on-road vehicles provide vibration isolation. Vibration levels generated from project-related traffic on the adjacent roadways would be less than significant, and no mitigation measures are required.

Table N: Traffic Noise Levels Without and With Proposed Project

Roadway Segment	Existing		Existing With Project			Cumulative		Cumulative Plus Project		
	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	Increase from Existing Conditions (dBA)	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	ADT	CNEL (dBA) 50 feet from Centerline of Nearest Lane	Increase from Existing Conditions (dBA)
Rockville Road East of Suisun Valley Road	6,640	61.6	7,110	61.9	0.3	7,700	62.2	8,170	62.5	0.3
Rockville Road West of Suisun Valley Road	3,590	58.9	3,740	59.1	0.2	3,950	59.3	4,100	59.5	0.2
Suisun Valley Road North of Rockville Road	5,630	59.3	6,070	59.6	0.3	6,250	59.7	6,690	60.0	0.3
Suisun Valley Road South of Rockville Road	6,850	60.1	7,310	60.4	0.3	8,000	60.8	8,460	61.0	0.2

Source: Compiled by LSA (March 2023).
Note: Traffic noise within 50 feet of the roadway centerline should be evaluated with site-specific information.
Shaded cells indicate roadway segments adjacent to the project site.
ADT = average daily traffic
CNEL= Community Noise Equivalent Level
dBA = A-weighted decibels

LAND USE COMPATIBILITY

The dominant source of noise in the project vicinity is traffic noise from roadways in the vicinity of the project.

EXTERIOR NOISE ASSESSMENT

To assess exterior noise levels at the proposed uses at the project site, as shown in Table G, LSA gathered long-term noise level measurements. The daily noise levels show that noise levels at the project site approach 69 dBA CNEL closest to Suisun Valley Road. Considering the tasting rooms, market, dining hall, and restaurant as commercial uses, an exterior noise level of 70 dBA or less is acceptable, as specified above. Furthermore, the exterior areas for commercial uses are not considered as noise-sensitive areas. For the hotel and cottages, approximately 300 ft from Suisun Valley Road, the noise levels would approach 54 dBA CNEL after distance attenuation and would be within the normally acceptable range for transient lodging. Because exterior noise levels at the project site are considered acceptable, no exterior noise mitigation is required.

INTERIOR NOISE ASSESSMENT

As discussed above, per the California Code of Regulations, an interior noise level standard of 45 dBA CNEL or less is required for all noise-sensitive rooms. Based on the expected future exterior noise levels at the hotel and cottages approaching 54 dBA CNEL, a minimum noise reduction of 9 dBA would be required. As stated in Table D, an interior level standard of 50 dBA CNEL or less is required for commercial uses. Based on the expected future exterior noise levels at the tasting rooms approaching 69 dBA CNEL, a minimum noise reduction of 24 dBA would be required.

Based on reference information from transmission loss test reports for various Milgard windows (Milgard 2008), standard building construction along with standard windows, typically in the Sound Transmission Class 25–28 range, would achieve a reduction of 25 dBA or more. With a reduction of 25 dBA or more, interior noise levels would remain below the interior noise level standard of 50 dBA CNEL for commercial uses and 45 dBA CNEL for transient lodging.

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APPENDIX A

NOISE MONITORING DATA

Noise Measurement Survey – 24 HR

Project Number: 20230890
Project Name: Solano Landing

Test Personnel: Moe Abushanab
Equipment: Spark 706 RC (SN:18907)

Site Number: LT-1 Date: 2/9/2023

Time: From 3:00 p.m. To 3:00 p.m.

Site Location: Southwest corner of project site, on a tree

Primary Noise Sources: Road traffic on Suisun Valley Rd.
Animal sounds (cows, dogs, birds)

Comments:

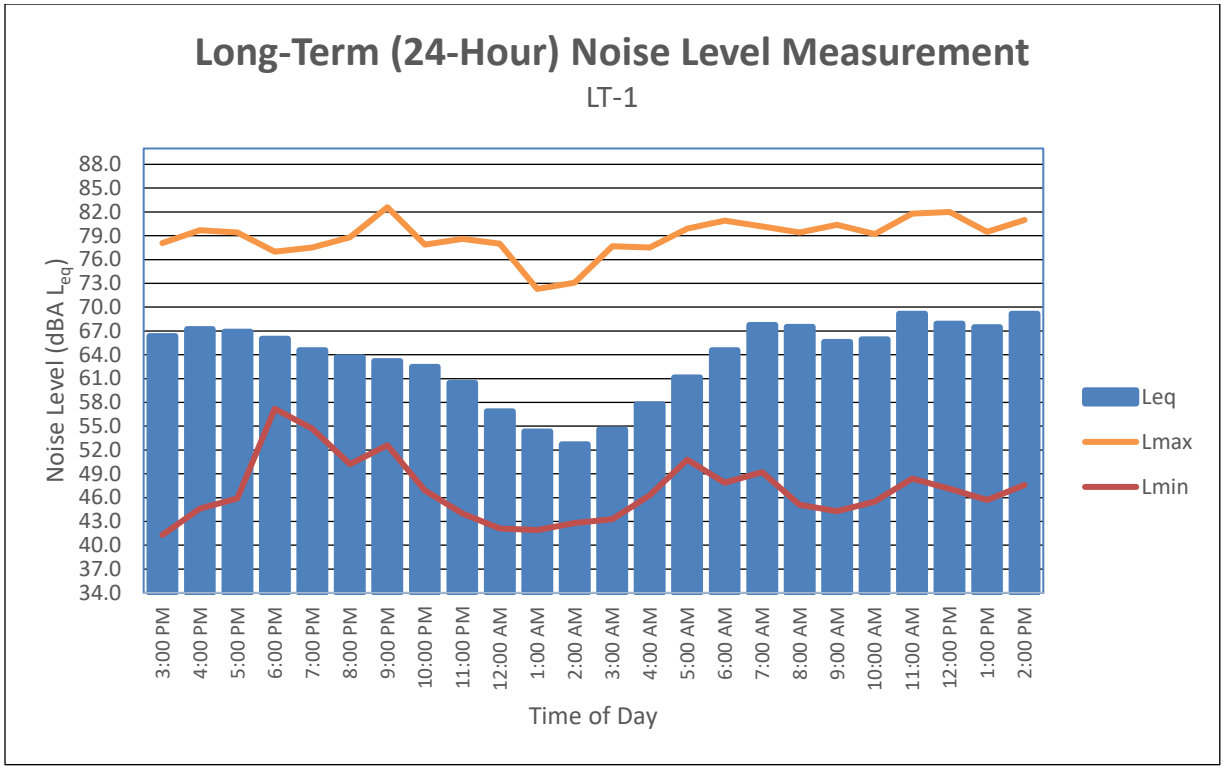
Photo:



Long-Term (24-Hour) Noise Level Measurement Results at LT-1

Start Time	Date	Noise Level (dBA)		
		L_{eq}	L_{max}	L_{min}
3:00 PM	2/9/23	66.4	78.1	41.3
4:00 PM	2/9/23	67.2	79.7	44.6
5:00 PM	2/9/23	66.9	79.4	45.9
6:00 PM	2/9/23	66.0	77.0	57.2
7:00 PM	2/9/23	64.6	77.5	54.7
8:00 PM	2/9/23	63.7	78.8	50.2
9:00 PM	2/9/23	63.2	82.6	52.6
10:00 PM	2/9/23	62.5	77.9	46.9
11:00 PM	2/9/23	60.5	78.6	44.0
12:00 AM	2/10/23	56.9	78.0	42.1
1:00 AM	2/10/23	54.3	72.3	41.9
2:00 AM	2/10/23	52.7	73.1	42.8
3:00 AM	2/10/23	54.6	77.7	43.3
4:00 AM	2/10/23	57.7	77.5	46.3
5:00 AM	2/10/23	61.1	79.9	50.8
6:00 AM	2/10/23	64.6	80.9	47.9
7:00 AM	2/10/23	67.8	80.2	49.2
8:00 AM	2/10/23	67.5	79.4	45.1
9:00 AM	2/10/23	65.6	80.4	44.3
10:00 AM	2/10/23	65.9	79.2	45.5
11:00 AM	2/10/23	69.2	81.8	48.4
12:00 PM	2/10/23	67.9	82.0	47.1
1:00 PM	2/10/23	67.5	79.5	45.7
2:00 PM	2/10/23	69.2	81.0	47.6

Source: Compiled by LSA Associates, Inc. (2023).
dBA = A-weighted decibel
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level
L_{min} = minimum measured sound level


Long-Term (24-Hour) Noise Level Measurement
LT-1
Noise Level (dBA Leq)
88.0
85.0
82.0
79.0
76.0
73.0
70.0
67.0
64.0
61.0
58.0
55.0
52.0
49.0
46.0
43.0
40.0
37.0
34.0
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
Time of Day
Leq
Lmax
Lmin

Noise Measurement Survey

Project Number: 20230890
Project Name: Solano Landing
Test Personnel: Moe Abushanab
Equipment: Larson Davis LxT SE

Site Number: ST-1 Date: 2/9/23 Time: From 2:18 pm To 2:33 pm

Site Location: Southeast corner of project site

Primary Noise Sources: Mainly quiet
Background traffic

Measurement Results:

	dBA
L_{eq}	45.5
L_{max}	54.8
L_{min}	41.3
L_5	47.9
L_{10}	47.3
L_{33}	45.8
L_{50}	45.0
L_{90}	42.5

Atmospheric Conditions:

Maximum Wind Velocity (mph)	2.0
Average Wind Velocity (mph)	1.0
Temperature (F)	66
Relative Humidity (%)	45
Comments:	

Comments:

Location Photo:



Noise Measurement Survey

Project Number: 20230890 Test Personnel: Moe Abushanab
Project Name: Solano Landing Equipment: Larson Davis LxT SE

Site Number: ST-2 Date: 2/9/23 Time: From 2:39 pm To 2:54 pm

Site Location: Northeast corner of project site, by powerline , south of Rockville Rd, approximately 25 ft from Rockville centerline

Primary Noise Sources: Traffic on Rockville Rd
Infrequent buzzing sound from box at powerline pole

Measurement Results:

	dBA
L_{eq}	67.4
L_{max}	82.8
L_{min}	43.7
L_5	73.2
L_{10}	71.5
L_{33}	66.7
L_{50}	62.2
L_{90}	46.7

Atmospheric Conditions:

Maximum Wind Velocity (mph)	2.0
Average Wind Velocity (mph)	1.0
Temperature (F)	66
Relative Humidity (%)	45
Comments:	

Comments:

Location Photo:



Noise Measurement Survey

Project Number: 20230890
Project Name: Solano Landing
Test Personnel: Moe Abushanab
Equipment: Larson Davis LxT SE

Site Number: ST-3 Date: 2/9/23 Time: From 2:39 pm To 2:54 pm

Site Location: Northwest boundary of project site, opposite Munson Construction office

Primary Noise Sources: Traffic on intersection of Rockville Rd and Suisun Valley Rd

Measurement Results:

	dBA
L_{eq}	54.1
L_{max}	75.5
L_{min}	41.7
L_5	56.2
L_{10}	54.0
L_{33}	50.7
L_{50}	49.3
L_{90}	45.5

Atmospheric Conditions:

Maximum Wind Velocity (mph)	2.0
Average Wind Velocity (mph)	1.0
Temperature (F)	66
Relative Humidity (%)	45
Comments:	

Comments:

Location Photo:



APPENDIX B

CONSTRUCTION NOISE CALCULATIONS

Construction Calculations

Phase: Site Preparation

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Tractor	4	84	40	50	0.5	84	86
Dozer	3	82	40	50	0.5	82	83
					Combined at 50 feet	**86**	**88**
					Combined at Receptor 385 feet	**68**	**70**
					Combined at Receptor 590 feet	**65**	**66**
					Combined at Receptor 1100 feet	**59**	**61**

Phase: Grading

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Grader	1	85	40	50	0.5	85	81
Dozer	1	82	40	50	0.5	82	78
Tractor	3	84	40	50	0.5	84	85
Excavator	1	81	40	50	0.5	81	77
					Combined at 50 feet	**89**	**87**
					Combined at Receptor 385 feet	**72**	**70**

Phase:Building Construstion

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Crane	1	81	16	50	0.5	81	73
Man Lift	3	75	20	50	0.5	75	73
Generator	1	81	50	50	0.5	81	78
Tractor	3	84	40	50	0.5	84	85
Welder / Torch	1	74	40	50	0.5	74	70
					Combined at 50 feet	**87**	**86**
					Combined at Receptor 385 feet	**70**	**68**

Phase:Paving

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Paver	2	77	50	50	0.5	77	77
All Other Equipment > 5 HP	2	85	50	50	0.5	85	85
Roller	2	80	20	50	0.5	80	76
					Combined at 50 feet	**87**	**86**
					Combined at Receptor 385 feet	**69**	**68**

Phase:Architectural Coating

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA)	
						Lmax	Leq
Compressor (air)	1	78	40	50	0.5	78	74
					Combined at 50 feet	**78**	**74**
					Combined at Receptor 385 feet	**60**	**56**

Sources: RCNM

[1]- Percentage of time that a piece of equipment is operating at full power.
dBA – A-weighted Decibels
Lmax- Maximum Level
Leq- Equivalent Level

APPENDIX C

FHWA TRAFFIC MODEL PRINTOUTS

TABLE Existing -01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Rockville Road East of Suisun Valley Road
NOTES: Solano Landing Project - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6640 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 61.58

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	0.0	81.9	174.2

TABLE Existing -02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Rockville Road West of Suisun Valley Road
NOTES: Solano Landing Project - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3590 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 58.91

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	55.5	116.1

TABLE Existing -03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Suisun Valley Road North of Rockville Road
NOTES: Solano Landing Project - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 5630 SPEED (MPH): 30 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 59.25

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	58.3	122.3

TABLE Existing -04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Suisun Valley Road South of Rockville Road
NOTES: Solano Landing Project - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6850 SPEED (MPH): 30 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 60.10

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	66.0	139.2

TABLE Existing Plus Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Rockville Road East of Suisun Valley Road
NOTES: Solano Landing Project - Existing Plus Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7110 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 61.88

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	85.6	182.2

TABLE Existing Plus Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Rockville Road West of Suisun Valley Road
NOTES: Solano Landing Project - Existing Plus Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3740 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 59.09

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	57.0	119.3

TABLE Existing Plus Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Suisun Valley Road North of Rockville Road
NOTES: Solano Landing Project - Existing Plus Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6070 SPEED (MPH): 30 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 59.58

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	61.1	128.6

TABLE Existing Plus Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Suisun Valley Road South of Rockville Road
NOTES: Solano Landing Project - Existing Plus Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7310 SPEED (MPH): 30 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 60.39

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	68.7	145.3

TABLE Cumulative (Year 2040)-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Rockville Road East of Suisun Valley Road
NOTES: Solano Landing Project - Cumulative (Year 2040)

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7700 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.22

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	90.2	192.1

TABLE Cumulative (Year 2040)-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Rockville Road West of Suisun Valley Road
NOTES: Solano Landing Project - Cumulative (Year 2040)

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3950 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 59.32

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	58.9	123.7

TABLE Cumulative (Year 2040)-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Suisun Valley Road North of Rockville Road
NOTES: Solano Landing Project - Cumulative (Year 2040)

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6250 SPEED (MPH): 30 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 59.71

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	62.3	131.0

TABLE Cumulative (Year 2040)-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Suisun Valley Road South of Rockville Road
NOTES: Solano Landing Project - Cumulative (Year 2040)

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8000 SPEED (MPH): 30 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 60.78

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	72.8	154.2

TABLE Cumulative Plus Project (Year 2040)-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Rockville Road East of Suisun Valley Road
NOTES: Solano Landing Project - Cumulative Plus Project (Year 2040)

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8170 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.48

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	93.7	199.8

TABLE Cumulative Plus Project (Year 2040)-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Rockville Road West of Suisun Valley Road
NOTES: Solano Landing Project - Cumulative Plus Project (Year 2040)

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 4100 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 59.48

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	60.3	126.7

TABLE Cumulative Plus Project (Year 2040)-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Suisun Valley Road North of Rockville Road
NOTES: Solano Landing Project - Cumulative Plus Project (Year 2040)

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6690 SPEED (MPH): 30 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 60.00

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	65.0	137.0

TABLE Cumulative Plus Project (Year 2040)-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 03/03/2023
ROADWAY SEGMENT: Suisun Valley Road South of Rockville Road
NOTES: Solano Landing Project - Cumulative Plus Project (Year 2040)

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8460 SPEED (MPH): 30 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 15 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 61.02

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	75.5	160.0

Appendix F

Traffic Impact Analysis

TRAFFIC IMPACT ANALYSIS

FOR

SOLANO LANDING PROJECT

Solano County, CA

Prepared For:

SOLANO LANDING, LLC.
506 Couch Street
Vallejo, CA 94590

Prepared By:

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January 31, 2023

6843-01

Solano Landing.rpt

SOLANO LANDING PROJECT
TRAFFIC IMPACT ANALYSIS

TABLE OF CONTENTS

EXECUTIVE SUMMARY I
2040 Conditions ii
Significant Transportation Effects for 2040 Plus Project Conditions ii

INTRODUCTION 1
Study Purpose and Objectives 1

EXISTING SETTING 4
Study Area 4
Study Area Intersections 4
Analysis Criteria 6
Existing Traffic Conditions 9
Non-Automobile Transportation 13

EXISTING PLUS PROJECT CONDITIONS 14
Trip Generation 14
Existing Plus Project Level of Service Impacts 20

CUMULATIVE IMPACTS 22
Year 2040 Forecasts / Conditions 22
2040 Conditions 23
2040 Plus Project Level of Service Impacts 23

PROJECT ACCESS 28
Need for Left Turn Lanes 29

FINDINGS / RECOMMENDATIONS/ IMPROVEMENTS 33

REFERENCES 36

APPENDIX 37

KDA

SOLANO LANDING PROJECT
TRAFFIC IMPACT ANALYSIS

EXECUTIVE SUMMARY

Project Description. This study evaluates the traffic impacts associated with the proposed Solano Landing project in Solano County. The project is located in the southeast quadrant of the Suisun Valley Road / Rockville Road intersection, north and west of the City of Fairfield and about 1½ miles north of Interstate 80 (I-80). This area is the County's Agriculture Tourist Center (ATC) Zone and includes the following development:

- 6 - 1,500 square foot wine tasting rooms
- Multi-purpose room / event center to accommodate 100 persons for wine tasting event
- 10-room boutique hotel
- 7,600 square foot fine dining restaurant
- 5,500 square foot specialty supermarket

The project is expected to generate 289 trips in the Friday p.m. peak period and 384 trips in the Saturday peak hour. Due to the ability for a wine tasting room to have a special event two scenarios were evaluated on Saturday, a special event occurring with event traffic inbound and a special event occurring with event traffic departing; the Friday p.m. peak hour assessment assumed that special event traffic was only headed inbound. After considering internal trips and pass-by trips the project is projected to generate 211 new Friday p.m. peak hour trips, 293 new Saturday trips with inbound special event traffic and 289 new Saturday trips with outbound special event traffic.

Existing Setting. Levels of Service were evaluated at nine existing intersections. The study included an analysis of the Friday p.m. peak hour and the Saturday peak hour. County Level of Service policy considers LOS C as the acceptable threshold while the City of Fairfield and Caltrans consider LOS D as the acceptable threshold.

All intersections currently operate within agency thresholds, within LOS C conditions at Solano County intersections and LOS D conditions at City of Fairfield and Caltrans agency intersections. While operating at an acceptable level of service the Suisun Valley Road / Neitzell Road intersection meet the peak hour signal warrant.

Significant Transportation Effects for Existing plus Project Conditions

Under Existing plus Project conditions, all intersections will continue to operate within acceptable levels of service. The Suisun Valley Road / Neitzell Road intersection will continue to operate at an acceptable level of service and meet the peak hour signal warrant.

The following recommendations are noted:

- The project should pay their fair share traffic impact fees in Solano County.

- The County should consider extending the 25-mph speed zone along Rockville Road to east of the project driveway as the site will be within the Rockville community. Shifting the zone to at least 150 feet east of the driveway will provide westbound motorists time to decelerate from 45 mph to 25 mph prior to reaching the driveway.

- The County should consider extending the 25-mph speed zone along Suisun Valley Road at least 100 feet south of the existing speed limit sign location. This will provide northbound motorists time to decelerate to 25-mph prior to reaching the intersection.

2040 Conditions

Under 2040 conditions all intersections are projected to operate within agency thresholds, within LOS C conditions at Solano County intersections and LOS D conditions at City of Fairfield and Caltrans agency intersections. The Suisun Valley Road / Neitzell Road intersection will operate at LOS D or better and meet the peak hour signal warrant.

Significant Transportation Effects for 2040 Plus Project Conditions

Under 2040 plus Project conditions, all intersections will continue to operate within acceptable levels of service. The Suisun Valley Road / Neitzell Road intersection will continue to operate at an acceptable level of service and meet the peak hour signal warrant.

SOLANO LANDING PROJECT
TRAFFIC IMPACT ANALYSIS

INTRODUCTION

Study Purpose and Objectives

This study evaluates the traffic impacts associated with the proposed Solano Landing project in Solano County. The project is located in the southeast quadrant of the Suisun Valley Road / Rockville Road intersection, north and west of the City of Fairfield and about 1½ miles north of Interstate 80 (I-80), as shown in Figure 1. The project is within the County's Agriculture Tourist Center (ATC) Zone and includes the following development:

- 6 - 1,500 square foot wine tasting rooms
- Multi-purpose room / event center to accommodate 100 persons for wine tasting event
- 10- room boutique hotel
- 7,600 square foot fine dining restaurant
- 5,500 square foot specialty supermarket

The proposed site plan is shown in Figure 2. Access to the site will be via the existing Suisun Valley Road / Suisun Valley Court intersection and a new driveway along Rockville Road.

The study parameters are consistent with Solano County guidelines. The study addresses the following traffic scenarios:

1. Existing (2021) Peak Hour Traffic Conditions;
2. Existing plus Project Peak Hour Traffic Conditions;
3. Year 2040 Peak Hour Traffic Conditions;
4. Year 2040 plus Project Peak Hour Traffic Conditions;

The purpose of this analysis is to identify the potential traffic-related impacts of the project within the context of current traffic conditions and to evaluate the cumulative impacts of future traffic conditions in the Solano County / City of Fairfield area. As the site is geared primarily to tourist destinations this analysis includes evaluation of existing circulation conditions based upon current Friday p.m. and Saturday peak hour traffic volumes. The extent to which improvements may already be needed to meet minimum standards was determined. The characteristics of the proposed project were determined based on probable peak hour, regional trip distribution and local trip assignment. Forecasts of future year traffic conditions, including other development anticipated under the Solano County General Plan have been analyzed with and without the proposed project using the latest Solano Transportation Authority travel demand model. Mitigation measures needed to ensure satisfactory operation of area intersections under each development scenario are identified.

In addition to analyzing roadway conditions for consistency with the County's General Plan Vehicle Miles Travelled (VMT) was also considered, consistent with the County's 2021 Interim Modifications guidelines.

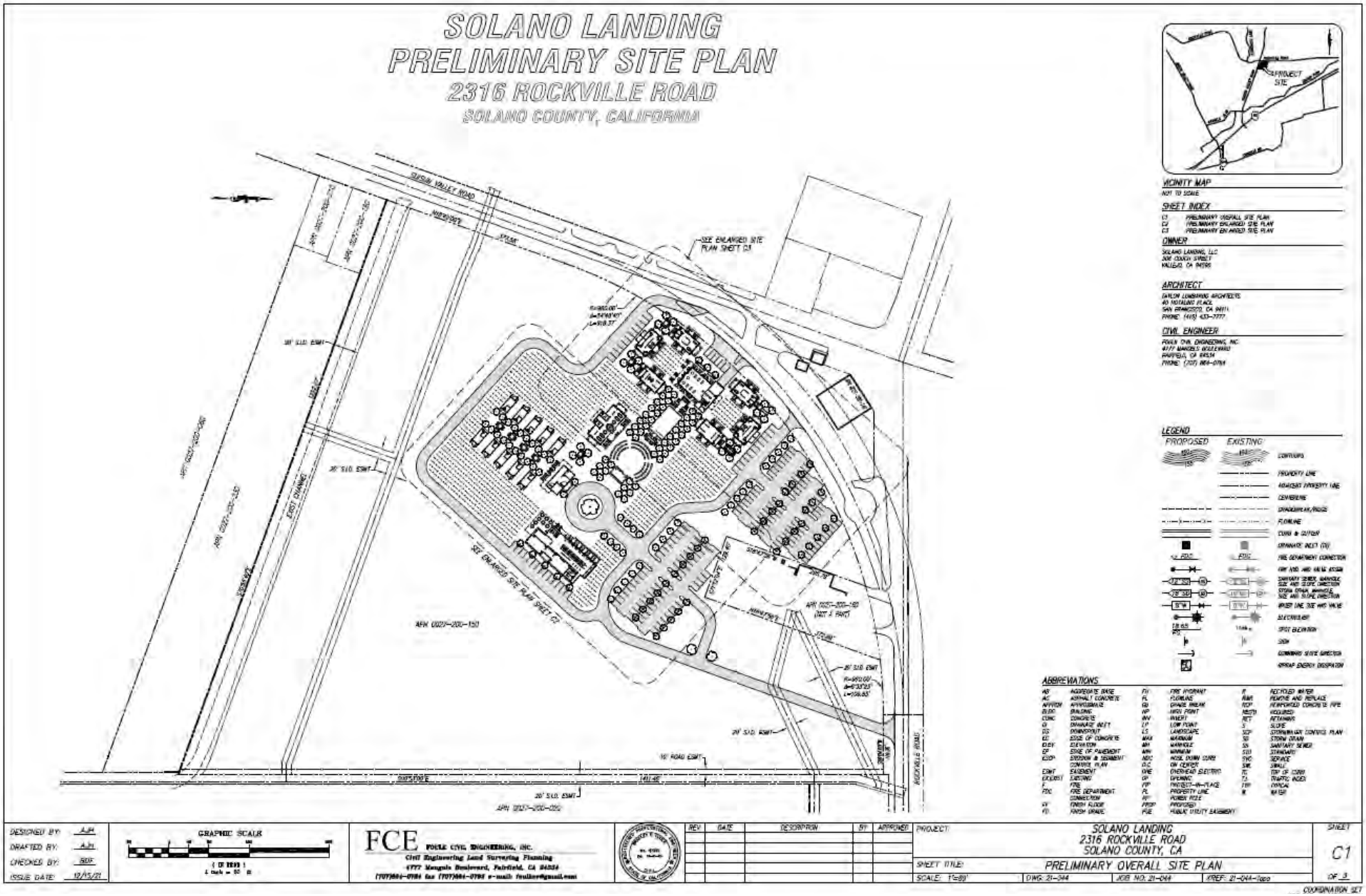


VICINITY MAP

KD Anderson & Associates, Inc.
Transportation Engineers

6843-01 RA 12/19/2022

figure 1


SOLANO LANDING
PRELIMINARY SITE PLAN
2316 ROCKVILLE ROAD
SOLANO COUNTY, CALIFORNIA
SUISUN VALLEY ROAD
ROCKVILLE ROAD
SEE ENLARGED SITE PLAN SHEET C2
SEE ENLARGED SITE PLAN SHEET C3
APN 0027-220-150
APN 0027-220-160
APN 0027-220-140
APN 0027-220-130
APN 0027-220-090
APN 0027-220-080
EAST CHANNEL
20' S.I.D. ESMT
10' ROAD ESMT
VICINITY MAP
NOT TO SCALE
SHEET INDEX
C1 PRELIMINARY OVERALL SITE PLAN
C2 PRELIMINARY ENLARGED SITE PLAN
C3 PRELIMINARY ENLARGED SITE PLAN
OWNER
SOLANO LANDING, LLC
308 CUGH STREET
VALLEJO, CA 94590
ARCHITECT
GAYLON LUNDBORG ARCHITECTS
40 MOTALVO PLACE
SAN FRANCISCO, CA 94111
PHONE: (415) 433-7777
CIVIL ENGINEER
FOULE CIVIL ENGINEERING, INC.
4777 MANGELS BOULEVARD
FAIRFIELD, CA 94534
PHONE: (707) 864-0784
LEGEND
PROPOSED
EXISTING
CONTOURS
PROPERTY LINE
ADJACENT PROPERTY LINE
CENTERLINE
DRAINAGE FLOWLINE
CURB & GUTTER
DRAINAGE INLET (TYP)
FDC
FIRE DEPARTMENT CONNECTION
FIRE HYDRANT
SPOT ELEVATION
SIGN
DRAINAGE FLOW DIRECTION
ABBREVIATIONS
AGGREGATE BASE
ASPHALT CONCRETE
ASPHALT CONCRETE
BUILDING
CONCRETE
DRAINAGE INLET
DOWNSPOUT
EDGE OF CONCRETE
ELEVATION
EDGE OF PAVEMENT
EROSION & SEDIMENT CONTROL PLAN
EASEMENT
EXISTING
FIRE
FIRE DEPARTMENT CONNECTION
FINISH FLOOR
FINISH GRADE
FIRE HYDRANT
FLOWLINE
GRADE BREAK
HIGH POINT
INVERT
LOW POINT
LANDSCAPE
MAXIMUM
MANHOLE
MINIMUM
NOISE DOWN CURB
ON CENTER
OVERHEAD ELECTRIC
OPENING
PROJECT-IN-PLACE
PROPERTY LINE
PLANTER PIPE
PROPOSED
PUBLIC UTILITY EASEMENT
RADIUS
RECYCLED WATER
REMOVE AND REPLACE
REINFORCED CONCRETE PIPE
REQUIRED
RETAINING
SLOPE
STORMWATER CONTROL PLAN
STORM DRAIN
SANITARY SEWER
STANDARD
SERVICE
SHALL
TOP OF CURB
TRAFFIC AGED
TYPICAL
WATER
DESIGNED BY: A.J.H.
DRAFTED BY: A.J.H.
CHECKED BY: S.G.F.
ISSUE DATE: 12/15/21
GRAPHIC SCALE
FCE FOULE CIVIL ENGINEERING, INC.
Civil Engineering Land Surveying Planning
4777 Mangels Boulevard, Fairfield, CA 94534
(707)864-0784 fax (707)864-0795 e-mail: foulker@gmail.com
REV DATE DESCRIPTION BY APPROVED
PROJECT: SOLANO LANDING
2316 ROCKVILLE ROAD
SOLANO COUNTY, CA
SHEET TITLE: PRELIMINARY OVERALL SITE PLAN
SCALE: 1"=80'
DWG: 21-044
JOB NO: 21-044
XREF: 21-044-Topo
SHEET C1
OF 3
COORDINATION SET

SITE PLAN

EXISTING SETTING

Study Area

This study addresses traffic conditions in the vicinity of the Solano Landing project site, including the project routes from the I-80 / Suisun Valley Road and I-80 / I-680-Green Valley Road interchanges. Based on direction from Solano County staff nine intersections along the routes providing access to the site and the two access intersections were analyzed. The text that follows describes the facilities included in this analysis.

Study Area Intersections

The quality of traffic flow is typically governed by the operation of major intersections. Nine intersections serving this site were identified for evaluation. These include:

1) Suisun Valley Road / Rockville Road
2) Rockville Road / Abernathy Road
3) Suisun Valley Road / Solano College Road (south)
4) Suisun Valley Road / Westamerica Road
5) Suisun Valley Road / Business Center Drive
6) Suisun Valley Road / Neitzell
7) Pitman Road / I-80 Eastbound Ramps
8) Green Valley Road / Business Center Drive
9) Green Valley Road / I-80 Westbound On-Ramp

P.m. Friday and Saturday mid-day peak hour counts were conducted at each of these intersections in early December, 2021. The Saturday mid-day peak two-hour period was determined using analytic data from *StreetLight Data*. Intersection turning movements were then counted for this two-hour period, and the peak hour determined. Volume adjustments were made based on 2019 *StreetLight* data and the December 2021 counts to arrive at pre-Covid volumes. Each study intersection is described below:

Suisun Valley Road / Rockville Road is a signalized four-way intersection in the northwest quadrant of the project site. The eastbound approach includes a left turn lane, a through lane and a right turn lane while the westbound approach includes a left turn lane, a through lane and a right turn lane. The right turn lane appears to have originally been designed as a free right turn; however, this lane is now stop controlled north of the signal. The northbound approach includes a shared left-through lane and a right turn lane while the southbound approach is a single shared left-through-right lane. The east-west approaches include protected left turn movements while the north-south approaches are split phased. Crosswalks are present along the west and north approaches with sidewalk only in the northwest quadrant. Bike lanes are not present.

Rockville Road / Abernathy Road is a single lane four-way roundabout four-way intersection about 1¾ miles east of the project site. Bike lanes are present on the east leg of the intersection. Sidewalks are not present.

The **Suisun Valley Road / Solano College Road-Oakwood Drive** is a signalized four-way intersection south of the project site. The northbound approach includes a left turn lane, two through lanes and a single lane "ramp" that transitions to a two-lane stop approach along Solano College Road east of the intersection. The southbound approach includes a left turn lane, a through lane and a shared through-right lane. The eastbound approach along Oakwood Drive includes a shared left-through lane and a right turn lane. The westbound approach includes a left turn lane, a shared left-through lane and a free right turn with yield onto northbound Suisun Valley Road. Suisun Valley Road provides protected left turn movements while the Oakwood Drive and Solano College Road approaches are split phase. Crosswalks are present along the west, north and east approaches with sidewalk and pathways present along Oakwood Drive and Solano College Road and Suisun Valley Road south of the intersection. Bike lanes are present on Suisun Valley Road south of the intersection.

The **Suisun Valley Road / Westamerica Drive-Kaiser Drive** is a signalized four-way intersection south of the project site. The northbound approach includes a left turn lane, two through lanes and a shared through-right lane. The southbound approach includes a left turn lane, two through lanes and a right turn lane. The eastbound approach along Westamerica Drive includes a left turn lane and a shared through-right turn lane while the westbound approach includes a left turn lane, a through lane and a shared through-right lane. Protected left turn movements are provided on all approaches. Crosswalks are present along all approaches. Bike lanes are present on Suisun Valley Road while bike sharrows are present along Westamerica Drive.

The **Suisun Valley Road / Business Center Drive** is a signalized four-way intersection south of the project site. The northbound approach includes dual left turn lanes, a through lane and a shared through-right lane. The southbound approach includes dual left turn lanes, two through lanes and a right turn lane. Both eastbound and westbound approaches along Business Center Drive include dual left turn lanes, two through lanes and a shared through-right lane. Protected left turn movements are provided on all approaches and crosswalks are present along all approaches. Bike lanes are present throughout the intersection except along the northbound Suisun Valley Road approach.

Suisun Valley Road / Neitzell Road is an all-way stop controlled tee intersection. Northbound Suisun Valley Road includes a left turn lane and two through lanes while the southbound approach includes two through lanes and a free right turn lane about 200 feet in advance of the intersection. Neitzell Road includes two left turn lanes and a free right turn lane with yield onto southbound Suisun Valley Road. Bike lanes and crosswalks are not present in the intersection.

I-80 Eastbound Ramps / Pitman Road is a signalized intersection in a Type L-2 configuration. The southbound Pitman Road approach consists of dual left turn lanes and a through lane while the northbound approach includes a through lane and a right turn lane. The eastbound I-80 off-ramp includes a shared left-through lane and a right turn lane. The on-ramp includes two general purpose lanes.

The **Green Valley Road / Business Center Drive** is a signalized four-way intersection southwest of the project site. The northbound Green Valley Road approach includes dual left turn lanes, two through lanes and a right turn lane. The southbound approach includes a left turn lane, a through lane and a shared through-right turn lane. The eastbound approach along Business Center Drive

includes a left turn lane, a shared left-through lane and dual right turn lanes. The westbound approach includes a left turn lane, a shared left-through lane and a shared through-right lane. Protected left turn movements are provided along Green Valley Road while split phasing is used on Business Center Drive. The right turn eastbound Business Center Drive lanes are also overlapped with the northbound Green Valley Road left turn lanes. Crosswalks are present along each approach and bike lanes are present throughout the intersection.

The **Green Valley Road / I-80 Westbound On-Ramp intersection** is a signalized tee intersection providing access to westbound I-80. The northbound Green Valley Drive approach consists of dual left turn lanes and a through lane while the southbound approach includes a through lane and a right turn lane. The westbound I-80 on-ramp includes two general purpose lanes.

The **Suisun Valley Road / Suisun Valley Court intersection** is an unsignalized tee intersection with stop control along Suisun Valley Court; an opposing private driveway is present opposite Suisun Valley Court. All approaches are single lane.

Analysis Criteria

Vehicle Miles Traveled. The impact of a project on LOS is an important factor in determining whether a project has a significant impact. However, changes made in 2018 to CEQA have changed how lead agencies use LOS in determining whether a project has a significant impact on transportation. As noted in the California Governor's Office of Planning and Research (OPR) document Technical Advisory on Evaluating Transportation Impacts in CEQA (California Governor's Office of Planning and Research 2018),

> "Senate Bill 743 (Steinberg, 2013), which was codified in Public Resources Code section 21099, required changes to the guidelines implementing CEQA (CEQA Guidelines) (Cal. Code Regs., Title 14, Div. 6, Ch. 3, § 15000 et seq.) regarding the analysis of transportation impacts. . . OPR has proposed, and the California Natural Resources Agency (Agency) has certified and adopted, changes to the CEQA Guidelines that identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project's transportation impacts. With the California Natural Resources Agency's certification and adoption of the changes to the CEQA Guidelines, automobile delay, as measured by "level of service" and other similar metrics, generally no longer constitutes a significant environmental effect under CEQA. (Pub. Resources Code, § 21099, subd. (b)(3).)"

Certain types of projects as identified in statute, the CEQA Guidelines, or in OPR's Technical Advisory are presumed to have a less than significant impact on VMT and therefore a less than significant impact on transportation. Generally, the identified projects contribute to efficient land use patterns enabling higher levels of walking, cycling, and transit as well as lower average trip length. These projects include, for example, projects in transit priority areas, projects consisting of residential infill or those located in low VMT areas.

The County identifies projects and areas presumed to have a less than significant transportation impact. Those include:

1. A Use Permit or other discretionary development which generates 110 total vehicle trips per day or less (770 total vehicle trips per week or less) will have less than significant impact on VMT. Employee trips are not considered in the total vehicle trip generation due to the reduction in regional commute trips and VMT due to local job creation.
2. An agricultural development that facilitates farm products primarily to local ag processing centers, cities and markets in Solano County will have less than significant impact on VMT.
3. A development that is within a ½ mile of an active transit stop with reasonable transportation connections qualifies for less than significant impact on VMT.
4. A development that is adjacent to a fully developed and connected system of bike lanes qualifies for less than significant impact on VMT for up to 125 total vehicle trips per day or less (875 total vehicle trips per week or less).
5. Permitted special events that include advertisements for and coordinated assistance with carpool and / or transit options for attendees.

General Plan Policy Consistency Level of Service Analysis Methodology. To assess the quality of existing traffic conditions and provide a basis for analyzing project impacts, Levels of Service were calculated at study area intersections and project driveways. "Level of Service" is a qualitative measure of traffic operating conditions whereby a letter grade "A" through "F", corresponding to progressively worsening operating conditions, is assigned to an intersection or roadway segment.

The analysis techniques presented in the *Highway Capacity Manual 6th Edition* were used to provide a basis for describing existing traffic conditions and evaluating the significance of project traffic impacts.

Various software programs have been developed to assist in calculating intersection Level of Service, and the level of sophistication of each program responds to factors that affect the overall flow of traffic. Two programs, Synchro and SIDRA were utilized for the analysis depending on the intersection characteristics. Synchro is generally used to analyze signalized and stop controlled intersections while SIDRA is used to analyze roundabouts. Synchro Version 11 and SIDRA Version 9 were used for the analysis.

The Level of Service (LOS) policies of Solano County, City of Fairfield and Caltrans govern this analysis. The Solano County Road Standards documents the County's policies for Level of Service in rural and urban areas. The document notes that LOS C is the design standard for the County; however, if an existing LOS is already below LOS C a project shall be designed such that there will be no decrease in the existing LOS.

The City of Fairfield LOS threshold standards apply to the p.m. peak hour. LOS D is the standard for arterial streets while LOS C is the standard for collector streets and LOS B applies to local streets.

Caltrans *Vehicle Miles Traveled-Focused Transportation Impact Study Guide, 2020* notes that Vehicle Miles Traveled (VMT) analysis is now Caltrans' primary focus under CEQA. However, the prior Caltrans publication *Guide for* the *Preparation of Traffic Impact Studies (dated December 2002)* states the following: "Caltrans endeavors to maintain a target LOS at the transition between

LOS “C” and LOS “D” on State highway facilities, however, Caltrans acknowledges that this may not be always feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS”.

Therefore, for this analysis, LOS C and better are considered acceptable at Solano County maintained intersections while LOS D worse is considered acceptable at City of Fairfield and Caltrans intersections.

Table 1 presents general characteristics associated with each Level of Service grade.

TABLE 1
LEVEL OF SERVICE DEFINITIONS

Level of Service	Signalized Intersection	Unsignalized Intersection	Roadway (Daily)
"A"	Uncongested operations, all queues clear in a single-signal cycle. Ave Delay ≤ 10 seconds per vehicle	Little or no delay. Ave Delay ≤ 10 sec/veh	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cycle. Delay > 10 sec/veh and ≤ 20 sec/veh	Short traffic delays. Delay > 10 sec/veh and ≤ 15 sec/veh	Free flow, presence of other vehicles noticeable.
"C"	Light congestion, occasional backups on critical approaches. Delay >20 sec/veh and <35 sec/veh	Average traffic delays. Delay > 15 sec/veh and ≤ 25 sec/veh	Ability to maneuver and select operating speed affected.
"D"	Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35 sec/veh and < 55 sec/veh	Long traffic delays. Delay > 25 sec/veh and ≤ 35 sec/veh	Unstable flow, speeds and ability to maneuver restricted.
"E"	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). Delay >55 sec and ≤ 80 sec/veh	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/veh and ≤ 50 sec/veh	At or near capacity, flow quite unstable.
"F"	Total breakdown, stop-and-go operation. Delay > 80 sec/veh	Intersection often blocked by external causes. Delay > 50 sec/veh	Forced flow, breakdown.
Sources: Highway Capacity Manual, 6th Edition			

Existing Traffic Conditions

Traffic Volume Counts. Intersection turning movements (ITM) counts were completed during the first week of December 2021. Due to the Covid-19 pandemic, travel patterns had been affected downward due to work and school closures. *StreetLight Data* uses "Big-Data" derived travel pattern analytics against publicly available traffic movement ratios drawn from traffic counts to compare current roadway counts. 2021 ITM's were compared to 2019 *StreetLight Data* to determine whether current traffic volumes remain significantly lower than pre-Covid conditions. This comparison indicated that current volumes continue to be lower than pre-Covid conditions; therefore, ITM's were adjusted to 2019 pre-Covid 19 conditions.

Traffic count data from 2021 is included in the Appendix. Figure 3 presents the regional study locations while adjusted ITM's are presented for each study location in Figure 4.

Intersection Levels of Service. Table 2 summarizes current Levels of Service at the study area intersections during the p.m. and Saturday peak hours. All intersections currently operate within agency LOS thresholds. While the Suisun Valley Road / Neitzell Road intersection operates acceptable the intersection meets the peak hour signal warrant.

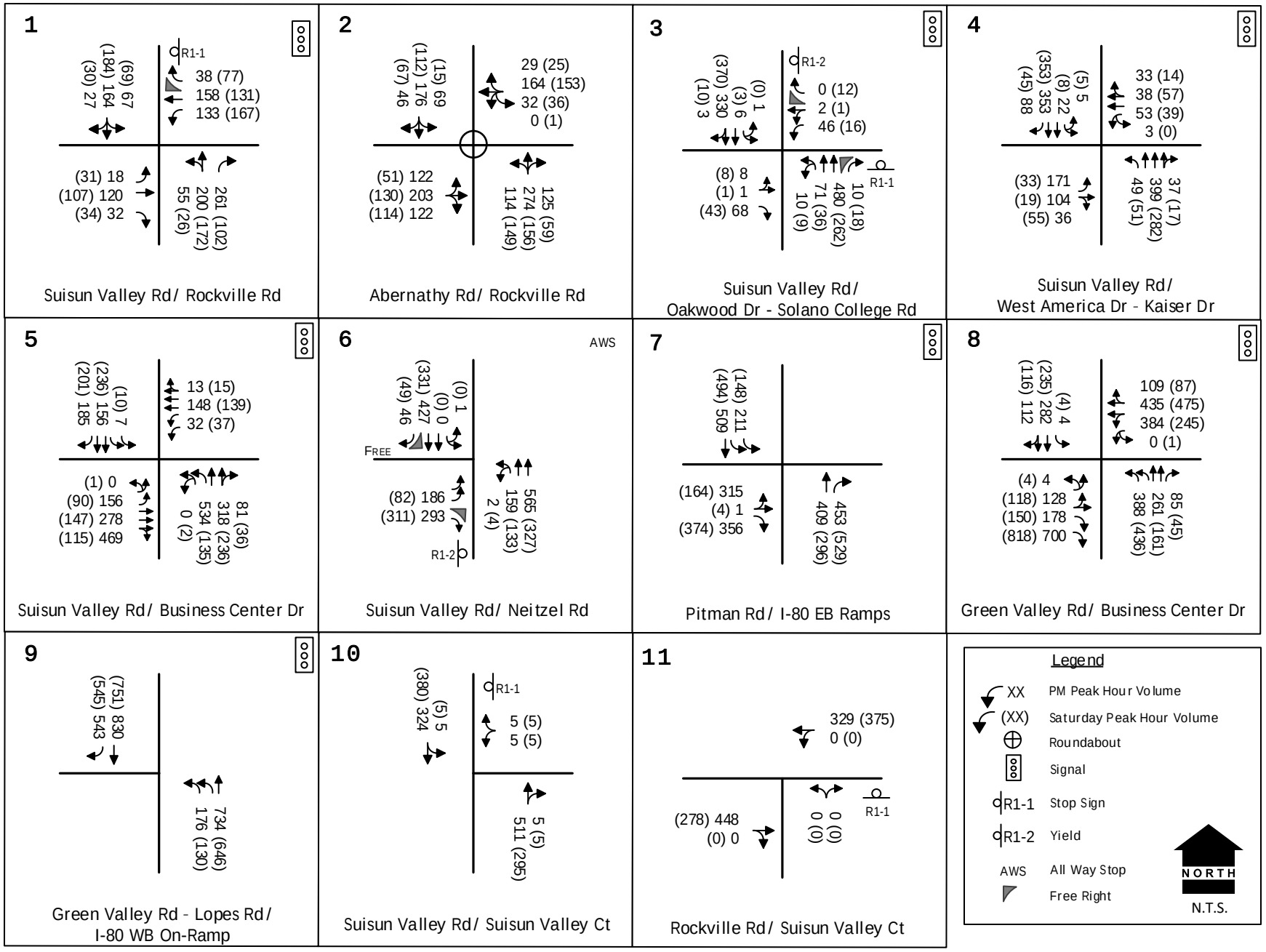


REGIONAL STUDY LOCATIONS

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figure 3



EXISTING TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 4

TABLE 2
EXISTING PEAK HOUR LEVELS OF SERVICE AT INTERSECTIONS

Location	Control	Existing Friday PM Peak Hour		Existing Saturday Peak Hour		Peak Hour Warrant Met?
		LOS	Average Delay (secs)	LOS	Average Delay (secs)	
1. Suisun Valley Rd / Rockville Rd (SC)	Signal	C	22.4	C	22.3	N/A
2. Rockville Rd / Abernathy Rd (SC)	Roundabout	B	11.3	A	6.4	N/A
3. Suisun Valley Rd / Solano College Rd (COF)	Signal	B	11.4	A	9.4	N/A
4. Suisun Valley Rd / Westamerica Dr (COF)	Signal	B	15.1	B	12.1	N/A
5. Suisun Valley Rd / Business Center Dr (COF)	Signal	D	40.3	B	19.7	N/A
6. Suisun Valley Rd / Neitzell Rd (COF)	AWS	C	23.5	B	12.3	Yes
7. Pitman Rd / I-80 EB Ramps (CT)	Signal	B	18.7	C	23.8	N/A
8. Green Valley Rd / Business Center Dr (COF)	Signal	D	38.7	C	30.2	N/A
9. Green Valley Rd / I-80 WB On-Ramp (CT)	Signal	A	5.3	A	4.8	N/A
10. Suisun Valley Rd / Suisun Ct (SC)						
SB Left	WB Stop	A	8.6	A	7.9	No
WB		B	14.7	B	12.4	

SC – Solano County COF – City of Fairfield CT – Caltrans
AWS – multi-way stop N/A – not applicable

Non-Automobile Transportation

Public Transit. Various bus services are provided within Fairfield. These include the Fairfield and Suisun Transit System (FAST) and the SolTrans Intercity routes. These services provide local and intercity routes along the I-80 corridor; in the project vicinity FAST routes #7 and #8 operate in the west Fairfield / Cordelia area and the Blue Line between Sacramento and Walnut Creek while SolTrans operates the R Line between Fairfield and Richmond.

The #7 route operates between the Fairfield Transportation Center and the Cordelia Library with stops along Suisun Valley Road at Solano Community College. The route operates with buses departing the Transportation Center hourly from 6:00 a.m. to 6:00 p.m. Monday through Friday. On Saturdays the route operates from 10:00 a.m. with the last bus departing at 4:00 p.m.

The #8 route operates between the Cordelia Library, the Pitman Road / Central Way area and south Cordelia. The route operates with buses departing the Cordelia Library between 6:30 a.m. and 9:30 a.m., 11:30 a.m. and 2:30 p.m. and 3:30 p.m. and 6:30 p.m. Monday through Friday. On Saturdays the route operates from 10:30 a.m. with the last bus departing at 3:30 p.m.

The Blue Line operates Monday through Friday with 20 northbound stops and 19 southbound stops at the Suisun Valley Road / Westamerica Drive – Kaiser Drive intersection. Stops are made throughout the day with the first southbound stop occurring at 6:11 a.m. and the last northbound stop occurring at 7:44 p.m. All stops provide service to the Walnut Creek BART station and the Vacaville Transportation Center. Saturday service is available at a reduced schedule with six northbound and southbound buses. The buses operate on approximately two-hour headways with the first southbound arrival at 8:05 a.m. and the last northbound arrival at 7:40 p.m.

The Red Line operates Monday through Friday with 16 northbound and southbound stops at the Suisun Valley Road / Westamerica Drive – Kaiser Drive intersection. Stops are made generally at one-hour headways beginning southbound at 6:30 a.m. and at 5:24 a.m. in the northbound direction. The last stops occur at 9:28 p.m. southbound and 8:27 p.m. northbound with all buses servicing the Suisun /Fairfield Amtrak Station and the El Cerrito del Norte BART station. Saturday service is available at a reduced schedule with seven northbound and southbound buses. The buses operate on approximately two-hour headways with the first northbound arrival at 8:25 a.m. and the last southbound arrival at 9:29 p.m.

Bicycle and Pedestrian Facilities. As identified within the *Study Area Intersections* section, sidewalks and bike lanes are present along much of Suisun Valley Road. Along the project frontage there are no sidewalks, nor bike lanes as this area transitions from an urban character within the City of Fairfield to a rural character within Solano County.

EXISTING PLUS PROJECT CONDITIONS

The development of this project will attract traffic to the project site. The amount of additional traffic on a particular section of the street network is dependent upon two factors:

- Trip Generation, the number of new trips generated by the project, and
- Trip Distribution and Assignment, the specific routes that the new traffic takes.

Trip Generation

Trip generation is determined by identifying the type and size of land use being developed. Recognized sources of trip generation data may then be used to calculate the total number of trip ends resulting from the day-to-day operation of the businesses in the project.

The trip generation for this project was developed based on the following uses:

- 6 wine tasting rooms at 1,500 sf
- A 10-room boutique hotel
- A 7,600 sf fine dining restaurant
- A 5,500 sf supermarket
- A 100-person 'event / multi-use' center – this would be used for special events at one of the wine tasting rooms. When used, that particular tasting room would close.

Where available, data from the Institute of Transportation Engineers publication, *Trip Generation, 11th Edition,* was used to develop trips. This included the hotel, restaurant and supermarket uses. The wine tasting trip generation was based on the Napa County Winery Trip generation worksheet. For Friday trips it was assumed that a special wine tasting event would occur in the evening; therefore, a special event with outbound traffic assessment was not considered. For the Saturday peak hour it was assumed that 100% of the special event traffic was either inbound or outbound.

As the site has multiple compatible uses, internal trips were considered for the hotel, restaurant and wine tasting facilities while pass-by trips were considered for the supermarket. Table 3 presents the trip generation for the project, with 289 Friday p.m. peak hour trips generated and 384 Saturday trips during a special event. After considering internal trips and pass-by trips the project is expected to generate 211 new Friday p.m. peak hour trips with 146 inbound trips and 65 outbound trips. During the peak hour on Saturday, it is expected that with a special event late in the peak hour period, i.e., special event traffic is headed inbound, 293 new peak hour trips will be generated with 180 inbound trips and 113 outbound trips. For Saturdays where the special event is held early in the peak hour, i.e. special even traffic is leaving, 121 new inbound trips will be generated while 168 outbound trips will occur.

TABLE 3
TRIP GENERATION

Land Use	Unit Quantity	Size	Trips Per Unit								
			PM Peak Hour			Saturday Peak Hour - Inbound			Saturday Peak Hour - Outbound		
			Rate	In	Out	Total	In	Out	Total	In	Out
Hotel (LU 330)	Rooms	10	0.41	43%	57%	0.72†	56%	44%	0.72†	56%	44%
Supermarket (LU 850)	KSF	5.50	8.95	50%	50%	10.10	50%	50%	10.10	50%	50%
Fine Dining Restaurant (LU 931)	KSF	7.60	7.80	67%	33%	10.68	59%	41%	10.68	59%	41%
Wine Tasting Room	EA	6	22.00	50%	50%	38.00	50%	50%	38.00	50%	50%
Special Event	EA	1	88.00	100%	0%	88.00	100%	0%	88.00	0%	100%
Hotel (LU 330)			4	2	2	7	4	3	7	4	3
Supermarket (LU 850)			49	25	25	56	28	28	56	28	28
Fine Dining Restaurant (LU 931)			59	40	20	81	48	33	81	48	33
Wine Tasting Room			88	44	44	152	76	76	152	76	76
Special Event			88	88	0	88	88	0	88	0	88
Sub-Total Trips			289	199	91	384	244	140	384	156	228
Internal Trips											
Hotel ‡ (25%)			(1)	0	(1)	(2)	(1)	(1)	(2)	(1)	(1)
Fine Dining Restaurant (25%)			(15)	(10)	(5)	(20)	(12)	(8)	(20)	(12)	(8)
Wine Tasting Room ‡ (25% pm / 18% Sat in / 20% Sat out)			(22)	(11)	(11)	(27)	(19)	(8)	(31)	(12)	(19)
Special Event ‡ (25%)			(22)	(22)	0	(22)	(22)	0	(22)	0	(22)
Sub-Total Internal Trips			(60)	(43)	(16)	(71)	(54)	(17)	(75)	(25)	(50)
Pass-By Trips											
Supermarket *(36%)*◊			(16)	(8)	(8)	(18)	(9)	(9)	(18)	(9)	(9)
Sub-Total Pass-By Trips			**(16)**	(8)	(8)	**(18)**	(9)	(9)	**(18)**	(9)	(9)
Net New Trips			**211**	**146**	**65**	**293**	**180**	**113**	**289**	**121**	**168**

KSF – thousand square feet Numbers may not match due to rounding

† no data available for LU 330; used LU 310 ‡ estimated ◊ ITE Trip Generation Handbook, 3rd Ed

Vehicle Trip Distribution. The distribution of project vehicular traffic was determined based on the expected origins of the users and included a review of existing traffic counts at the surrounding intersections. Table 4 displays the trip distribution used for the proposed project.

TABLE 4
TRIP DISTRIBUTION

Route	% of Total Trips
To / from Rockville Rd west of	5%
To / from North on Suisun Valley Rd	15%
To / from Rockville Rd east of Abernathy Rd	5%
To / from I-80 East	20%
To / from Green Valley Rd north of Business Center Dr 113	5%
To / from I-80 West	20%
To / from I-680 South	20%
To / from Oakwood Dr west of Suisun Valley Rd	3%
To / from Westamerica Dr west of Suisun Valley Rd	4%
To / from Kaiser Dr east of Suisun Valley Rd	3%
Total	100%

Vehicle Trip Assignment. Traffic generated by the project was assigned to the study roadway system based on the projected trip distribution percentages (Figure 5). Figure 6 displays the project generated traffic. Figure 7 displays the resulting sum of existing Friday p.m. and Saturday peak hour volumes at the study intersections for the Existing plus Project condition.

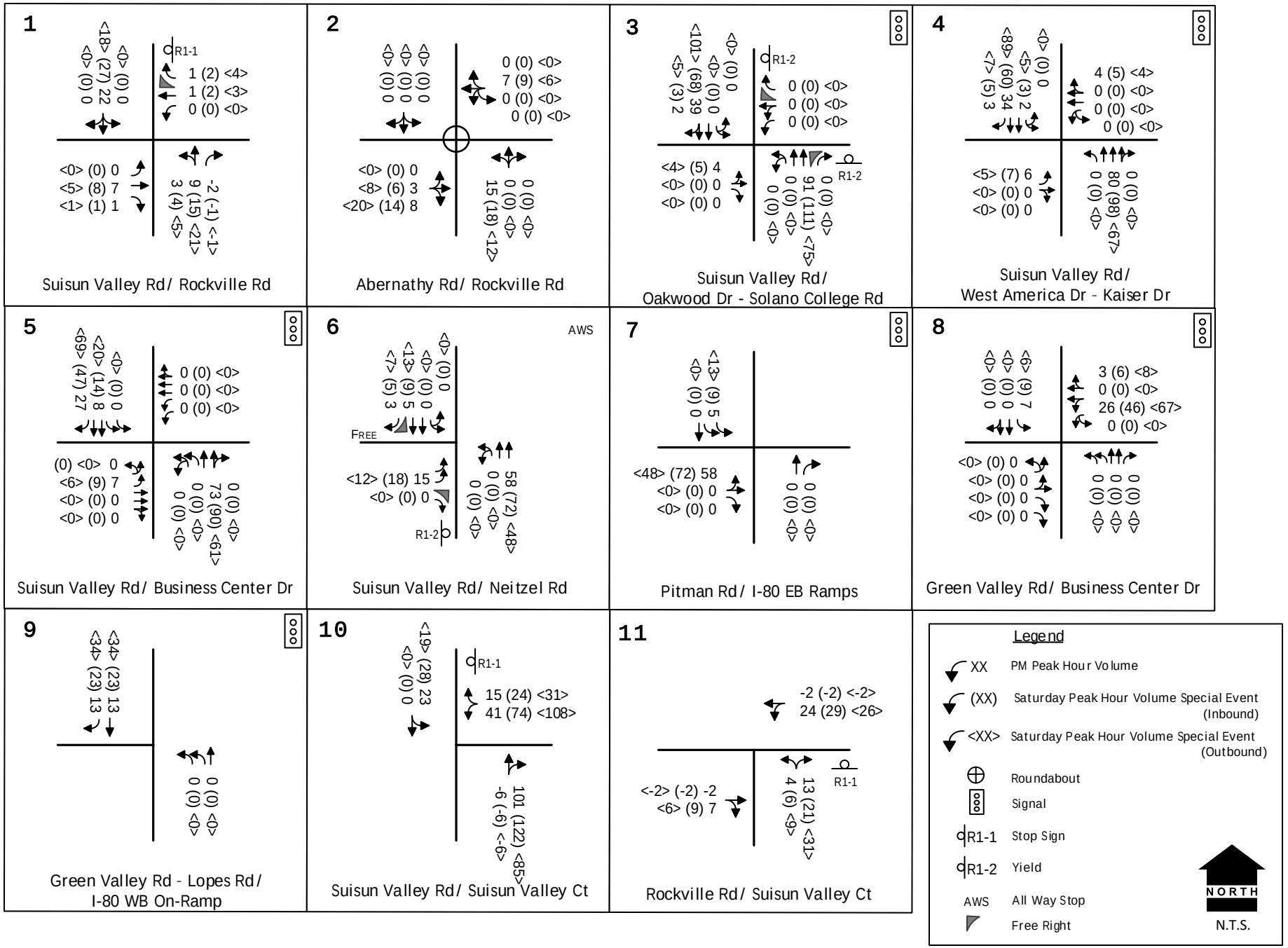


TRIP DISTRIBUTION PERCENTAGES

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figure 5

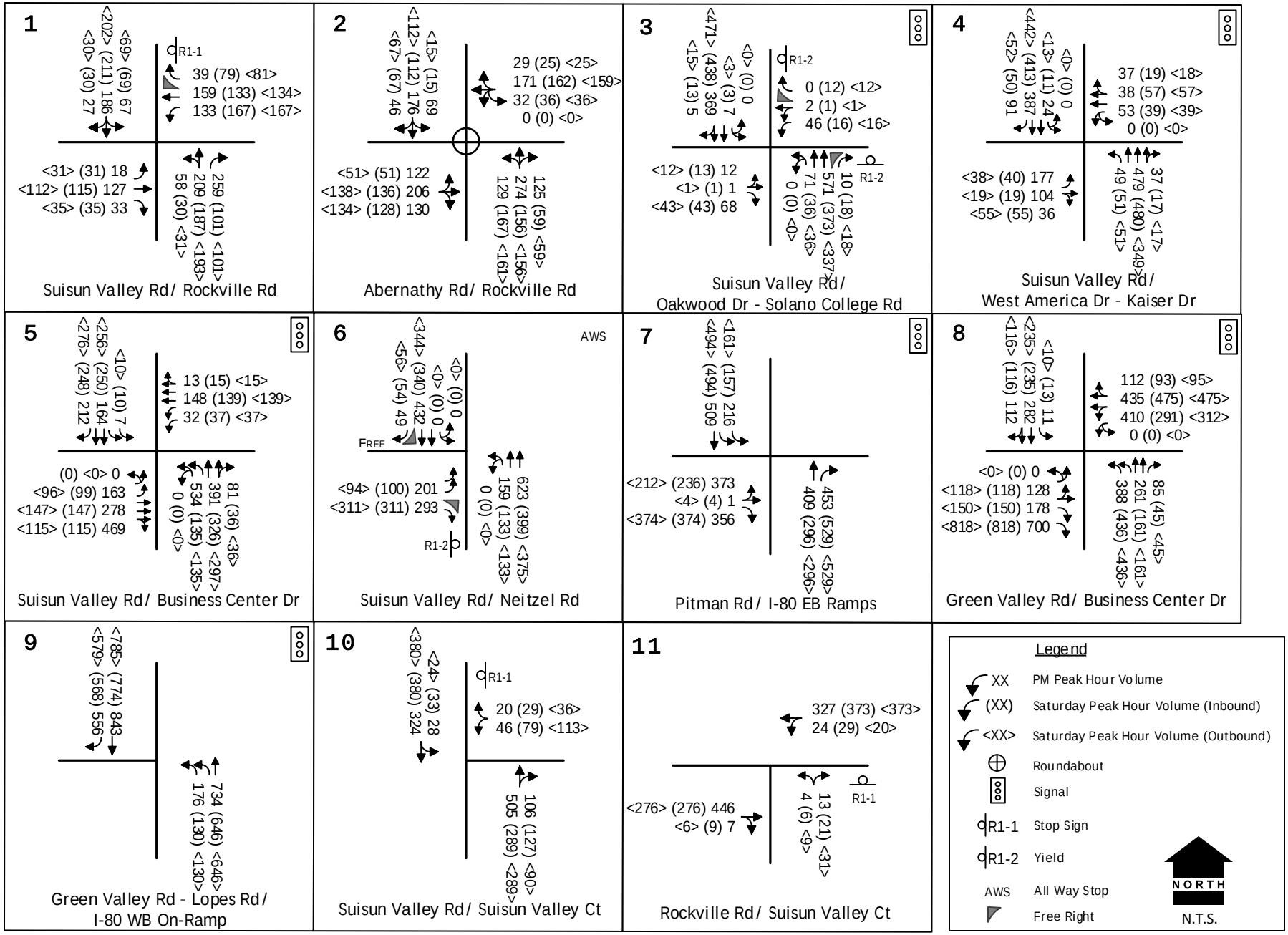


PROJECT ONLY TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 6



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EXISTING PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 7

Existing Plus Project Level of Service Impacts

Vehicle Miles Traveled. The project is within an Agriculture Tourist Center District north of I-80. This district allows the uses identified in the *Trip Generation* section of this report. The proposed project includes a variety of uses. These include 6-1,500 square foot wine tasting rooms, a multi-purpose room / event center to accommodate 100 persons for wine tasting event, a 10-room boutique hotel, a 7,600 square foot fine dining restaurant and a 5,500 square foot specialty supermarket.

A review of similar uses in the region shows that there are various wineries north and west of the project location. Additionally, the site includes a supermarket and restaurant which will provide residents with local shopping / dining destinations. Increasing opportunities for these uses closer to the trip origins, users may decrease overall VMT by substituting short trips for longer ones. By having a consolidation of wineries, visitors to the region are likely to visit this location rather than driving between wineries further north and west of the project site. Additionally, the project provides residents with local shopping and dining options who will be able to use more local services. The project will construct a total of 33,000 square foot of buildings.

As noted in the County Interim Modification of Standards a Use Permit or other discretionary development which generates 110 total vehicle trips per day or less (770 total vehicle trips per week or less) will have less than significant impact on VMT. Employee trips are not considered in the total vehicle trip generation due to the reduction in regional commute trips and VMT due to local job creation. Annually, this equates to 40,150 daily trips. The projected number of annual trips the project will generate, excluding those trips that are consistent with the County's VMT policy, are projected to generate 125,435 annual trips. This is a significant impact.

Intersection Levels of Service. Table 5 displays the levels of service for the Friday p.m. peak hour, Saturday peak hour with inbound special event traffic and Saturday peak hour with outbound special event traffic periods. All intersections will operate within the LOS thresholds for each agency. The Suisun Valley Road / Neitzell Road intersection will continue to operate at an acceptable level of service and will continue to meet the peak hour signal warrant. No mitigations are necessary.

TABLE 5
EXISTING PLUS PEAK HOUR LEVELS OF SERVICE AT INTERSECTIONS

Location	Control	Existing plus Project Friday PM Peak Hour		Existing plus Project Saturday Peak Hour With Inbound Special Event		Existing plus Project Saturday Peak Hour With Outbound Special Event		Peak Hour Warrant Met?
		LOS	Average Delay (secs)	LOS	Average Delay (secs)	LOS	Average Delay (secs)	
1. Suisun Valley Rd / Rockville Rd (SC)	Signal	C	23.5	C	23.9	C	23.7	N/A
2. Rockville Rd / Abernathy Rd (SC)	Roundabout	B	11.8	A	6.9	A	6.9	N/A
3. Suisun Valley Rd / Solano College Rd (COF)	Signal	B	11.4	A	9.3	A	9.4	N/A
4. Suisun Valley Rd / Westamerica Dr (COF)	Signal	B	15.2	B	12.0	B	12.1	N/A
5. Suisun Valley Rd / Business Center Dr (COF)	Signal	D	42.4	C	20.1	C	20.4	N/A
6. Suisun Valley Rd / Neitzell Rd (COF)	AWS	C	24.6	B	13.1	B	13.0	Yes
7. Pitman Rd / I-80 EB Ramps (CT)	Signal	B	19.0	C	23.9	C	24.1	N/A
8. Green Valley Rd / Business Center Dr (COF)	Signal	D	39.9	C	30.7	C	31.0	N/A
9. Green Valley Rd / I-80 WB On-Ramp (CT)	Signal	A	5.3	A	4.9	A	4.9	N/A
10. Suisun Valley Rd / Suisun Ct (COF) SB Left WB	WB Stop	 A C	 9.0 21.0	 A C	 8.4 19.7	 A C	 8.2 21.5	No
11. Rockville Rd / Project Access (SC) NB WB Left	NB Stop	 B A	 12.9 8.4	 B A	 11.4 8.0	 B A	 11.5 7.9	No

AWS – multi-way stop

CUMULATIVE IMPACTS

The analysis of Cumulative impacts was considered when accommodating the peak tonnage increase for the site.

The analysis of the long range 2040 cumulative condition is intended to consider the impact of this project within the context of buildout of the General Plan circulation element occurring in 2040.

Year 2040 Forecasts / Conditions

2040 Traffic Forecasts

Year 2040 traffic forecasts were based on the most recent Countywide traffic model provided by the Solano Transportation Authority (STA). The method used to develop forecasts of future year peak hour intersection turning movement traffic volumes was based on the increase or decrease of traffic model generated growth factors. Peak hour traffic volumes from the travel model were used to generate growth factors. These growth factors were applied to existing peak hour intersection turning movement traffic volumes. The development of future year intersection turning movement traffic volumes requires that the turning movements at each intersection "balance". To achieve the balance, inbound traffic volumes must equal the outbound traffic volumes, and the volumes must be distributed among the various left-turn, through, and right-turn movements at each intersection. The "balancing" of future year intersection turning movement traffic volumes was conducted using methods described in the Transportation Research Board's (TRB's) National Cooperative Highway Research Program (NCHRP) Report 255, *Highway Traffic Data for Urbanized Area Project Planning and Design*. The NCHRP 255 method applies the desired peak hour directional volumes to the intersection turning movement volumes, using an iterative process to balance and adjust the resulting forecasts to match the desired peak hour directional volumes. Year 2040 forecasted intersection turning movements are presented in Figure 8.

Roadway Conditions

Roadways conditions in the 2040 model are generally projected to remain with their current lane configurations. No changes were noted. Traffic signal timing was optimized where appropriate under the assumption that signal operations do not remain static between Existing and Cumulative conditions.

It is also acknowledged that the I-80 / I-680 / SR 12 interchange is currently being reconstructed with Caltrans the lead agency. This multi-year, multi-phase project will improve connectivity between the two interstate freeways and the state route highway. The project also includes improving access to and from local roadways in Fairfield. Funding for the entire project is not confirmed. The STA model does not appear to include the proposed improvements.

2040 Conditions

Intersection Levels of Service. Table 6 displays the p.m. and Saturday peak hour Levels of Service at each study intersection in the Cumulative 2040 condition. All intersections will operate at acceptable levels of service. The Suisun Valley Road / Neitzell Road intersection will meet the peak hour signal warrant but will continue to operate within acceptable LOS thresholds, at LOS D or better.

2040 Plus Project Level of Service Impacts

Intersection Levels of Service. Figure 9 presents the projected turning movements at the study intersections under 2040 plus Project conditions. Table 7 displays the Levels of Service at each study intersection in the 2040 plus Project condition for the p.m. peak hour and the Saturday peak hour conditions, considering both inbound and outbound special event traffic. All intersections will operate within the LOS thresholds for each agency. The Suisun Valley Road / Neitzell Road intersection will continue to operate at an acceptable level of service and will continue to meet the peak hour signal warrant. No mitigations are necessary.

TABLE 6
2040 PEAK HOUR LEVELS OF SERVICE AT INTERSECTIONS

Location	Control	2040 Friday Peak Hour		2040 Saturday Peak Hour		Peak Hour Warrant Met?
		LOS	Average Delay (secs)	LOS	Average Delay (secs)	
1. Suisun Valley Rd / Rockville Rd (SC)	Signal	C	25.2	C	25.4	N/A
2. Rockville Rd / Abernathy Rd (SC)	Roundabout	B	16.8	A	9.1	N/A
3. Suisun Valley Rd / Solano College Rd (COF)	Signal	B	12.5	B	11.0	N/A
4. Suisun Valley Rd / Westamerica Dr (COF)	Signal	B	18.2	B	12.5	N/A
5. Suisun Valley Rd / Business Center Dr (COF)	Signal	D	38.8	C	21.9	N/A
6. Suisun Valley Rd / Neitzell Rd (COF)	AWS	D	26.9	B	13.4	Yes
7. Pitman Rd / I-80 EB Ramps (CT)	Signal	C	34.8	D	36.9	N/A
8. Green Valley Rd / Business Center Dr (COF)	Signal	D	47.8	D	46.2	N/A
9. Green Valley Rd / I-80 WB On-Ramp (CT)	Signal	A	7.0	A	4.6	N/A
10. Suisun Valley Rd / Suisun Ct (SC)						
SB Left	WB Stop	A	8.8	A	8.2	No
WB		C	15.8	B	13.8	

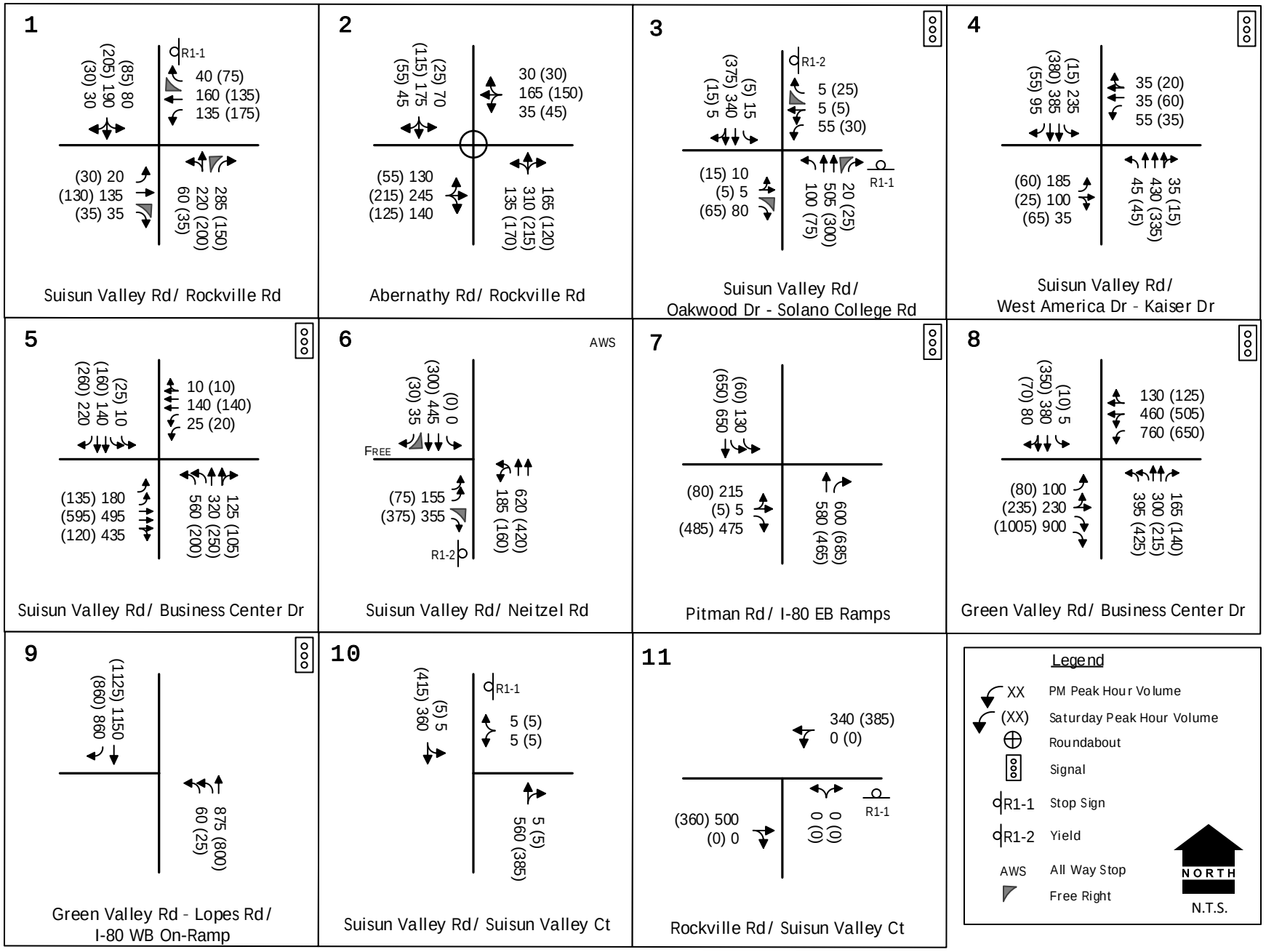
SC – Solano County COF – City of Fairfield CT – Caltrans

BOLD values exceed acceptable LOS threshold

TABLE 7
2040 PLUS PROJECT PEAK HOUR LEVELS OF SERVICE AT INTERSECTIONS

Location	Control	2040 plus Project Friday PM Peak Hour		2040 plus Project Saturday Peak Hour With Inbound Special Event		2040 plus Project Saturday Peak Hour With Outbound Special Event		Peak Hour Warrant Met?
		LOS	Average Delay (secs)	LOS	Average Delay (secs)	LOS	Average Delay (secs)	
1. Suisun Valley Rd / Rockville Rd (SC)	Signal	C	26.4	C	27.4	C	27.2	N/A
2. Rockville Rd / Abernathy Rd (SC)	Roundabout	B	18.0	A	9.5	A	9.5	N/A
3. Suisun Valley Rd / Solano College Rd (COF)	Signal	B	12.6	B	11.0	B	11.1	N/A
4. Suisun Valley Rd / Westamerica Dr (COF)	Signal	B	18.8	B	12.7	B	12.7	N/A
5. Suisun Valley Rd / Business Center Dr (COF)	Signal	D	41.0	C	22.9	C	23.6	N/A
6. Suisun Valley Rd / Neitzell Rd (COF)	AWS	D	32.4	B	14.8	B	14.5	Yes
7. Pitman Rd / I-80 EB Ramps (CT)	Signal	C	34.8	D	37.0	D	37.4	N/A
8. Green Valley Rd / Business Center Dr (COF)	Signal	D	49.1	D	48.5	D	49.4	N/A
9. Green Valley Rd / I-80 WB On-Ramp (CT)	Signal	A	7.4	A	5.0	A	5.2	N/A
10. Suisun Valley Rd / Suisun Ct (COF) SB Left WB	WB Stop	 A C	 9.2 23.7	 A C	 8.7 24.4	 A D	 8.5 27.9	No
11. Rockville Rd / Project Access (SC) NB WB Left	NB Stop	 B A	 13.6 8.6	 B A	 12.3 8.2	 B A	 12.4 8.2	No

SC – Solano County COF – City of Fairfield CT – Caltrans
BOLD values exceed acceptable LOS threshold

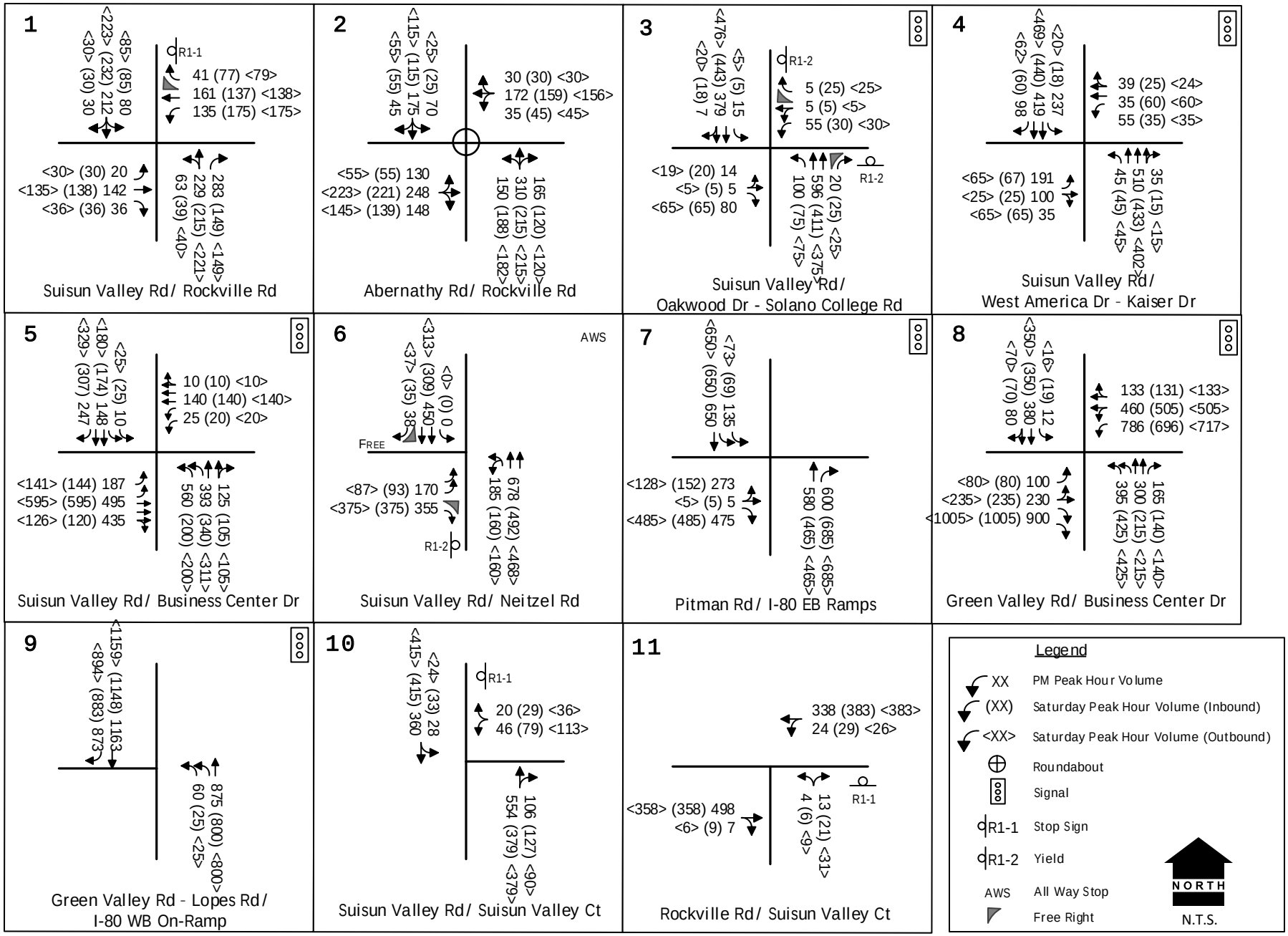


CUMULATIVE TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 8



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CUMULATIVE PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 9

PROJECT ACCESS

Two access locations will be provided for the project. One access is the existing Suisun Valley Court intersection along Suisun Valley Road while the second will be along Rockville Road, about 750 feet east of the Suisun Valley Road intersection. Suisun Valley Court will continue to provide access to the existing commercial space in the southeast corner of the Suisun Valley Road / Rockville Road intersection. Several driveways will access the project. The two primary parking areas along the north side of the site will have direct access from the north driveway on Suisun Valley Court and from Rockville Road. A perimeter road will also be provided to provide emergency vehicle access to the south side of the project.

Sight Distance. A sight distance analysis was completed at the proposed project access locations along Suisun Valley Road and Rockville Road.

Available sight distance was evaluated using the standards documented in the Caltrans *Highway Design Manual* (HDM). Based on the location of the driveways "**Minimum Stopping Sight** Distance" (MSSD) and "**Corner Sight Distance**" (CSD) was considered. These criteria are documented in Tables 201.1 and 405.1A of the HDM. As noted in the HDM corner sight distance are not applied to urban driveways unless signalized. However, based on the roadway conditions corner sight distance criteria was also reviewed.

Suisun Valley Road / Suisun Valley Court. The posted speed limit at the project access intersection along Suisun Valley Road is 25 miles per hour (mph); however, just south of the intersection is a speed reduction from 35 mph. It is expected that many motorists will be in the process of reducing the vehicle speed; thus, the 35 mph speed was considered.

The Minimum Stopping Sight Distance (MSSD) is the distance required for an approaching motorist to identify a hazard and come to a stop. The Caltrans Highway Design Manual (HDM) Table 201.1 notes that the minimum sight distance requirement for the posted speed limit of 35 mph is 250 feet. The line of sight from the "driver's eye" along on Suisun Valley Road is straight and level, and a motorist has a clear view of traffic exiting from Suisun Valley Court.

Corner Sight Distance (CSD) is the distance needed for a motorist to see approaching vehicles and complete a turning maneuver before that vehicle arrives. Table 405.1A notes that CSD is determined based on the design speed of the major road and the time gap needed to complete the maneuver. For a single-unit truck departing the site and turning south, the required time gap is 9½ seconds. With a 35-mph posted speed limit a CSD of about 490 feet is required ($1.47V_mT_{g)}$ to provide adequate time for the vehicle to enter southbound Suisun Valley Road before an opposing vehicle arrives. The sight distance appears adequate.

Rockville Road Driveway. This driveway will form a tee intersection along Rockville Road. Similar to Suisun Valley Road Rockville Road is generally straight and level. The posted speed is 45 mph. The MSSD is 360 feet, and motorists has a clear line of sight along Rockville Road

With a 45-mph posted speed limit a CSD of about 630 feet is required ($1.47V_mT_{g)}$ to provide adequate time for the vehicle to enter westbound Rockville Road before an opposing vehicle arrives. Based on the approximate driveway location the sight distance may be adequate. There appears to be a line of trees along the property frontage on Rockville Road that could interfere with sight distance looking west. It is unknown whether these trees can be removed. There is adequate sight distance looking east. The sight distance should be confirmed during preparation of improvement plans.

Need for Left Turn Lanes

The extent to which project trips create the need for a separate left turn lane at study intersections has been investigated based application of published criteria to long term cumulative volumes

Methodology. The American Association of State Transportation and Highway Officials (AASHTO) has identified guidelines for evaluating the benefits of installing left turn lanes in their publication *A Policy on Geometric Design of Highways and Streets*. AASHTO guidelines take two forms. These guidelines are presented the 11th Edition (2011) in their Exhibit 9-29 and Table 7 and base the need for a left turn lane on the volume of approaching and opposing traffic on the mainline road and the relative percentage of that traffic that turns. These criteria are applicable to intersections where the major street traffic proceeds freely and side street traffic is controlled by stop signs. This methodology considers high speed roadways of 40 mph or greater.

The AASHTO publication was updated in December 2018 and different guidelines are now available. The newer guidelines suggest that a left turn lane could be beneficial based on the volume of traffic turning and the total volume per lane on the road. The new guidance considered rural and urban conditions. This guidance is presented in their Figures 9-35 and 9-36 (Table 8) which follows. These guidelines also suggest volume thresholds for creation of a "bypass" lane that, absent a full turn lane, would allow through traffic to proceed around a vehicle stopped to turn left at a "tee" intersection. The information supporting the 2018 guidelines notes, however, that "*The volume based guidelines or warrants presented below indicate situations where a left turn lane may be desirable, not necessarily situations where a left-turn lane is definitely needed".*

TABLE 7 TRAFFIC VOLUMES JUSTIFYING LEFT TURN LANES UNDER 2011 AASHTO				
Opposing Volume (veh/hr)	**Advancing Volume (veh/hr)**			
	5% Left Turns	**10% Left Turns**	**20% Left Turns**	**30% Left Turns**
40-mph operating speed				
800	330	240	180	160
600	410	305	225	200
400	510	380	275	245
200	640	470	350	305
100	720	515	390	340
50-mph operating speed				
800	280	210	165	135
600	350	260	195	170
400	430	320	240	210
200	550	400	300	270
100	615	445	335	295
60-mph operating speed				
800	230	170	125	115
600	290	210	160	140
400	365	270	200	175
200	450	330	250	215
100	505	370	275	240
Source: *A Policy on Geometric Design of Highway and Streets, AASHTO, 2011.*				

TABLE 8 ASSESSMENT OF JUSTIFICATION FOR LEFT TURN LANES UNDER 2018 AASHTO		
Left Turn Lane Volume (VPH)	**Major Road Two-Lane Highway Peak-Hour Volume (VPH/Lane)**	
	Three-Leg Intersection*	**Four-Leg Intersection***
	Warrants a Left Turn Lane	**Warrants a Left Turn Lane**
5	450 / 200	200 / 150
10	300 / 100	100 / 50
15	250 / 100	100 / 50
20	200 / 50	50 / <50
25	200 / 50	50 / <50
30	150 / 50	50 / <50
35	150 / 50	50 / <50
40	150 / 50	50 / <50
45	150 / 50	50 / <50
50 or more	100 / 50	50 / <50
Source: *A Policy on Geometric Design of Highway and Streets, AASHTO, 2018.* * Approach volume Urban areas / Rural area		

Assessment. The justification of a for left turn lane was considered at two locations, as noted in Table 9. The need for left turn lanes was considered based on factors such as the frequency of volumes reaching warrants levels, the availability of adequate sight distance and the nature of motorists attracted to the site.

Suisun Valley Road / Suisun Court. As previously determined sight distance is adequate at this intersection. A left turn lane could be justified based on the 2011 AASHTO criteria as the Friday p.m. volumes meet the minimum requirements; however, the method is based on a 40-mph speed, the lowest speed considered. For both Saturday alternatives the left turn lane is not justified. The 2018 methodology shows that a left turn lane could be justified for each of the study periods. While many motorists may not be familiar with the project location those left turning visitors will have just passed through a signalized intersections 250 feet to the north and are traveling through a 25-mph speed zone. A review of crash data from the California Highway Patrol SWITRS database between 2017 and 2019 showed few crashes along Suisun Valley Road in the project vicinity. Of the crashes noted they were generally due to speeding, DUI, improper turns leading to the hitting of an object and one improper starting / backing occurring north of Rockville Road.

As noted in the AASHTO manual the volume-based guidelines indicate situations where a left turn lane may be desirable, not necessarily situations where a left-turn lane is definitely needed. It is recommended that the speed zone along Suisun Valley Road south of Rockville Road be extended south to provide a longer 25-mph speed zone leading to the Rockville Road intersection.

Rockville Road / Project Driveway. It was previously identified that the sight distance at this location should be verified looking west as the location of the driveway relative to the existing tree line is undetermined. The projected volumes at this location will not satisfy the 2011 AASHTO criteria but will satisfy the 2018 methodology. A review of crash data from the California Highway Patrol SWITRS database between 2017 and 2019 showed few crashes along Rockville Road in the project vicinity. Of the crashes noted they were generally due to speeding and improper turns leading to the hitting of an object.

As noted in the AASHTO manual the volume-based guidelines indicate situations where a left turn lane may be desirable, not necessarily situations where a left-turn lane is definitely needed. It is recommended that the speed zone along Rockville Road east of Suisun Valley Road be extended east to provide a longer 25-mph speed zone leading into the project are and the Suisun Valley Road / Rockville Road intersection. The extension of the 25-mph speed zone will also reduce the needed sight distance to about 350 feet.

TABLE 9
SUMMARY OF LEFT TURN LANE ASSESSMENT
CUMULATIVE PLUS PROJECT CONDITIONS

Location	AASHTO 2011 Methodology						AASHTO 2018 Methodology	
	Friday Peak Hr Left Turn Volume	Major Street Traffic Volume		Percent Left Turns	Design Speed	Left Turn Lane Justified?	Major Street Volume Per lane	Left Turn Lane Justified?
		Advancing	Opposing					
Suisun Valley Rd / Suisun Valley Ct	28	388	660	7.2%	25 mph	Yes*	660	Yes
Site Access on Rockville Road	24	362	505	6.6%	45 mph	No	505	Yes
	Saturday Peak Hr Inbound Left Turn Volume							
Suisun Valley Rd / Suisun Valley Ct	33	448	506	7.4%	25 mph	No*	506	Yes
Site Access on Rockville Road	29	412	367	7.0%	45 mph	No	367	Yes
	Saturday Peak Hr Outbound Left Turn Volume							
Suisun Valley Rd / Suisun Valley Ct	24	439	469	5.5%	25 mph	No*	469	Yes
Site Access on Rockville Road	20	403	364	5.0%	45 mph	No	364	Yes

* 40 mph lowest operating speed; meets criteria for 40 mph

FINDINGS / RECOMMENDATIONS/ IMPROVEMENTS

The preceding analysis has identified project impacts that may occur without identifying any recommendations or improvements. The text that follows identifies a strategy for recommendations to the 'No Project' conditions or improvements to the 'Plus Project' conditions.

Existing Conditions

Recommendations. All intersections currently operate within agency thresholds, within LOS C conditions at Solano County intersections and LOS D conditions at City of Fairfield and Caltrans agency intersections. While operating at an acceptable level of service the Suisun Valley Road / Neitzell Road intersection meet the peak hour signal warrant.

Significant Transportation Effects for Existing plus Project Conditions

The project's VMT will exceed the County's VMT policy. The California Air Pollution Control Officers Association (CAPCOA) *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* publication provides alternative measures to reduce VMT and greenhouse gases. To reduce the project VMT the following CAPCOA trip reduction measures should be considered:

T-5 Implement Commute Trip Reduction Program – Voluntary

This strategy would implement a voluntary Commute Trip Reduction (CTR) program with employers to discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. Using the Greenhouse Gas Reduction Formula shown in the appendix the maximum GHG reduction is 4%. The applicant should consider working with *Solano Mobility* to develop trip reduction strategy.

T-7 Implement Commute Trip Reduction (CTR) Marketing

This measure would implement a marketing strategy to promote the project site employer's CTR program. Information sharing and marketing promote and educate employees about their travel choices to the employment location beyond driving such as carpooling, taking transit, walking, and biking, thereby reducing VMT and GHG emissions. Using the Greenhouse Gas Reduction Formula shown in the appendix the maximum GHG reduction is 4%.

T-9 Implement Subsidized or Discounted Transit Program

This measure would provide subsidized or discounted, or free transit passes for employees and/or residents. Reducing the out-of-pocket cost for choosing transit improves the competitiveness of transit against driving, increasing the total number of transit trips and decreasing vehicle trips. This decrease in vehicle trips results in reduced VMT and thus a reduction in GHG emissions. The closest route to the project is the City of Fairfield FAST Route #7 which operates between the Fairfield Transportation Center and the Cordelia Library with a stop at Solano Community College. This stop is less than ½ mile from the project site.

T-10 Provide End of Trip Facilities

This measure will install and maintain end-of-trip facilities for employee use. End-of-trip facilities include bike parking, bike lockers, showers, and personal lockers. The provision and maintenance of secure bike parking and related facilities encourages commuting by bicycle, thereby reducing VMT and GHG emissions. Using the Greenhouse Gas Reduction Formula shown in the appendix the maximum GHG reduction is 4.4%.

T-14 Provide Electric Vehicle Charging Infrastructure

Install onsite electric vehicle chargers in an amount beyond what is required by the 2019 California Green Building Standards (CALGreen) at buildings with designated parking areas (e.g., commercial, educational, retail, multifamily). This will enable drivers of Plug-In Hybrid Electric Vehicles (PHEVs) to drive a larger share of miles in electric mode (eVMT), as opposed to gasoline-powered mode, thereby displacing GHG emissions from gasoline consumption with a lesser amount of indirect emissions from electricity. Most PHEVs owners charge their vehicles at home overnight. When making trips during the day, the vehicle will switch to gasoline mode if/when it reaches its maximum all-electric range. The maximum GHG reduction is 11.9%.

T-18 Provide Pedestrian Network Improvement

This measure will increase the sidewalk coverage to improve pedestrian access. Providing sidewalks and an enhanced pedestrian network encourages people to walk instead of drive. This mode shift results in a reduction in VMT and GHG emissions. The installation of sidewalk along the Suisun Valley Road frontage will provide for a future connection to Solano Community College.

T-22 Implement Pedal Bikeshare Program (Non-Electric and/or Electric)

This measure will establish a bikeshare program. Bikeshare programs provide users with on-demand access to bikes for short-term use. This encourages a mode shift from vehicles to bicycles, displacing VMT and thus reducing GHG emissions. This program could be useful for visitors to the site exploring the Solano Wine Region along Suisun Valley Road. The maximum GHG reduction is 0.06%.

T-25 Extend Transit Network Coverage or Hours

This measure will expand the local transit network by either adding or modifying existing transit service or extending the operation hours to enhance the service near the project site. Starting services earlier in the morning and/or extending services to late-night hours can accommodate the commuting times of alternative-shift workers. This will encourage the use of transit and therefore reduce VMT and associated GHG emissions. This measure could extend Route 7 of the FAST network to the Suisun Valley Road / Rockville Road intersection to further encourage transit ridership.

Under Existing plus Project conditions, all intersections will continue to operate within acceptable levels of service. The Suisun Valley Road / Neitzell Road intersection will continue to operate at an acceptable level of service and meet the peak hour signal warrant.

The following recommendations are noted:

- The project should pay their fair share traffic impact fees in Solano County.

- The County should consider extending the 25-mph speed zone along Rockville Road to east of the project driveway as the site will be within the Rockville community. Shifting the zone to at least 150 feet east of the driveway will provide westbound motorists time to decelerate from 45 mph to 25 mph prior to reaching the driveway.

- The County should consider extending the 25-mph speed zone along Suisun Valley Road at least 100 feet south of the existing speed limit sign location. This will provide northbound motorists time to decelerate to 25-mph prior to reaching the intersection.

2040 Conditions

Under 2040 conditions all intersections are projected to operate within agency thresholds, within LOS C conditions at Solano County intersections and LOS D conditions at City of Fairfield and Caltrans agency intersections. The Suisun Valley Road / Neitzell Road intersection will operate at LOS D or better and meet the peak hour signal warrant.

Significant Transportation Effects for 2040 Plus Project Conditions

Under 2040 plus Project conditions, all intersections will continue to operate within acceptable levels of service. The Suisun Valley Road / Neitzell Road intersection will continue to operate at an acceptable level of service and meet the peak hour signal warrant.

REFERENCES

1. Solano County. November 2008. *Solano County General Plan.*
2. Solano County. February 2006. *Road Improvement Standards and Land Development Requirements.*
3. California Department of Transportation. *California Manual on Uniform Traffic Control Devices for Streets and Highways* – 2014 Edition, 2021 Addendum. Sacramento, CA
4. Caltrans *Highway Design Manual*, 2022
5. California Highway Patrol, *Statewide Integrated Traffic Records System (SWITRS)*. https://iswitrs.chp.ca.gov/reports/jsp/index.jsp
6. Transportation Research Board. *Highway Capacity Manual 6th Edition*. Washington, D.C.
7. Transportation Research Board. 1982. National Cooperative Highway Research Program (NCHRP) Report 255, *Highway Traffic Data for Urbanized Area Project Planning and Design.* Washington, D.C.

APPENDIX

(under separate cover)

Prepared by National Data & Surveying Services

Suisun Valley Rd & Rockville Rd

Peak Hour Turning Movement Count

ID: 21-080323-001
City: Fairfield

Day: Friday
Date: 12/3/2021

PEAK HOURS	COUNT PERIODS
NONE	NONE
NONE	NONE
04:00 PM - 05:00 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Suisun Valley Rd)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	23	140	57	0	114	PM

EASTBOUND (Rockville Rd)

AM	NOON	PM	
0	0	149	⇦
0	0	0	↶ 0
0	0	17	↱ 0
0	0	112	→ 0
0	0	30	↷ 0
AM	NOON	PM	

WESTBOUND (Rockville Rd)

PM	NOON	AM	
24	0	0	0 ↷
100	0	0	0 ←
84	0	0	0 ↰
0	0	0	0 ↶
327	0	0	⇨
PM	NOON	AM	

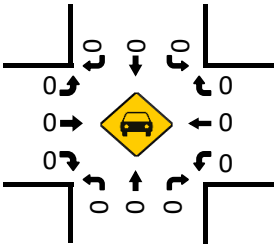
CONTROL: Signalized

TEV	0 AM	0 NOON	844 PM
PHF			0.87

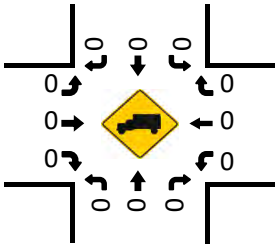
NORTHBOUND (Suisun Valley Rd)

PM	254	0	26	73	158	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

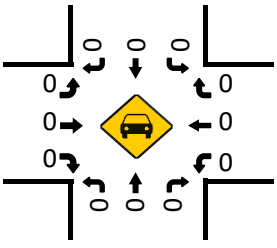
Cars (AM)



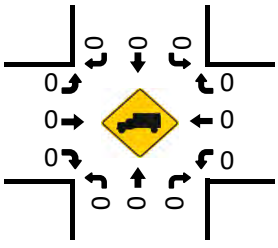
HT (AM)



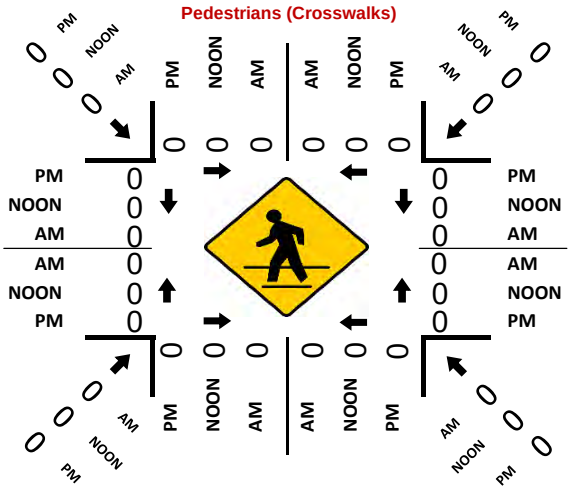
Cars (NOON)



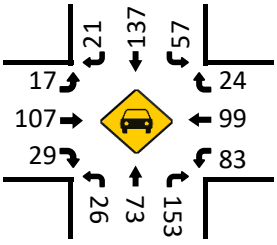
HT (NOON)



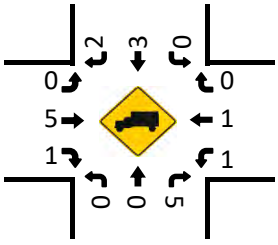
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Rockville Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-001
Date: 12/3/2021

Data - Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	8	23	54	0	17	30	9	0	6	32	9	0	23	24	8	0	243
4:15 PM	7	21	34	0	15	48	4	0	6	32	9	0	21	24	5	0	226
4:30 PM	9	17	39	0	9	38	3	0	4	25	6	0	24	32	3	0	209
4:45 PM	2	12	31	0	16	24	7	0	1	23	6	0	16	20	8	0	166
5:00 PM	10	19	39	0	10	28	4	0	2	31	8	0	14	26	3	0	194
5:15 PM	6	20	24	0	11	26	5	0	4	23	6	0	25	31	0	0	181
5:30 PM	3	18	17	0	5	27	3	0	2	29	3	0	10	23	3	0	143
5:45 PM	9	11	28	0	6	15	4	0	2	19	2	0	16	14	6	0	132
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	54	141	266	0	89	236	39	0	27	214	49	0	149	194	36	0	1494
APPROACH %'s :	11.71%	30.59%	57.70%	0.00%	24.45%	64.84%	10.71%	0.00%	9.31%	73.79%	16.90%	0.00%	39.31%	51.19%	9.50%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	26	73	158	0	57	140	23	0	17	112	30	0	84	100	24	0	844
PEAK HR FACTOR :	0.722	0.793	0.731	0.000	0.838	0.729	0.639	0.000	0.708	0.875	0.833	0.000	0.875	0.781	0.750	0.000	0.868
	0.756				0.821				0.846				0.881				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Rockville Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-001
Date: 12/3/2021

Data - Cars

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	8	23	53	0	17	29	8	0	6	31	9	0	22	24	8	0	238
4:15 PM	7	21	31	0	15	48	4	0	6	29	9	0	21	24	5	0	220
4:30 PM	9	17	38	0	9	38	3	0	4	24	5	0	24	31	3	0	205
4:45 PM	2	12	31	0	16	22	6	0	1	23	6	0	16	20	8	0	163
5:00 PM	10	19	39	0	10	28	4	0	2	31	8	0	12	26	3	0	192
5:15 PM	6	20	24	0	11	26	5	0	4	22	6	0	25	31	0	0	180
5:30 PM	3	18	16	0	5	25	3	0	2	29	3	0	10	23	3	0	140
5:45 PM	9	11	28	0	6	14	4	0	2	19	2	0	16	14	6	0	131
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	54	141	260	0	89	230	37	0	27	208	48	0	146	193	36	0	1469
APPROACH %'s :	11.87%	30.99%	57.14%	0.00%	25.00%	64.61%	10.39%	0.00%	9.54%	73.50%	16.96%	0.00%	38.93%	51.47%	9.60%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	26	73	153	0	57	137	21	0	17	107	29	0	83	99	24	0	826
PEAK HR FACTOR :	0.722	0.793	0.722	0.000	0.838	0.714	0.656	0.000	0.708	0.863	0.806	0.000	0.865	0.798	0.750	0.000	0.868
	0.750				0.802				0.832				0.888				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Rockville Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-001
Date: 12/3/2021

Data - HT

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	1	0	0	1	1	0	0	1	0	0	1	0	0	0	5
4:15 PM	0	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0	6
4:30 PM	0	0	1	0	0	0	0	0	0	1	1	0	0	1	0	0	4
4:45 PM	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:30 PM	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	6	0	0	6	2	0	0	6	1	0	3	1	0	0	25
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	0.00%	75.00%	25.00%	0.00%	0.00%	85.71%	14.29%	0.00%	75.00%	25.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	5	0	0	3	2	0	0	5	1	0	1	1	0	0	18
PEAK HR FACTOR :	0.000	0.000	0.417	0.000	0.000	0.375	0.500	0.000	0.000	0.417	0.250	0.000	0.250	0.250	0.000	0.000	0.750
	0.417				0.417				0.500				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Rockville Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-001
Date: 12/3/2021

Data - Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:30 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	2	0	0	0	0	0	0	0	1	0	0	4
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%					0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	1	0	0	2	0	0	0	0	0	0	0	1	0	0	4
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.500
	0.250				0.500								0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Rockville Rd
City: Fairfield
Project ID: 21-080323-001
Date: 12/3/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd		Rockville Rd		Rockville Rd		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

Abernathy Rd & Rockville Rd

Peak Hour Turning Movement Count

ID: 21-080323-002
City: Fairfield

Day: Friday
Date: 12/3/2021

PEAK HOURS	COUNT PERIODS
NONE	NONE
NONE	NONE
04:00 PM - 05:00 PM	4:00 PM - 06:00 PM

CONTROL: 4-Way Yield

	AM	NOON	PM
TEV	0	0	1110
PHF			0.90

SOUTHBOUND (Abernathy Rd)

	Left	Thru	Right	Diagonal	Total	
AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	31	141	55	2	333	PM

EASTBOUND (Rockville Rd)

	Left	Thru	Right	Diagonal
AM	0	0	0	0
NOON	0	0	0	0
PM	218	2	89	148

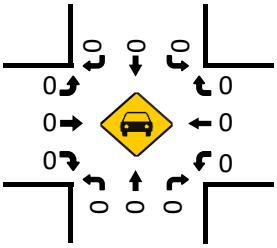
WESTBOUND (Rockville Rd)

	Left	Thru	Right	Diagonal
PM	23	109	26	0
NOON	0	0	0	0
AM	0	0	0	303

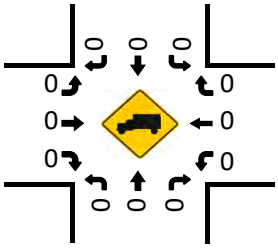
NORTHBOUND (Abernathy Rd)

	Left	Thru	Right	Diagonal	Total	
PM	256	0	76	219	100	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

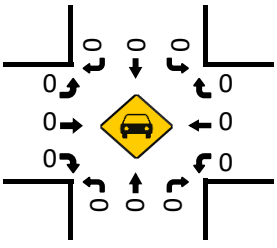
Cars (AM)



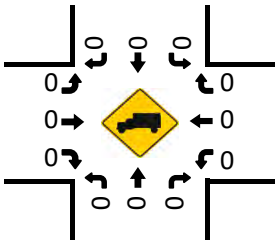
HT (AM)



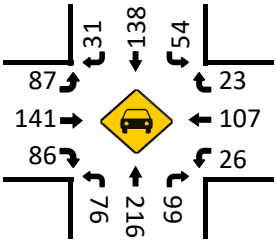
Cars (NOON)



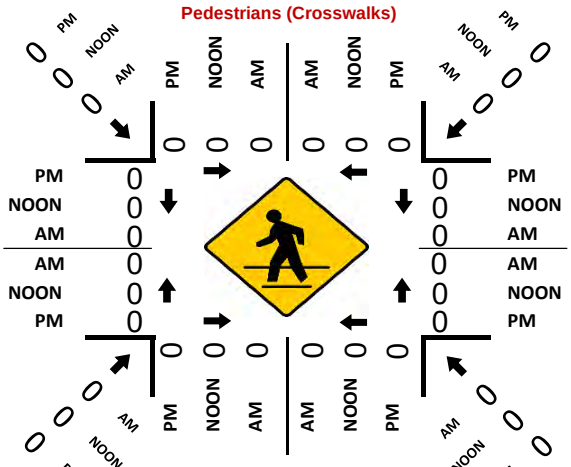
HT (NOON)



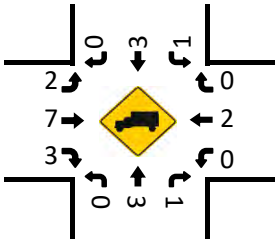
Cars (PM)



Pedestrians (Crosswalks)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Abernathy Rd & Rockville Rd
City: Fairfield
Control: 4-Way Yield

Project ID: 21-080323-002
Date: 12/3/2021

Data - Total

NS/EW Streets:	Abernathy Rd				Abernathy Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	25	60	28	0	13	34	6	0	34	46	25	1	4	29	3	0	308
4:15 PM	18	49	30	0	15	42	11	0	17	40	26	0	7	27	9	0	291
4:30 PM	11	57	26	0	16	36	8	0	25	33	18	1	7	37	6	0	281
4:45 PM	22	53	16	0	11	29	6	2	13	29	20	0	8	16	5	0	230
5:00 PM	19	65	29	0	7	25	6	0	25	33	26	0	8	24	5	0	272
5:15 PM	20	50	19	0	5	39	10	0	15	33	18	1	6	18	6	0	240
5:30 PM	17	43	33	0	7	28	1	0	13	34	14	0	5	22	1	0	218
5:45 PM	17	50	12	0	6	27	6	0	10	26	16	0	5	23	2	0	200
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	149	427	193	0	80	260	54	2	152	274	163	3	50	196	37	0	2040
APPROACH %'s :	19.38%	55.53%	25.10%	0.00%	20.20%	65.66%	13.64%	0.51%	25.68%	46.28%	27.53%	0.51%	17.67%	69.26%	13.07%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	76	219	100	0	55	141	31	2	89	148	89	2	26	109	23	0	1110
PEAK HR FACTOR :	0.760	0.913	0.833	0.000	0.859	0.839	0.705	0.250	0.654	0.804	0.856	0.500	0.813	0.736	0.639	0.000	0.901
	0.874				0.842				0.774				0.790				

National Data & Surveying Services Intersection Turning Movement Count

Location: Abernathy Rd & Rockville Rd
City: Fairfield
Control: 4-Way Yield

Project ID: 21-080323-002
Date: 12/3/2021

Data - Cars

NS/EW Streets:	Abernathy Rd				Abernathy Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	25	59	28	0	12	34	6	0	33	45	25	1	4	28	3	0	303
4:15 PM	18	47	30	0	15	41	11	0	17	35	25	0	7	26	9	0	281
4:30 PM	11	57	26	0	16	35	8	0	24	32	17	1	7	37	6	0	277
4:45 PM	22	53	15	0	11	28	6	2	13	29	19	0	8	16	5	0	227
5:00 PM	17	65	29	0	7	25	6	0	25	33	25	0	8	24	5	0	269
5:15 PM	20	50	19	0	5	39	10	0	15	31	18	1	6	18	6	0	238
5:30 PM	17	43	32	0	7	28	1	0	13	33	14	0	4	22	1	0	215
5:45 PM	17	50	11	0	6	27	6	0	10	25	16	0	5	23	2	0	198
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	147	424	190	0	79	257	54	2	150	263	159	3	49	194	37	0	2008
APPROACH %'s :	19.32%	55.72%	24.97%	0.00%	20.15%	65.56%	13.78%	0.51%	26.09%	45.74%	27.65%	0.52%	17.50%	69.29%	13.21%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	76	216	99	0	54	138	31	2	87	141	86	2	26	107	23	0	1088
PEAK HR FACTOR :	0.760	0.915	0.825	0.000	0.844	0.841	0.705	0.250	0.659	0.783	0.860	0.500	0.813	0.723	0.639	0.000	0.898
	0.873				0.840				0.760				0.780				

National Data & Surveying Services Intersection Turning Movement Count

Location: Abernathy Rd & Rockville Rd
City: Fairfield
Control: 4-Way Yield

Project ID: 21-080323-002
Date: 12/3/2021

Data - HT

NS/EW Streets:	Abernathy Rd				Abernathy Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	1	0	0	0	1	1	0	0	0	1	0	0	5
4:15 PM	0	2	0	0	0	1	0	0	0	5	1	0	0	1	0	0	10
4:30 PM	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	4
4:45 PM	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	3
5:00 PM	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
5:30 PM	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	3
5:45 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	3	3	0	1	3	0	0	2	11	4	0	1	2	0	0	32
APPROACH %'s :	25.00%	37.50%	37.50%	0.00%	25.00%	75.00%	0.00%	0.00%	11.76%	64.71%	23.53%	0.00%	33.33%	66.67%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	3	1	0	1	3	0	0	2	7	3	0	0	2	0	0	22
PEAK HR FACTOR :	0.000	0.375	0.250	0.000	0.250	0.750	0.000	0.000	0.500	0.350	0.750	0.000	0.000	0.500	0.000	0.000	0.550
	0.500				1.000				0.500				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Abernathy Rd & Rockville Rd
City: Fairfield
Control: 4-Way Yield

Project ID: 21-080323-002
Date: 12/3/2021

Data - Bikes

NS/EW Streets:	Abernathy Rd				Abernathy Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	3
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%					0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.500
	0.250								0.250								

National Data & Surveying Services Intersection Turning Movement Count

Location: Abernathy Rd & Rockville Rd
City: Fairfield
Project ID: 21-080323-002
Date: 12/3/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Abernathy Rd		Abernathy Rd		Rockville Rd		Rockville Rd		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

Suisun Valley Rd & Mangels Blvd/Business Center Dr

Peak Hour Turning Movement Count

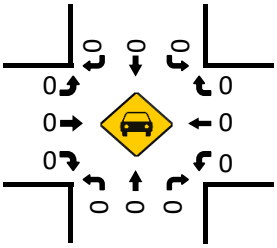
ID: 21-080323-003
City: Fairfield

Day: Friday
Date: 12/3/2021

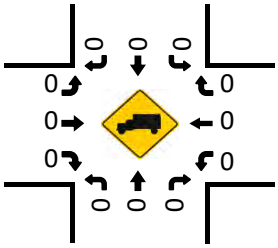
PEAK HOURS		COUNT PERIODS
AM	NONE	AM
NOON	NONE	NOON
PM	04:15 PM - 05:15 PM	PM

				Suisun Valley Rd							
				SOUTHBOUND							
			AM	0	0	0	0	0	AM		
			NOON	0	0	0	0	0	NOON		
			PM	142	120	7	0	251	PM		
				0	0	0	0				
Mangels Blvd/Business Center Dr	EASTBOUND	AM	NOON	PM					PM	NOON	AM	WESTBOUND	Mangels Blvd/Business Center Dr
		0	0	392				0	9	0	0		
		0	0	0	0	CONTROL		0	115	0	0		
		0	0	78	0	Signalized		0	26	0	0		
		0	0	278	0	TEV	0 AM / 0 NOON / 1357 PM	0	0	0	0		
		0	0	202	0	PHF	0.88		366	0	0		
		AM	NOON	PM					PM	NOON	AM		
					0	0	0	0					
				PM	348	0	135	164	81	PM			
				NOON	0	0	0	0	0	NOON			
				AM	0	0	0	0	0	AM			
				NORTHBOUND									
				Suisun Valley Rd									

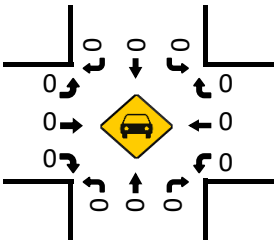
Cars (AM)



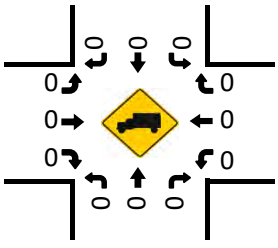
HT (AM)



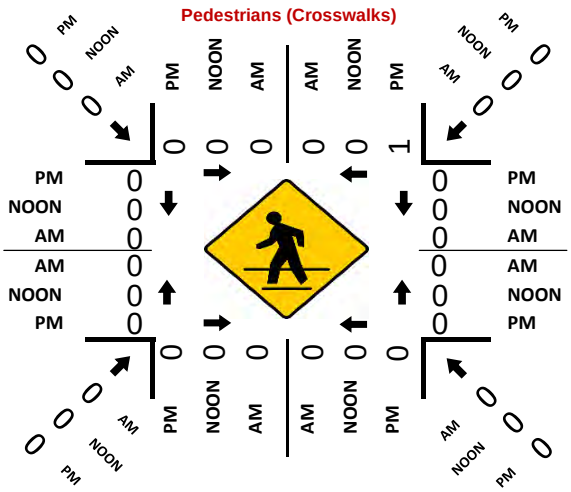
Cars (NOON)



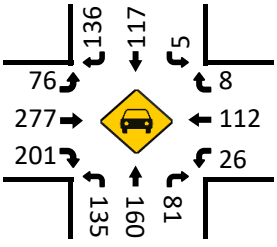
HT (NOON)



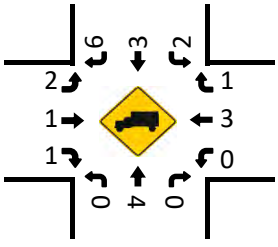
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Mangels Blvd/Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-003
Date: 12/3/2021

Data - Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Mangels Blvd/Business Center Dr				Mangels Blvd/Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	33	53	35	0	0	31	30	0	20	58	44	0	6	30	0	0	340
4:15 PM	28	42	26	0	0	30	47	0	19	76	40	0	2	28	5	0	343
4:30 PM	37	37	16	0	4	35	33	0	25	69	48	0	11	31	1	0	347
4:45 PM	38	44	16	0	0	20	31	0	17	52	33	0	3	27	1	0	282
5:00 PM	32	41	23	0	3	35	31	0	17	81	81	0	10	29	2	0	385
5:15 PM	36	48	10	0	2	31	36	0	20	49	47	0	4	24	4	0	311
5:30 PM	34	37	11	0	5	23	24	0	16	53	38	0	6	33	0	0	280
5:45 PM	38	46	16	0	0	11	31	0	17	52	33	0	3	27	1	0	275
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	276	348	153	0	14	216	263	0	151	490	364	0	45	229	14	0	2563
APPROACH %'s :	35.52%	44.79%	19.69%	0.00%	2.84%	43.81%	53.35%	0.00%	15.02%	48.76%	36.22%	0.00%	15.63%	79.51%	4.86%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	135	164	81	0	7	120	142	0	78	278	202	0	26	115	9	0	1357
PEAK HR FACTOR :	0.888	0.932	0.779	0.000	0.438	0.857	0.755	0.000	0.780	0.858	0.623	0.000	0.591	0.927	0.450	0.000	0.881
	0.969				0.873				0.779				0.872				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Mangels Blvd/Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-003
Date: 12/3/2021

Data - Cars

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Mangels Blvd/Business Center Dr				Mangels Blvd/Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	32	51	34	0	0	30	28	0	20	57	43	0	6	29	0	0	330
4:15 PM	28	39	26	0	0	30	44	0	19	75	39	0	2	26	4	0	332
4:30 PM	37	36	16	0	2	35	33	0	23	69	48	0	11	30	1	0	341
4:45 PM	38	44	16	0	0	18	30	0	17	52	33	0	3	27	1	0	279
5:00 PM	32	41	23	0	3	34	29	0	17	81	81	0	10	29	2	0	382
5:15 PM	36	46	10	0	2	31	34	0	20	49	47	0	4	24	3	0	306
5:30 PM	34	37	11	0	4	23	23	0	15	53	37	0	5	33	0	0	275
5:45 PM	38	44	16	0	0	9	30	0	17	52	33	0	3	27	1	0	270
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	275	338	152	0	11	210	251	0	148	488	361	0	44	225	12	0	2515
APPROACH %'s :	35.95%	44.18%	19.87%	0.00%	2.33%	44.49%	53.18%	0.00%	14.84%	48.95%	36.21%	0.00%	15.66%	80.07%	4.27%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	135	160	81	0	5	117	136	0	76	277	201	0	26	112	8	0	1334
PEAK HR FACTOR :	0.888	0.909	0.779	0.000	0.417	0.836	0.773	0.000	0.826	0.855	0.620	0.000	0.591	0.933	0.500	0.000	0.873
	0.959				0.872				0.774				0.869				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Mangels Blvd/Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-003
Date: 12/3/2021

Data - HT

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Mangels Blvd/Business Center Dr				Mangels Blvd/Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	2	1	0	0	1	2	0	0	1	1	0	0	1	0	0	10
4:15 PM	0	3	0	0	0	0	3	0	0	1	1	0	0	2	1	0	11
4:30 PM	0	1	0	0	2	0	0	0	2	0	0	0	0	1	0	0	6
4:45 PM	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	2	0	0	0	0	2	0	0	0	0	0	0	0	1	0	5
5:30 PM	0	0	0	0	1	0	1	0	1	0	1	0	1	0	0	0	5
5:45 PM	0	2	0	0	0	2	1	0	0	0	0	0	0	0	0	0	5
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	10	1	0	3	6	12	0	3	2	3	0	1	4	2	0	48
APPROACH %'s :	8.33%	83.33%	8.33%	0.00%	14.29%	28.57%	57.14%	0.00%	37.50%	25.00%	37.50%	0.00%	14.29%	57.14%	28.57%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	4	0	0	2	3	6	0	2	1	1	0	0	3	1	0	23
PEAK HR FACTOR :	0.000	0.333	0.000	0.000	0.250	0.375	0.500	0.000	0.250	0.250	0.250	0.000	0.000	0.375	0.250	0.000	0.523
	0.333				0.917				0.500				0.333				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Mangels Blvd/Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-003
Date: 12/3/2021

Data - Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Mangels Blvd/Business Center Dr				Mangels Blvd/Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0	4
APPROACH %'s :	0.00%	33.33%	66.67%	0.00%									0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3
PEAK HR FACTOR :	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375
	0.375																

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Mangels Blvd/Business Center Dr Project ID: 21-080323-003
City: Fairfield Date: 12/3/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd		Mangels Blvd/Business Center Dr		Mangels Blvd/Business Center Dr		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	1	0	0	0	0	0	0	1
4:15 PM	0	1	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	2	0	0	0	0	0	0	2
APPROACH %'s :	0.00%	100.00%							
PEAK HR :	04:15 PM - 05:15 PM								TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	1
PEAK HR FACTOR :		0.250							0.250
	0.250								

Prepared by National Data & Surveying Services

Suisun Valley Rd & Neitzel Rd

Peak Hour Turning Movement Count

ID: 21-080323-004
City: Fairfield

Day: Friday
Date: 12/3/2021

PEAK HOURS	COUNT PERIODS
NONE	NONE
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Suisun Valley Rd)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	34	316	0	1	377	PM

EASTBOUND (Neitzel Rd)

AM	NOON	PM	
0	0	128	⇦
0	0	0	↶ 0
0	0	93	↱ 0
0	0	0	→ 0
0	0	223	↴ 0
AM	NOON	PM	

WESTBOUND (Neitzel Rd)

PM	NOON	AM	
0	0	0	↰ 0
0	0	0	← 0
0	0	0	↰ 0
0	0	0	↶ 0
0	0	0	⇨
PM	NOON	AM	

CONTROL

3-Way Stop(NB/SB/EB)

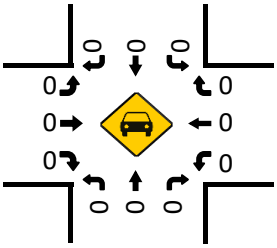
TEV	0 AM	0 NOON	1046 PM
PHF			0.86

NORTHBOUND (Suisun Valley Rd)

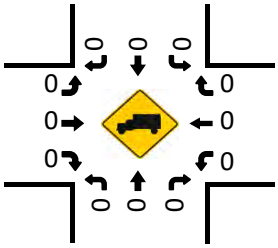
PM	541	2	94	283	0 PM
NOON	0	0	0	0	0 NOON
AM	0	0	0	0	0 AM

↓ 0 0 0 0 ↰ ↰ ↑ ↱

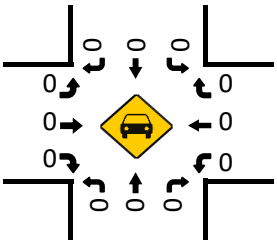
Cars (AM)



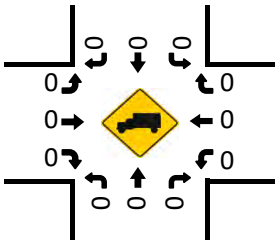
HT (AM)



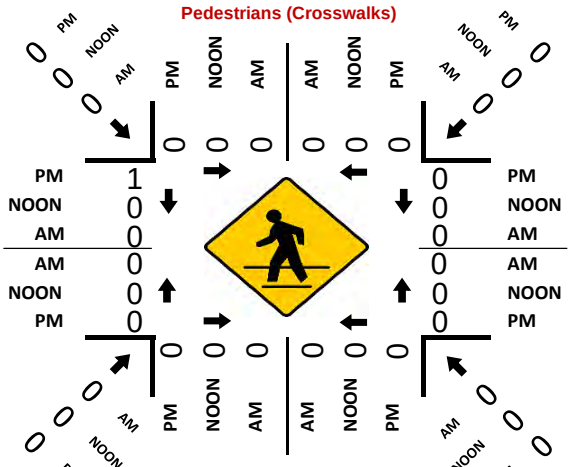
Cars (NOON)



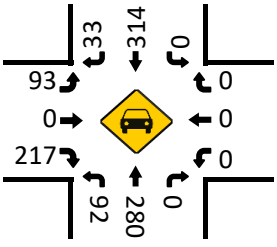
HT (NOON)



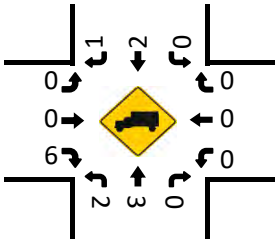
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Neitzel Rd
City: Fairfield
Control: 3-Way Stop(NB/SB/EB)

Project ID: 21-080323-004
Date: 12/3/2021

Data - Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Neitzel Rd				Neitzel Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	22	92	0	0	0	74	10	0	31	0	55	0	0	0	0	0	284
4:15 PM	17	65	0	1	0	65	7	0	26	0	53	0	0	0	0	0	234
4:30 PM	25	66	0	1	0	78	11	0	27	0	65	0	0	0	0	0	273
4:45 PM	18	71	0	0	0	52	6	0	22	0	58	0	0	0	0	0	227
5:00 PM	26	86	0	0	0	113	10	1	16	0	53	0	0	0	0	0	305
5:15 PM	25	60	0	1	0	73	7	0	28	0	47	0	0	0	0	0	241
5:30 PM	19	54	0	3	0	65	3	0	33	0	75	0	0	0	0	0	252
5:45 PM	17	72	0	2	0	57	4	0	14	0	66	0	0	0	0	0	232
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	169	566	0	8	0	577	58	1	197	0	472	0	0	0	0	0	2048
APPROACH %'s :	22.75%	76.18%	0.00%	1.08%	0.00%	90.72%	9.12%	0.16%	29.45%	0.00%	70.55%	0.00%					
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	94	283	0	2	0	316	34	1	93	0	223	0	0	0	0	0	1046
PEAK HR FACTOR :	0.904	0.823	0.000	0.500	0.000	0.699	0.773	0.250	0.830	0.000	0.858	0.000	0.000	0.000	0.000	0.000	0.857
	0.846				0.708				0.859								

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Neitzel Rd
City: Fairfield
Control: 3-Way Stop(NB/SB/EB)

Project ID: 21-080323-004
Date: 12/3/2021

Data - Cars

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Neitzel Rd				Neitzel Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	22	89	0	0	0	73	10	0	30	0	55	0	0	0	0	0	279
4:15 PM	16	62	0	1	0	63	7	0	26	0	51	0	0	0	0	0	226
4:30 PM	25	65	0	1	0	78	11	0	27	0	65	0	0	0	0	0	272
4:45 PM	17	71	0	0	0	51	5	0	22	0	54	0	0	0	0	0	220
5:00 PM	26	86	0	0	0	112	10	1	16	0	52	0	0	0	0	0	303
5:15 PM	24	58	0	1	0	73	7	0	28	0	46	0	0	0	0	0	237
5:30 PM	19	54	0	3	0	63	3	0	33	0	73	0	0	0	0	0	248
5:45 PM	17	70	0	2	0	55	4	0	14	0	66	0	0	0	0	0	228
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	166	555	0	8	0	568	57	1	196	0	462	0	0	0	0	0	2013
APPROACH %'s :	22.77%	76.13%	0.00%	1.10%	0.00%	90.73%	9.11%	0.16%	29.79%	0.00%	70.21%	0.00%					
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	92	280	0	2	0	314	33	1	93	0	217	0	0	0	0	0	1032
PEAK HR FACTOR :	0.885	0.814	0.000	0.500	0.000	0.701	0.750	0.250	0.830	0.000	0.835	0.000	0.000	0.000	0.000	0.000	0.851
	0.835				0.707				0.842								

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Neitzel Rd
City: Fairfield
Control: 3-Way Stop(NB/SB/EB)

Project ID: 21-080323-004
Date: 12/3/2021

Data - HT

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Neitzel Rd				Neitzel Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	3	0	0	0	1	0	0	1	0	0	0	0	0	0	0	5
4:15 PM	1	3	0	0	0	2	0	0	0	0	2	0	0	0	0	0	8
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	1	0	0	0	0	1	1	0	0	0	4	0	0	0	0	0	7
5:00 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
5:15 PM	1	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4
5:30 PM	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	4
5:45 PM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	11	0	0	0	9	1	0	1	0	10	0	0	0	0	0	35
APPROACH %'s :	21.43%	78.57%	0.00%	0.00%	0.00%	90.00%	10.00%	0.00%	9.09%	0.00%	90.91%	0.00%					
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	2	3	0	0	0	2	1	0	0	0	6	0	0	0	0	0	14
PEAK HR FACTOR :	0.500	0.375	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.500
	0.417				0.375				0.375								

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Neitzel Rd
City: Fairfield
Control: 3-Way Stop(NB/SB/EB)

Project ID: 21-080323-004
Date: 12/3/2021

Data - Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Neitzel Rd				Neitzel Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%					100.00%	0.00%	0.00%	0.00%					
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
	0.250																

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Neitzel Rd
City: Fairfield
Project ID: 21-080323-004
Date: 12/3/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd		Neitzel Rd		Neitzel Rd		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	1	1
APPROACH %'s :							0.00%	100.00%	
PEAK HR :	04:30 PM - 05:30 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	1	1
PEAK HR FACTOR :								0.250	0.250
								0.250	

Prepared by National Data & Surveying Services

Pittman Rd & I-80 EB Ramps

Peak Hour Turning Movement Count

ID: 21-080323-005
City: Fairfield

Day: Friday
Date: 12/3/2021

PEAK HOURS	COUNT PERIODS
NONE	NONE
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

CONTROL: Signalized

	AM	NOON	PM
TEV	0	0	1612
PHF			0.92

SOUTHBOUND (Pittman Rd)

	L	T	R	U	Total	
AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	386	160	0	384	PM

EASTBOUND (I-80 EB Ramps)

	AM	NOON	PM
U	0	0	0
L	0	0	0
T	0	0	167
R	0	0	1
	0	0	273

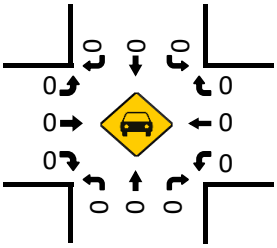
WESTBOUND (I-80 EB Ramps)

	PM	NOON	AM
U	0	0	0
L	0	0	0
T	0	0	0
R	0	0	0
	569	0	0

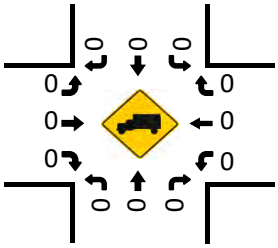
NORTHBOUND (Pittman Rd)

	L	T	R	U	Total	
PM	659	0	0	217	408	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

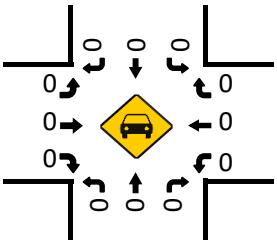
Cars (AM)



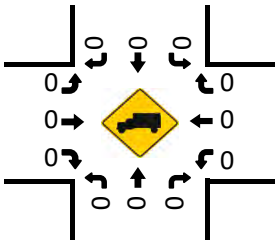
HT (AM)



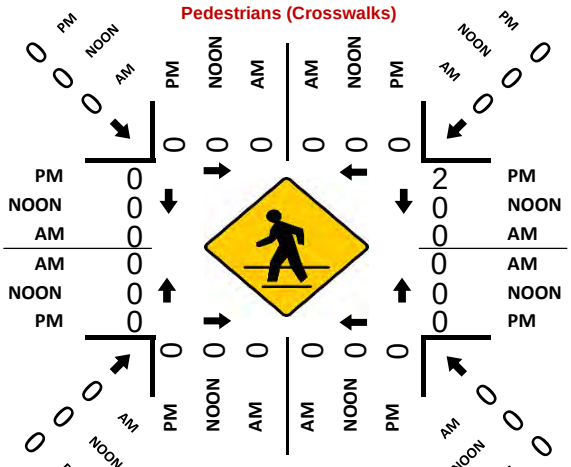
Cars (NOON)



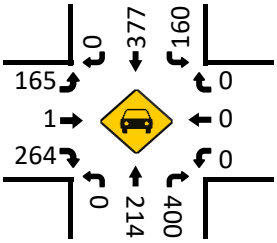
HT (NOON)



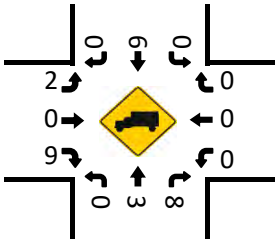
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Pittman Rd & I-80 EB Ramps
City: Fairfield
Control: Signalized

Project ID: 21-080323-005
Date: 12/3/2021

Data - Total

NS/EW Streets:	Pittman Rd				Pittman Rd				I-80 EB Ramps				I-80 EB Ramps				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	62	83	0	32	93	0	0	46	1	73	0	0	0	0	0	390
4:15 PM	0	51	90	0	33	86	0	0	35	0	59	0	0	0	0	0	354
4:30 PM	0	48	111	0	34	114	0	0	42	0	80	0	0	0	0	0	429
4:45 PM	0	52	94	0	25	85	0	0	40	0	66	0	0	0	0	0	362
5:00 PM	0	55	107	0	57	101	0	0	55	1	61	0	0	0	0	0	437
5:15 PM	0	62	96	0	44	86	0	0	30	0	66	0	0	0	0	0	384
5:30 PM	0	48	86	0	31	106	0	0	25	1	62	0	0	0	0	0	359
5:45 PM	0	55	101	0	26	101	0	0	32	1	81	0	0	0	0	0	397
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	433	768	0	282	772	0	0	305	4	548	0	0	0	0	0	3112
APPROACH %'s :	0.00%	36.05%	63.95%	0.00%	26.76%	73.24%	0.00%	0.00%	35.59%	0.47%	63.94%	0.00%					
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	217	408	0	160	386	0	0	167	1	273	0	0	0	0	0	1612
PEAK HR FACTOR :	0.000	0.875	0.919	0.000	0.702	0.846	0.000	0.000	0.759	0.250	0.853	0.000	0.000	0.000	0.000	0.000	0.922
		0.965				0.864				0.904							

National Data & Surveying Services Intersection Turning Movement Count

Location: Pittman Rd & I-80 EB Ramps
City: Fairfield
Control: Signalized

Project ID: 21-080323-005
Date: 12/3/2021

Data - Cars

NS/EW Streets:	Pittman Rd				Pittman Rd				I-80 EB Ramps				I-80 EB Ramps				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	61	81	0	31	93	0	0	45	1	72	0	0	0	0	0	384
4:15 PM	0	48	89	0	32	83	0	0	34	0	56	0	0	0	0	0	342
4:30 PM	0	48	109	0	34	114	0	0	41	0	78	0	0	0	0	0	424
4:45 PM	0	51	91	0	25	80	0	0	40	0	64	0	0	0	0	0	351
5:00 PM	0	55	106	0	57	99	0	0	55	1	59	0	0	0	0	0	432
5:15 PM	0	60	94	0	44	84	0	0	29	0	63	0	0	0	0	0	374
5:30 PM	0	48	84	0	30	104	0	0	25	1	59	0	0	0	0	0	351
5:45 PM	0	55	100	0	25	100	0	0	30	1	79	0	0	0	0	0	390
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	426	754	0	278	757	0	0	299	4	530	0	0	0	0	0	3048
APPROACH %'s :	0.00%	36.10%	63.90%	0.00%	26.86%	73.14%	0.00%	0.00%	35.89%	0.48%	63.63%	0.00%					
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	214	400	0	160	377	0	0	165	1	264	0	0	0	0	0	1581
PEAK HR FACTOR :	0.000	0.892	0.917	0.000	0.702	0.827	0.000	0.000	0.750	0.250	0.846	0.000	0.000	0.000	0.000	0.000	0.915
		0.953				0.861				0.903							

National Data & Surveying Services Intersection Turning Movement Count

Location: Pittman Rd & I-80 EB Ramps
City: Fairfield
Control: Signalized

Project ID: 21-080323-005
Date: 12/3/2021

Data - HT

NS/EW Streets:	Pittman Rd				Pittman Rd				I-80 EB Ramps				I-80 EB Ramps				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	2	0	1	0	0	0	1	0	1	0	0	0	0	0	6
4:15 PM	0	3	1	0	1	3	0	0	1	0	3	0	0	0	0	0	12
4:30 PM	0	0	2	0	0	0	0	0	1	0	2	0	0	0	0	0	5
4:45 PM	0	1	3	0	0	5	0	0	0	0	2	0	0	0	0	0	11
5:00 PM	0	0	1	0	0	2	0	0	0	0	2	0	0	0	0	0	5
5:15 PM	0	2	2	0	0	2	0	0	1	0	3	0	0	0	0	0	10
5:30 PM	0	0	2	0	1	2	0	0	0	0	3	0	0	0	0	0	8
5:45 PM	0	0	1	0	1	1	0	0	2	0	2	0	0	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	7	14	0	4	15	0	0	6	0	18	0	0	0	0	0	64
APPROACH %'s :	0.00%	33.33%	66.67%	0.00%	21.05%	78.95%	0.00%	0.00%	25.00%	0.00%	75.00%	0.00%					
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	3	8	0	0	9	0	0	2	0	9	0	0	0	0	0	31
PEAK HR FACTOR :	0.000	0.375	0.667	0.000	0.000	0.450	0.000	0.000	0.500	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.705
	0.688				0.450				0.688								

National Data & Surveying Services Intersection Turning Movement Count

Location: Pittman Rd & I-80 EB Ramps
City: Fairfield
Control: Signalized

Project ID: 21-080323-005
Date: 12/3/2021

Data - Bikes

NS/EW Streets:	Pittman Rd				Pittman Rd				I-80 EB Ramps				I-80 EB Ramps				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%													
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
	0.250																

National Data & Surveying Services Intersection Turning Movement Count

Location: Pittman Rd & I-80 EB Ramps
City: Fairfield
Project ID: 21-080323-005
Date: 12/3/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Pittman Rd		Pittman Rd		I-80 EB Ramps		I-80 EB Ramps		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	1	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	1	0	0	1
5:30 PM	0	0	0	0	0	0	1	0	1
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	2	1	0	3
APPROACH %'s :					0.00%	100.00%	100.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	2	0	0	2
PEAK HR FACTOR :						0.500			0.500
						0.500			

Prepared by National Data & Surveying Services

Green Valley Rd & Business Center Dr

Peak Hour Turning Movement Count

ID: 21-080323-006
City: Fairfield

Day: Friday
Date: 12/3/2021

PEAK HOURS	COUNT PERIODS
NONE	NONE
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

CONTROL: Signalized

	AM	NOON	PM
TEV	0	0	3054
PHF			0.96

SOUTHBOUND (Green Valley Rd)

	Left	Thru	Thru	Right	Total	
AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	112	282	4	0	492	PM

EASTBOUND (Business Center Dr)

AM	NOON	PM	
0	0	931	⇦
0	0	4	↶ 0
0	0	128	↱ 0
0	0	178	→ 0
0	0	700	↷ 0

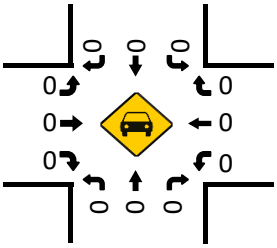
WESTBOUND (Business Center Dr)

PM	NOON	AM	
109	0	0	0 ↰
435	0	0	0 ←
384	0	0	0 ↶
0	0	0	0 ↷
265	0	0	⇨

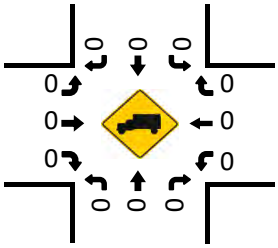
NORTHBOUND (Green Valley Rd)

	Left	Thru	Thru	Right	Total	
PM	1366	0	380	255	83	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

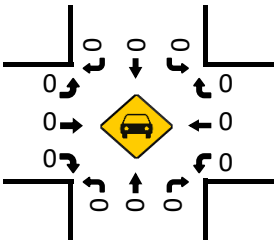
Cars (AM)



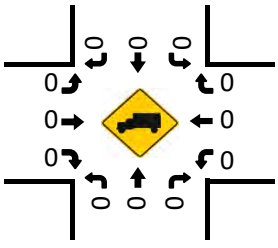
HT (AM)



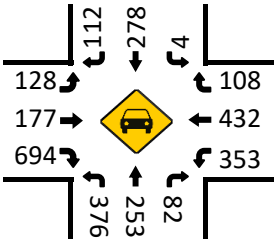
Cars (NOON)



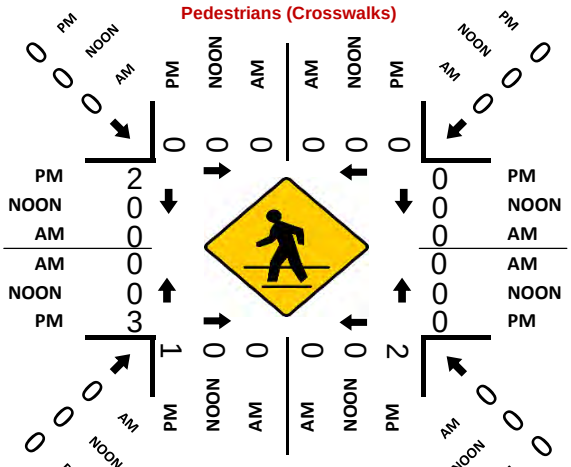
HT (NOON)



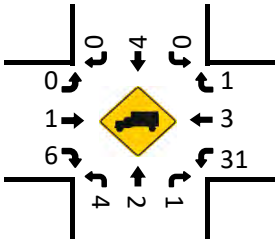
Cars (PM)



Pedestrians (Crosswalks)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Green Valley Rd & Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-006
Date: 12/3/2021

Data - Total

NS/EW Streets:	Green Valley Rd				Green Valley Rd				Business Center Dr				Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	90	52	21	0	1	59	24	0	46	49	198	0	112	95	14	0	761
4:15 PM	113	52	26	0	1	64	24	0	46	42	169	0	78	105	26	0	746
4:30 PM	95	62	26	0	2	75	25	0	27	52	209	1	102	92	25	0	793
4:45 PM	102	59	19	0	1	65	30	0	31	37	159	1	85	117	28	0	734
5:00 PM	81	61	21	0	0	75	29	0	38	55	168	1	92	115	28	0	764
5:15 PM	102	73	17	0	1	67	28	0	32	34	164	1	105	111	28	0	763
5:30 PM	70	73	28	0	1	67	24	0	43	40	157	1	65	84	19	0	672
5:45 PM	92	43	13	0	2	52	22	0	39	29	156	0	58	69	14	0	589
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	745	475	171	0	9	524	206	0	302	338	1380	5	697	788	182	0	5822
APPROACH %'s :	53.56%	34.15%	12.29%	0.00%	1.22%	70.91%	27.88%	0.00%	14.91%	16.69%	68.15%	0.25%	41.81%	47.27%	10.92%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	380	255	83	0	4	282	112	0	128	178	700	4	384	435	109	0	3054
PEAK HR FACTOR :	0.931	0.873	0.798	0.000	0.500	0.940	0.933	0.000	0.842	0.809	0.837	1.000	0.914	0.929	0.973	0.000	0.963
	0.935				0.957				0.874				0.951				

National Data & Surveying Services Intersection Turning Movement Count

Location: Green Valley Rd & Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-006
Date: 12/3/2021

Data - Cars

NS/EW Streets:	Green Valley Rd				Green Valley Rd				Business Center Dr				Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	90	51	21	0	1	59	24	0	46	49	197	0	103	94	14	0	749
4:15 PM	111	51	26	0	1	64	24	0	45	42	167	0	68	104	26	0	729
4:30 PM	94	62	25	0	2	75	25	0	27	51	207	1	92	92	24	0	777
4:45 PM	101	59	19	0	1	63	30	0	31	37	158	1	77	116	28	0	721
5:00 PM	81	60	21	0	0	73	29	0	38	55	166	1	88	115	28	0	755
5:15 PM	100	72	17	0	1	67	28	0	32	34	163	1	96	109	28	0	748
5:30 PM	70	73	28	0	1	66	24	0	43	39	155	1	64	83	19	0	666
5:45 PM	92	42	13	0	2	49	22	0	39	28	156	0	51	69	14	0	577
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	739	470	170	0	9	516	206	0	301	335	1369	5	639	782	181	0	5722
APPROACH %'s :	53.59%	34.08%	12.33%	0.00%	1.23%	70.59%	28.18%	0.00%	14.98%	16.67%	68.11%	0.25%	39.89%	48.81%	11.30%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	376	253	82	0	4	278	112	0	128	177	694	4	353	432	108	0	3001
PEAK HR FACTOR :	0.931	0.878	0.820	0.000	0.500	0.927	0.933	0.000	0.842	0.805	0.838	1.000	0.919	0.931	0.964	0.000	0.966
	0.940				0.966				0.877				0.958				

National Data & Surveying Services Intersection Turning Movement Count

Location: Green Valley Rd & Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-006
Date: 12/3/2021

Data - HT

NS/EW Streets:	Green Valley Rd				Green Valley Rd				Business Center Dr				Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	0	0	0	0	0	1	0	9	1	0	0	12
4:15 PM	2	1	0	0	0	0	0	0	1	0	2	0	10	1	0	0	17
4:30 PM	1	0	1	0	0	0	0	0	0	1	2	0	10	0	1	0	16
4:45 PM	1	0	0	0	0	2	0	0	0	0	1	0	8	1	0	0	13
5:00 PM	0	1	0	0	0	2	0	0	0	0	2	0	4	0	0	0	9
5:15 PM	2	1	0	0	0	0	0	0	0	0	1	0	9	2	0	0	15
5:30 PM	0	0	0	0	0	1	0	0	0	1	2	0	1	1	0	0	6
5:45 PM	0	1	0	0	0	3	0	0	0	1	0	0	7	0	0	0	12
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	5	1	0	0	8	0	0	1	3	11	0	58	6	1	0	100
APPROACH %'s :	50.00%	41.67%	8.33%	0.00%	0.00%	100.00%	0.00%	0.00%	6.67%	20.00%	73.33%	0.00%	89.23%	9.23%	1.54%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	4	2	1	0	0	4	0	0	0	1	6	0	31	3	1	0	53
PEAK HR FACTOR :	0.500	0.500	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.250	0.750	0.000	0.775	0.375	0.250	0.000	0.828
	0.583				0.500				0.583				0.795				

National Data & Surveying Services Intersection Turning Movement Count

Location: Green Valley Rd & Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-006
Date: 12/3/2021

Data - Bikes

NS/EW Streets:	Green Valley Rd				Green Valley Rd				Business Center Dr				Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%									
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
					0.250												

National Data & Surveying Services Intersection Turning Movement Count

Location: Green Valley Rd & Business Center Dr
City: Fairfield
Project ID: 21-080323-006
Date: 12/3/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Green Valley Rd		Green Valley Rd		Business Center Dr		Business Center Dr		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	1	0	1
4:15 PM	0	0	0	0	0	0	0	1	1
4:30 PM	0	0	0	0	0	0	0	1	1
4:45 PM	0	0	1	1	0	0	1	0	3
5:00 PM	0	0	0	0	0	0	0	1	1
5:15 PM	0	0	0	1	0	0	2	0	3
5:30 PM	0	0	2	0	0	0	1	0	3
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	3	2	0	0	5	3	13
APPROACH %'s :			60.00%	40.00%			62.50%	37.50%	
PEAK HR :	04:30 PM - 05:30 PM								TOTAL
PEAK HR VOL :	0	0	1	2	0	0	3	2	8
PEAK HR FACTOR :			0.250	0.500			0.375	0.500	0.667
			0.375				0.625		

Prepared by National Data & Surveying Services

Lopes Rd/Green Valley Rd & I-80 WB On Ramp

Peak Hour Turning Movement Count

ID: 21-080323-007
City: Fairfield

Day: Friday
Date: 12/3/2021

PEAK HOURS

AM	NONE
NOON	NONE
PM	04:00 PM - 05:00 PM

COUNT PERIODS

AM	NONE
NOON	NONE
PM	4:00 PM - 06:00 PM

CONTROL: Signalized

	AM	NOON	PM
TEV	0	0	2256
PHF			0.93

SOUTHBOUND (Lopes Rd/Green Valley Rd)

	Left	Thru	Thru	Right	
AM	0	0	0	0	0 AM
NOON	0	0	0	0	0 NOON
PM	543	830	0	0	712 PM

EASTBOUND (I-80 WB On Ramp)

	AM	NOON	PM
	0	0	714
	0	0	0
	0	0	0
	0	0	0
	0	0	0

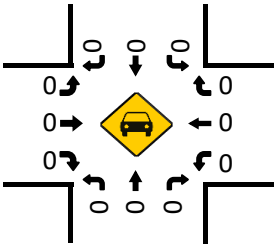
WESTBOUND (I-80 WB On Ramp)

	PM	NOON	AM
	0	0	0
	0	0	0
	0	0	0
	0	0	0
	0	0	0

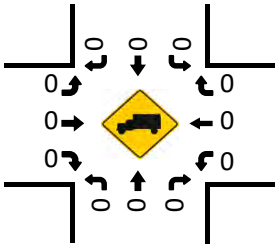
NORTHBOUND (Lopes Rd/Green Valley Rd)

	Left	Thru	Thru	Right	
PM	830	0	171	712	0 PM
NOON	0	0	0	0	0 NOON
AM	0	0	0	0	0 AM

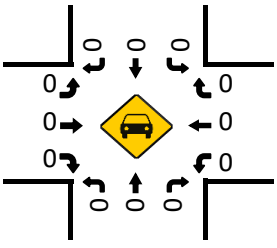
Cars (AM)



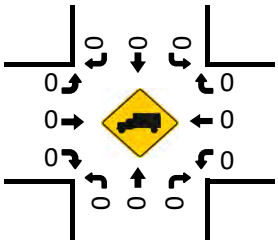
HT (AM)



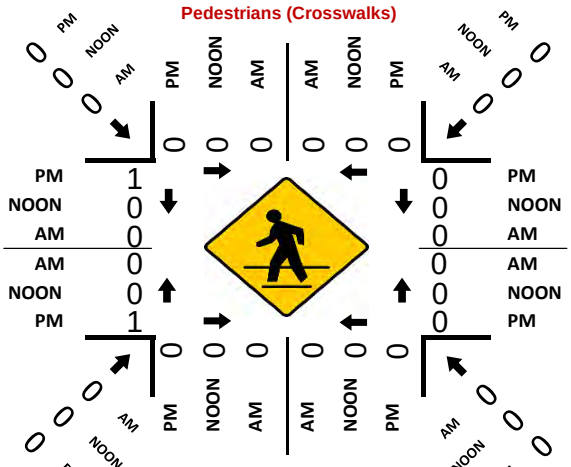
Cars (NOON)



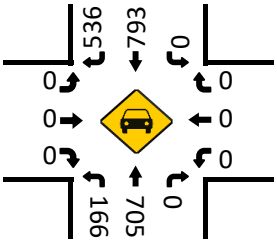
HT (NOON)



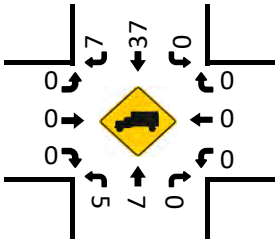
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Lopes Rd/Green Valley Rd & I-80 WB On Ramp
City: Fairfield
Control: Signalized

Project ID: 21-080323-007
Date: 12/3/2021

Data - Total

NS/EW Streets:	Lopes Rd/Green Valley Rd				Lopes Rd/Green Valley Rd				I-80 WB On Ramp				I-80 WB On Ramp				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	56	157	0	0	0	216	147	0	0	0	0	0	0	0	0	0	576
4:15 PM	46	196	0	0	0	184	129	0	0	0	0	0	0	0	0	0	555
4:30 PM	34	191	0	0	0	224	156	0	0	0	0	0	0	0	0	0	605
4:45 PM	35	168	0	0	0	206	111	0	0	0	0	0	0	0	0	0	520
5:00 PM	20	175	0	0	0	193	137	0	0	0	0	0	0	0	0	0	525
5:15 PM	32	179	0	0	0	217	123	0	0	0	0	0	0	0	0	0	551
5:30 PM	29	175	0	0	0	162	121	0	0	0	0	0	0	0	0	0	487
5:45 PM	25	146	0	0	0	192	81	0	0	0	0	0	0	0	0	0	444
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	277	1387	0	0	0	1594	1005	0	0	0	0	0	0	0	0	0	4263
APPROACH %'s :	16.65%	83.35%	0.00%	0.00%	0.00%	61.33%	38.67%	0.00%									
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	171	712	0	0	0	830	543	0	0	0	0	0	0	0	0	0	2256
PEAK HR FACTOR :	0.763	0.908	0.000	0.000	0.000	0.926	0.870	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.932
	0.912				0.903												

National Data & Surveying Services Intersection Turning Movement Count

Location: Lopes Rd/Green Valley Rd & I-80 WB On Ramp
City: Fairfield
Control: Signalized

Project ID: 21-080323-007
Date: 12/3/2021

Data - Cars

NS/EW Streets:	Lopes Rd/Green Valley Rd				Lopes Rd/Green Valley Rd				I-80 WB On Ramp				I-80 WB On Ramp				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	52	156	0	0	0	210	144	0	0	0	0	0	0	0	0	0	562
4:15 PM	46	193	0	0	0	175	127	0	0	0	0	0	0	0	0	0	541
4:30 PM	34	189	0	0	0	211	155	0	0	0	0	0	0	0	0	0	589
4:45 PM	34	167	0	0	0	197	110	0	0	0	0	0	0	0	0	0	508
5:00 PM	19	174	0	0	0	186	135	0	0	0	0	0	0	0	0	0	514
5:15 PM	31	176	0	0	0	208	123	0	0	0	0	0	0	0	0	0	538
5:30 PM	26	175	0	0	0	159	119	0	0	0	0	0	0	0	0	0	479
5:45 PM	24	145	0	0	0	183	80	0	0	0	0	0	0	0	0	0	432
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	266	1375	0	0	0	1529	993	0	0	0	0	0	0	0	0	0	4163
APPROACH %'s :	16.21%	83.79%	0.00%	0.00%	0.00%	60.63%	39.37%	0.00%									
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	166	705	0	0	0	793	536	0	0	0	0	0	0	0	0	0	2200
PEAK HR FACTOR :	0.798	0.913	0.000	0.000	0.000	0.940	0.865	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.934
	0.911				0.908												

National Data & Surveying Services Intersection Turning Movement Count

Location: Lopes Rd/Green Valley Rd & I-80 WB On Ramp
City: Fairfield
Control: Signalized

Project ID: 21-080323-007
Date: 12/3/2021

Data - HT

NS/EW Streets:	Lopes Rd/Green Valley Rd				Lopes Rd/Green Valley Rd				I-80 WB On Ramp				I-80 WB On Ramp				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	4	1	0	0	0	6	3	0	0	0	0	0	0	0	0	0	14
4:15 PM	0	3	0	0	0	9	2	0	0	0	0	0	0	0	0	0	14
4:30 PM	0	2	0	0	0	13	1	0	0	0	0	0	0	0	0	0	16
4:45 PM	1	1	0	0	0	9	1	0	0	0	0	0	0	0	0	0	12
5:00 PM	1	1	0	0	0	7	2	0	0	0	0	0	0	0	0	0	11
5:15 PM	1	3	0	0	0	9	0	0	0	0	0	0	0	0	0	0	13
5:30 PM	3	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	8
5:45 PM	1	1	0	0	0	9	1	0	0	0	0	0	0	0	0	0	12
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	11	12	0	0	0	65	12	0	0	0	0	0	0	0	0	0	100
APPROACH %'s :	47.83%	52.17%	0.00%	0.00%	0.00%	84.42%	15.58%	0.00%									
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	5	7	0	0	0	37	7	0	0	0	0	0	0	0	0	0	56
PEAK HR FACTOR :	0.313	0.583	0.000	0.000	0.000	0.712	0.583	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.875
	0.600				0.786												

National Data & Surveying Services Intersection Turning Movement Count

Location: Lopes Rd/Green Valley Rd & I-80 WB On Ramp
City: Fairfield
Control: Signalized

Project ID: 21-080323-007
Date: 12/3/2021

Data - Bikes

NS/EW Streets:	Lopes Rd/Green Valley Rd				Lopes Rd/Green Valley Rd				I-80 WB On Ramp				I-80 WB On Ramp				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%													
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

National Data & Surveying Services Intersection Turning Movement Count

Location: Lopes Rd/Green Valley Rd & I-80 WB On Ramp
City: Fairfield
Project ID: 21-080323-007
Date: 12/3/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Lopes Rd/Green Valley Rd		Lopes Rd/Green Valley Rd		I-80 WB On Ramp		I-80 WB On Ramp		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	1	1
4:45 PM	0	0	0	0	0	0	1	0	1
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	1	0	1
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	2	1	3
APPROACH %'s :							66.67%	33.33%	
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	1	1	2
PEAK HR FACTOR :							0.250	0.250	0.500
							0.500		

6843-01

Prepared by National Data & Surveying Services

Suisun Valley Rd & Oakwood Dr/Solano College Rd

Peak Hour Turning Movement Count

ID: 21-080323-008
City: Fairfield

Day: Friday
Date: 12/3/2021

	SOUTHBOUND					
PEAK HOURS	NONE					COUNT PERIODS
	NONE					
	04:00 PM - 05:00 PM					4:00 PM - 06:00 PM
AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	2	236	4	1	222	PM

EASTBOUND	AM	NOON	PM
	0	0	26
	0	0	0
	0	0	4
	0	0	1
	0	0	14
	AM	NOON	PM

WESTBOUND	PM	NOON	AM
	0	0	0
	2	0	0
	26	0	0
	0	0	0
	5	0	0
	PM	NOON	AM

CONTROL			
Signalized			
TEV	0 AM	0 NOON	539 PM
PHF			0.94

NORTHBOUND					
PM	286	10	22	217	0 PM
NOON	0	0	0	0	0 NOON
AM	0	0	0	0	0 AM

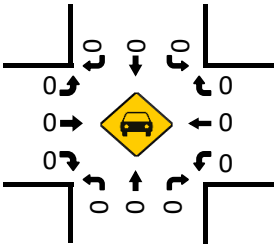
Oakwood Dr/Solano College Rd

Suisun Valley Rd

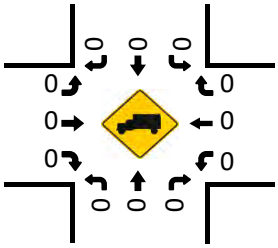
Suisun Valley Rd

Oakwood Dr/Solano College Rd

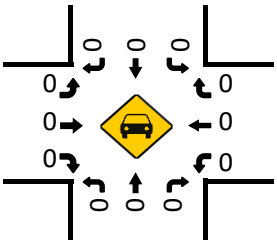
Cars (AM)



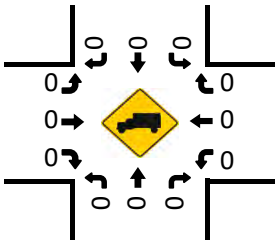
HT (AM)



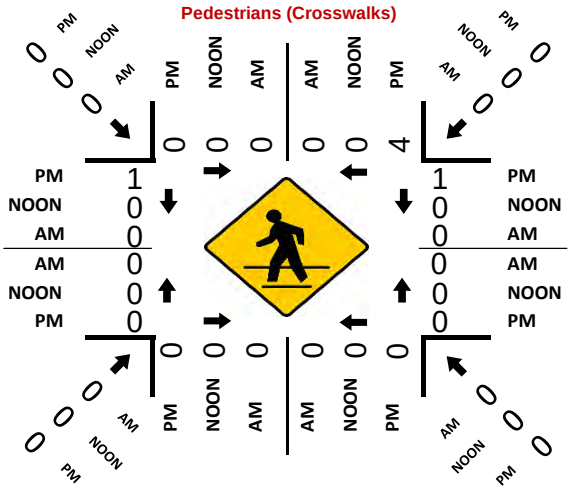
Cars (NOON)



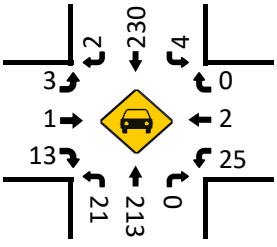
HT (NOON)



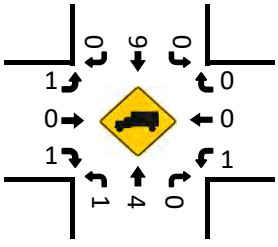
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Oakwood Dr/Solano College Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-008
Date: 12/3/2021

Data - Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Oakwood Dr/Solano College Rd				Oakwood Dr/Solano College Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	8	63	0	3	1	50	0	0	1	0	3	0	11	1	0	0	141
4:15 PM	6	52	0	3	2	69	1	0	2	1	4	0	3	0	0	0	143
4:30 PM	4	58	0	0	0	66	1	0	1	0	3	0	9	1	0	0	143
4:45 PM	4	44	0	4	1	51	0	1	0	0	4	0	3	0	0	0	112
5:00 PM	8	56	0	3	0	51	4	2	1	0	8	0	2	0	0	0	135
5:15 PM	10	48	0	4	0	51	0	0	2	0	2	0	6	0	0	0	123
5:30 PM	9	43	0	1	0	47	0	0	3	0	2	0	2	1	0	0	108
5:45 PM	4	42	0	5	1	26	1	0	0	0	7	0	2	0	0	0	88
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	53	406	0	23	5	411	7	3	10	1	33	0	38	3	0	0	993
APPROACH %'s :	11.00%	84.23%	0.00%	4.77%	1.17%	96.48%	1.64%	0.70%	22.73%	2.27%	75.00%	0.00%	92.68%	7.32%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	22	217	0	10	4	236	2	1	4	1	14	0	26	2	0	0	539
PEAK HR FACTOR :	0.688	0.861	0.000	0.625	0.500	0.855	0.500	0.250	0.500	0.250	0.875	0.000	0.591	0.500	0.000	0.000	0.942
	0.841				0.844				0.679				0.583				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Oakwood Dr/Solano College Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-008
Date: 12/3/2021

Data - Cars

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Oakwood Dr/Solano College Rd				Oakwood Dr/Solano College Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	8	62	0	3	1	48	0	0	1	0	2	0	11	1	0	0	137
4:15 PM	5	51	0	2	2	68	1	0	1	1	4	0	3	0	0	0	138
4:30 PM	4	56	0	0	0	65	1	0	1	0	3	0	9	1	0	0	140
4:45 PM	4	44	0	4	1	49	0	1	0	0	4	0	2	0	0	0	109
5:00 PM	8	56	0	3	0	48	4	2	1	0	8	0	2	0	0	0	132
5:15 PM	10	47	0	4	0	51	0	0	2	0	2	0	6	0	0	0	122
5:30 PM	9	42	0	1	0	44	0	0	2	0	2	0	2	1	0	0	103
5:45 PM	4	42	0	5	1	25	1	0	0	0	7	0	2	0	0	0	87
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	52	400	0	22	5	398	7	3	8	1	32	0	37	3	0	0	968
APPROACH %'s :	10.97%	84.39%	0.00%	4.64%	1.21%	96.37%	1.69%	0.73%	19.51%	2.44%	78.05%	0.00%	92.50%	7.50%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	21	213	0	9	4	230	2	1	3	1	13	0	25	2	0	0	524
PEAK HR FACTOR :	0.656	0.859	0.000	0.563	0.500	0.846	0.500	0.250	0.750	0.250	0.813	0.000	0.568	0.500	0.000	0.000	0.936
	0.832				0.835				0.708				0.563				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Oakwood Dr/Solano College Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-008
Date: 12/3/2021

Data - HT

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Oakwood Dr/Solano College Rd				Oakwood Dr/Solano College Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	2	0	0	0	0	1	0	0	0	0	0	4
4:15 PM	1	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	5
4:30 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
4:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	3
5:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	1	0	0	0	3	0	0	1	0	0	0	0	0	0	0	5
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	6	0	1	0	13	0	0	2	0	1	0	1	0	0	0	25
APPROACH %'s :	12.50%	75.00%	0.00%	12.50%	0.00%	100.00%	0.00%	0.00%	66.67%	0.00%	33.33%	0.00%	100.00%	0.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	1	4	0	1	0	6	0	0	1	0	1	0	1	0	0	0	15
PEAK HR FACTOR :	0.250	0.500	0.000	0.250	0.000	0.750	0.000	0.000	0.250	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.750
	0.500				0.750				0.500				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Oakwood Dr/Solano College Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-008
Date: 12/3/2021

Data - Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Oakwood Dr/Solano College Rd				Oakwood Dr/Solano College Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
APPROACH %'s :					0.00%	100.00%	0.00%	0.00%									
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
						0.500											

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Oakwood Dr/Solano College Rd Project ID: 21-080323-008
City: Fairfield Date: 12/3/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd		Oakwood Dr/Solano College Rd		Oakwood Dr/Solano College Rd		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	0	0	0	1	2
4:30 PM	0	3	0	0	0	1	0	0	4
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	1	0	0	0	0	0	1	0	2
5:15 PM	0	1	0	0	0	0	0	1	2
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	6	0	0	0	1	1	2	11
APPROACH %'s :	14.29%	85.71%			0.00%	100.00%	33.33%	66.67%	
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	0	4	0	0	0	1	0	1	6
PEAK HR FACTOR :	0.333				0.250		0.250		0.375
	0.333				0.250		0.250		

Prepared by National Data & Surveying Services

Suisun Valley Rd & Westamerica Dr/Kaiser Dr

Peak Hour Turning Movement Count

ID: 21-080323-009
City: Fairfield

Day: Friday
Date: 12/3/2021

PEAK HOURS	COUNT PERIODS
AM: NONE	AM: NONE
NOON: NONE	NOON: NONE
PM: 04:15 PM - 05:15 PM	PM: 4:00 PM - 06:00 PM

SOUTHBOUND (Suisun Valley Rd)

	Left	Thru	Thru	Right	Total
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	53	227	2	4	273

EASTBOUND (Westamerica Dr/Kaiser Dr)

	Left	Thru	Right	Total
AM	0	0	0	0
NOON	0	0	0	0
PM	0	0	104	104
AM	0	0	0	0
NOON	0	0	0	0
PM	0	0	61	61
AM	0	0	0	0
NOON	0	0	0	0
PM	0	0	41	41
AM	0	0	0	0
NOON	0	0	0	0
PM	0	0	25	25

WESTBOUND (Westamerica Dr/Kaiser Dr)

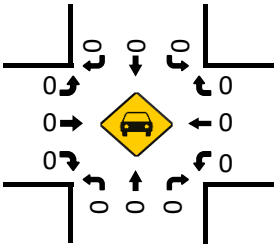
	Left	Thru	Right	Total
AM	0	0	0	0
NOON	0	0	0	0
PM	0	0	7	7
AM	0	0	0	0
NOON	0	0	0	0
PM	0	0	20	20
AM	0	0	0	0
NOON	0	0	0	0
PM	0	0	16	16
AM	0	0	0	0
NOON	0	0	0	0
PM	0	0	3	3
AM	0	0	0	0
NOON	0	0	0	0
PM	0	0	70	70

NORTHBOUND (Suisun Valley Rd)

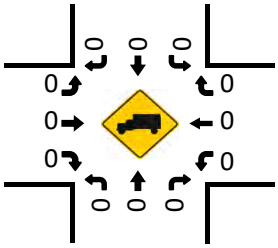
	Left	Thru	Thru	Right	Total
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	268	0	31	201	24	256

CONTROL	AM	NOON	PM
Signalized			
TEV	0	0	715
PHF			0.89

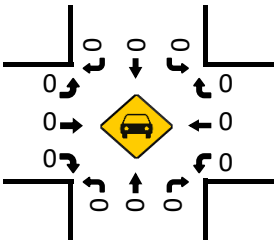
Cars (AM)



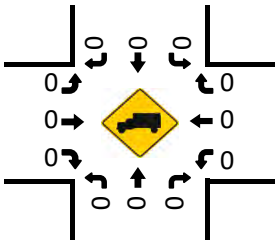
HT (AM)



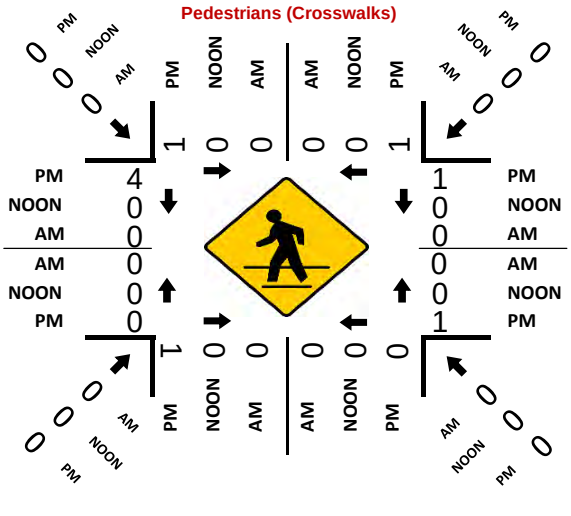
Cars (NOON)



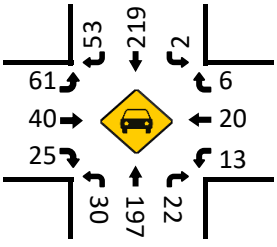
HT (NOON)



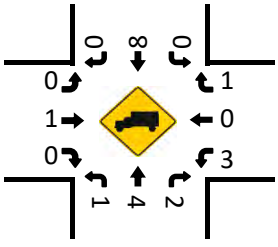
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Westamerica Dr/Kaiser Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-009
Date: 12/3/2021

Data - Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Westamerica Dr/Kaiser Dr				Westamerica Dr/Kaiser Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	13	54	1	0	6	52	5	1	19	15	11	0	2	5	4	0	188
4:15 PM	8	52	8	0	0	61	14	2	14	6	6	0	4	6	0	1	182
4:30 PM	11	46	4	0	1	66	15	2	16	6	5	0	5	6	4	0	187
4:45 PM	6	50	8	0	1	42	12	0	10	7	5	0	2	2	1	0	146
5:00 PM	6	53	4	0	0	58	12	0	21	22	9	0	5	6	2	2	200
5:15 PM	12	48	10	0	2	50	11	1	11	2	9	0	5	5	1	0	167
5:30 PM	9	40	6	0	1	45	10	0	10	3	8	0	2	9	4	0	147
5:45 PM	8	40	3	0	0	36	6	0	16	6	7	0	2	2	2	0	128
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	73	383	44	0	11	410	85	6	117	67	60	0	27	41	18	3	1345
APPROACH %'s :	14.60%	76.60%	8.80%	0.00%	2.15%	80.08%	16.60%	1.17%	47.95%	27.46%	24.59%	0.00%	30.34%	46.07%	20.22%	3.37%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	31	201	24	0	2	227	53	4	61	41	25	0	16	20	7	3	715
PEAK HR FACTOR :	0.705	0.948	0.750	0.000	0.500	0.860	0.883	0.500	0.726	0.466	0.694	0.000	0.800	0.833	0.438	0.375	0.894
	0.941				0.851				0.611				0.767				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Westamerica Dr/Kaiser Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-009
Date: 12/3/2021

Data - Cars

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Westamerica Dr/Kaiser Dr				Westamerica Dr/Kaiser Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	13	52	0	0	6	50	5	1	19	15	11	0	2	5	4	0	183
4:15 PM	8	50	7	0	0	59	14	2	14	5	6	0	3	6	0	1	175
4:30 PM	10	44	3	0	1	65	15	2	16	6	5	0	4	6	3	0	180
4:45 PM	6	50	8	0	1	40	12	0	10	7	5	0	1	2	1	0	143
5:00 PM	6	53	4	0	0	55	12	0	21	22	9	0	5	6	2	2	197
5:15 PM	11	47	9	0	2	50	11	1	11	2	9	0	3	5	1	0	162
5:30 PM	9	39	6	0	1	42	10	0	10	3	8	0	2	9	4	0	143
5:45 PM	8	39	2	0	0	34	6	0	16	6	7	0	2	2	2	0	124
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	71	374	39	0	11	395	85	6	117	66	60	0	22	41	17	3	1307
APPROACH %'s :	14.67%	77.27%	8.06%	0.00%	2.21%	79.48%	17.10%	1.21%	48.15%	27.16%	24.69%	0.00%	26.51%	49.40%	20.48%	3.61%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	30	197	22	0	2	219	53	4	61	40	25	0	13	20	6	3	695
PEAK HR FACTOR :	0.750	0.929	0.688	0.000	0.500	0.842	0.883	0.500	0.726	0.455	0.694	0.000	0.650	0.833	0.500	0.375	0.882
	0.958				0.837				0.606				0.700				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Westamerica Dr/Kaiser Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-009
Date: 12/3/2021

Data - HT

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Westamerica Dr/Kaiser Dr				Westamerica Dr/Kaiser Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	2	1	0	0	2	0	0	0	0	0	0	0	0	0	0	5
4:15 PM	0	2	1	0	0	2	0	0	0	1	0	0	1	0	0	0	7
4:30 PM	1	2	1	0	0	1	0	0	0	0	0	0	1	0	1	0	7
4:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	3
5:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	1	1	1	0	0	0	0	0	0	0	0	0	2	0	0	0	5
5:30 PM	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4
5:45 PM	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	9	5	0	0	15	0	0	0	1	0	0	5	0	1	0	38
APPROACH %'s :	12.50%	56.25%	31.25%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	83.33%	0.00%	16.67%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	1	4	2	0	0	8	0	0	0	1	0	0	3	0	1	0	20
PEAK HR FACTOR :	0.250	0.500	0.500	0.000	0.000	0.667	0.000	0.000	0.000	0.250	0.000	0.000	0.750	0.000	0.250	0.000	0.714
	0.438				0.667				0.250				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Westamerica Dr/Kaiser Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-009
Date: 12/3/2021

Data - Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Westamerica Dr/Kaiser Dr				Westamerica Dr/Kaiser Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	0	2	0	2	0	0	0	0	0	0	0	5
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%					
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	0	2	0	2	0	0	0	0	0	0	0	5
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.500	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.417
	0.250				0.500				0.250								

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Westamerica Dr/Kaiser Dr
City: Fairfield
Project ID: 21-080323-009
Date: 12/3/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd		Westamerica Dr/Kaiser Dr		Westamerica Dr/Kaiser Dr		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	1	1	1	0	1	0	0	1	5
4:30 PM	0	0	0	0	0	1	0	3	4
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	1	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	1	1	1	1	1	0	4	10
APPROACH %'s :	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	0.00%	100.00%	
PEAK HR :	04:15 PM - 05:15 PM								TOTAL
PEAK HR VOL :	1	1	1	0	1	1	0	4	9
PEAK HR FACTOR :	0.250	0.250	0.250		0.250	0.250		0.333	0.450
	0.250		0.250		0.500		0.333		

Prepared by National Data & Surveying Services

Suisun Valley Rd & Rockville Rd

Peak Hour Turning Movement Count

ID: 21-080323-001
City: Fairfield

Day: Saturday
Date: 12/4/2021

PEAK HOURS	COUNT PERIODS
NONE	NONE
NONE	NONE
02:00 PM - 03:00 PM	2:00 PM - 05:00 PM

SOUTHBOUND (Suisun Valley Rd)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	30	101	50	0	168	PM

EASTBOUND (Rockville Rd)

AM	NOON	PM	
0	0	170	⇦
0	0	0	↶ 0
0	0	31	↱ 0
0	0	107	→ 0
0	0	34	↴ 0
AM	NOON	PM	

WESTBOUND (Rockville Rd)

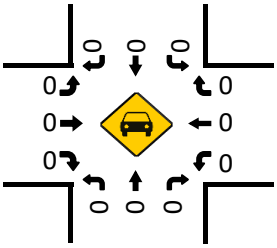
PM	NOON	AM	
37	0	0	0 ↰
117	0	0	0 ←
76	0	0	0 ↰
0	0	0	0 ↶
218	0	0	⇨
PM	NOON	AM	

NORTHBOUND (Suisun Valley Rd)

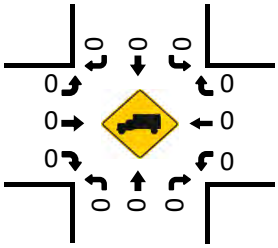
PM	211	0	23	100	61	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

CONTROL			
Signalized			
TEV	0 AM	0 NOON	767 PM
PHF			0.88

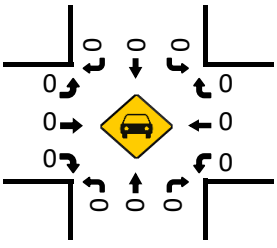
Cars (AM)



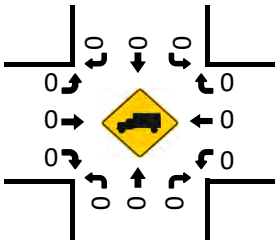
HT (AM)



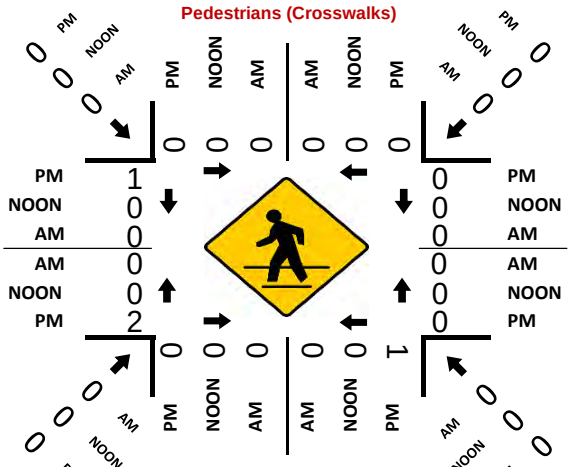
Cars (NOON)



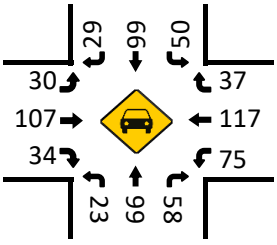
HT (NOON)



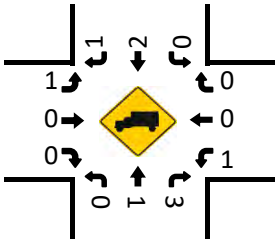
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Rockville Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-001
Date: 12/4/2021

Data - Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	8	23	24	0	17	26	8	0	4	28	5	0	22	29	12	0	206
2:15 PM	4	22	8	0	7	19	6	0	7	25	8	0	27	29	12	0	174
2:30 PM	5	29	15	0	11	35	10	0	11	27	13	0	17	38	6	0	217
2:45 PM	6	26	14	0	15	21	6	0	9	27	8	0	10	21	7	0	170
3:00 PM	2	27	18	0	7	27	6	0	10	21	8	0	18	26	11	0	181
3:15 PM	7	29	11	0	13	30	5	0	6	25	4	0	14	25	12	0	181
3:30 PM	4	27	23	0	10	19	7	0	4	21	4	0	13	27	10	0	169
3:45 PM	6	28	14	0	13	26	7	0	4	39	6	0	13	27	9	0	192
4:00 PM	1	26	15	0	7	24	10	0	9	24	9	0	13	24	5	0	167
4:15 PM	3	25	19	0	10	33	4	0	7	36	8	0	11	25	6	0	187
4:30 PM	2	15	7	0	10	27	8	0	11	15	6	0	15	21	6	0	143
4:45 PM	5	24	19	0	12	27	9	0	4	27	7	0	16	14	5	0	169
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	53	301	187	0	132	314	86	0	86	315	86	0	189	306	101	0	2156
APPROACH %'s :	9.80%	55.64%	34.57%	0.00%	24.81%	59.02%	16.17%	0.00%	17.66%	64.68%	17.66%	0.00%	31.71%	51.34%	16.95%	0.00%	
PEAK HR :	02:00 PM - 03:00 PM																TOTAL
PEAK HR VOL :	23	100	61	0	50	101	30	0	31	107	34	0	76	117	37	0	767
PEAK HR FACTOR :	0.719	0.862	0.635	0.000	0.735	0.721	0.750	0.000	0.705	0.955	0.654	0.000	0.704	0.770	0.771	0.000	0.884
	0.836				0.808				0.843				0.846				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Rockville Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-001
Date: 12/4/2021

Data - Cars

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	8	22	24	0	17	26	7	0	4	28	5	0	22	29	12	0	204
2:15 PM	4	22	7	0	7	18	6	0	7	25	8	0	27	29	12	0	172
2:30 PM	5	29	14	0	11	34	10	0	10	27	13	0	16	38	6	0	213
2:45 PM	6	26	13	0	15	21	6	0	9	27	8	0	10	21	7	0	169
3:00 PM	2	27	18	0	7	27	6	0	10	21	8	0	16	26	11	0	179
3:15 PM	6	28	10	0	13	30	5	0	6	25	4	0	14	25	12	0	178
3:30 PM	4	26	23	0	10	19	7	0	4	21	4	0	13	27	10	0	168
3:45 PM	6	28	14	0	13	26	7	0	4	39	6	0	12	27	9	0	191
4:00 PM	1	26	15	0	7	22	10	0	9	24	9	0	12	24	5	0	164
4:15 PM	3	25	19	0	10	32	4	0	7	36	8	0	11	25	6	0	186
4:30 PM	2	15	7	0	10	27	8	0	11	15	5	0	15	21	6	0	142
4:45 PM	5	24	19	0	12	26	9	0	4	27	7	0	16	14	5	0	168
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	52	298	183	0	132	308	85	0	85	315	85	0	184	306	101	0	2134
APPROACH %'s :	9.76%	55.91%	34.33%	0.00%	25.14%	58.67%	16.19%	0.00%	17.53%	64.95%	17.53%	0.00%	31.13%	51.78%	17.09%	0.00%	
PEAK HR :	02:00 PM - 03:00 PM																TOTAL
PEAK HR VOL :	23	99	58	0	50	99	29	0	30	107	34	0	75	117	37	0	758
PEAK HR FACTOR :	0.719	0.853	0.604	0.000	0.735	0.728	0.725	0.000	0.750	0.955	0.654	0.000	0.694	0.770	0.771	0.000	0.890
	0.833				0.809				0.855				0.842				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Rockville Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-001
Date: 12/4/2021

Data - HT

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
2:15 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
2:30 PM	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0	4
2:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
3:15 PM	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3
3:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
4:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	3
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	3	4	0	0	6	1	0	1	0	1	0	5	0	0	0	22
APPROACH %'s :	12.50%	37.50%	50.00%	0.00%	0.00%	85.71%	14.29%	0.00%	50.00%	0.00%	50.00%	0.00%	100.00%	0.00%	0.00%	0.00%	
PEAK HR :	02:00 PM - 03:00 PM																TOTAL
PEAK HR VOL :	0	1	3	0	0	2	1	0	1	0	0	0	1	0	0	0	9
PEAK HR FACTOR :	0.000	0.250	0.750	0.000	0.000	0.500	0.250	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.563
			1.000				0.750				0.250				0.250		

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Rockville Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-001
Date: 12/4/2021

Data - Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
2:30 PM	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	2
3:30 PM	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
3:45 PM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
4:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	0	1	0	0	0	3	0	1	1	3	0	0	0	1	0	13
APPROACH %'s :	75.00%	0.00%	25.00%	0.00%	0.00%	0.00%	100.00%	0.00%	20.00%	20.00%	60.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	02:00 PM - 03:00 PM																TOTAL
PEAK HR VOL :	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	3
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.375
	0.250								0.250				0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Rockville Rd
City: Fairfield
Project ID: 21-080323-001
Date: 12/4/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd		Rockville Rd		Rockville Rd		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	0	1	1	2
2:15 PM	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	1	0	0	1	0	2
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	1	1
3:45 PM	0	0	0	0	0	0	1	0	1
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	1	0	0	3	2	6
APPROACH %'s :			0.00%	100.00%			60.00%	40.00%	
PEAK HR :	02:00 PM - 03:00 PM								TOTAL
PEAK HR VOL :	0	0	0	1	0	0	2	1	4
PEAK HR FACTOR :				0.250			0.500	0.250	0.500
			0.250				0.375		

Prepared by National Data & Surveying Services

Abernathy Rd & Rockville Rd

Peak Hour Turning Movement Count

ID: 21-080323-002
City: Fairfield

Day: Saturday
Date: 12/4/2021

PEAK HOURS

AM	NONE
NOON	NONE
PM	03:00 PM - 04:00 PM

COUNT PERIODS

AM	NONE
NOON	NONE
PM	2:00 PM - 05:00 PM

SOUTHBOUND (Abernathy Rd)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	39	90	12	0	182	PM

EASTBOUND (Rockville Rd)

AM	NOON	PM	
0	0	213	
0	0	0	0
0	0	37	0
0	0	95	0
0	0	83	0

WESTBOUND (Rockville Rd)

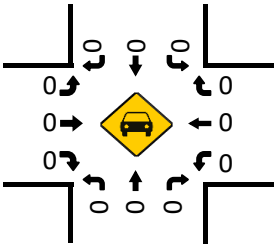
PM	NOON	AM	
20	0	0	0
88	0	0	0
29	0	0	0
1	0	0	0
155	0	0	

NORTHBOUND (Abernathy Rd)

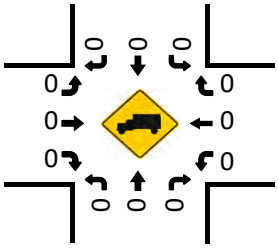
PM	202	0	86	125	47	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

CONTROL			
4-Way Yield			
TEV	0 AM	0 NOON	752 PM
PHF			0.94

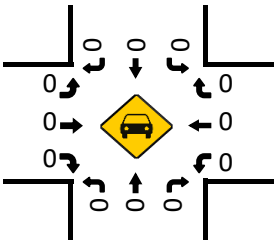
Cars (AM)



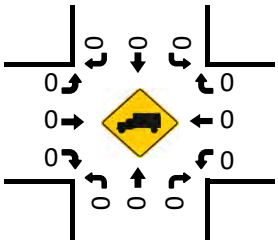
HT (AM)



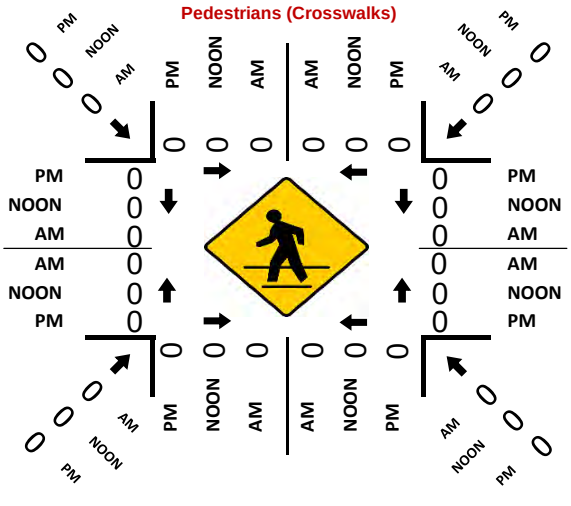
Cars (NOON)



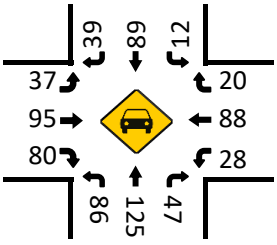
HT (NOON)



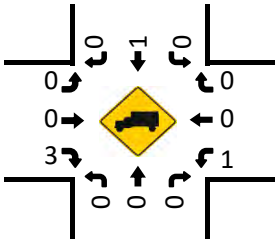
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Abernathy Rd & Rockville Rd
City: Fairfield
Control: 4-Way Yield

Project ID: 21-080323-002
Date: 12/4/2021

Data - Total

NS/EW Streets:	Abernathy Rd				Abernathy Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	19	29	9	0	4	22	4	0	11	23	33	0	4	39	6	0	203
2:15 PM	27	24	7	1	5	15	9	0	7	22	18	0	13	31	7	0	186
2:30 PM	18	27	10	0	6	21	15	0	7	24	22	0	12	23	4	0	189
2:45 PM	11	19	7	0	2	21	11	0	6	27	25	0	9	21	6	0	165
3:00 PM	26	30	21	0	3	22	13	0	9	20	20	0	6	23	7	0	200
3:15 PM	16	37	10	0	3	24	10	0	5	21	23	0	4	24	7	1	185
3:30 PM	18	28	6	0	3	22	11	0	11	22	20	0	10	26	2	0	179
3:45 PM	26	30	10	0	3	22	5	0	12	32	20	0	9	15	4	0	188
4:00 PM	20	33	9	0	1	21	4	0	7	21	14	0	3	19	3	0	155
4:15 PM	21	27	5	0	3	25	6	0	13	25	29	0	2	26	3	0	185
4:30 PM	15	26	5	0	3	23	5	0	3	19	20	0	6	19	1	0	145
4:45 PM	14	26	9	0	7	27	5	0	6	20	24	0	11	18	2	0	169
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	231	336	108	1	43	265	98	0	97	276	268	0	89	284	52	1	2149
APPROACH %'s :	34.17%	49.70%	15.98%	0.15%	10.59%	65.27%	24.14%	0.00%	15.13%	43.06%	41.81%	0.00%	20.89%	66.67%	12.21%	0.23%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	86	125	47	0	12	90	39	0	37	95	83	0	29	88	20	1	752
PEAK HR FACTOR :	0.827	0.845	0.560	0.000	1.000	0.938	0.750	0.000	0.771	0.742	0.902	0.000	0.725	0.846	0.714	0.250	0.940
	0.838				0.928				0.840				0.908				

National Data & Surveying Services Intersection Turning Movement Count

Location: Abernathy Rd & Rockville Rd
City: Fairfield
Control: 4-Way Yield

Project ID: 21-080323-002
Date: 12/4/2021

Data - Cars

NS/EW Streets:	Abernathy Rd				Abernathy Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	19	29	9	0	3	21	4	0	11	23	32	0	4	39	6	0	200
2:15 PM	27	24	7	1	5	15	9	0	7	21	18	0	13	31	7	0	185
2:30 PM	17	27	10	0	6	21	15	0	7	24	21	0	12	23	4	0	187
2:45 PM	11	19	7	0	2	21	9	0	6	27	24	0	9	21	6	0	162
3:00 PM	26	30	21	0	3	21	13	0	9	20	19	0	6	23	7	0	198
3:15 PM	16	37	10	0	3	24	10	0	5	21	22	0	3	24	7	0	182
3:30 PM	18	28	6	0	3	22	11	0	11	22	19	0	10	26	2	0	178
3:45 PM	26	30	10	0	3	22	5	0	12	32	20	0	9	15	4	0	188
4:00 PM	19	33	9	0	1	21	4	0	7	21	14	0	3	19	3	0	154
4:15 PM	21	27	5	0	3	23	6	0	13	25	29	0	2	26	3	0	183
4:30 PM	15	26	5	0	3	22	5	0	3	19	20	0	6	19	1	0	144
4:45 PM	14	26	8	0	7	26	5	0	6	20	24	0	10	18	2	0	166
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	229	336	107	1	42	259	96	0	97	275	262	0	87	284	52	0	2127
APPROACH %'s :	34.03%	49.93%	15.90%	0.15%	10.58%	65.24%	24.18%	0.00%	15.30%	43.38%	41.32%	0.00%	20.57%	67.14%	12.29%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	86	125	47	0	12	89	39	0	37	95	80	0	28	88	20	0	746
PEAK HR FACTOR :	0.827	0.845	0.560	0.000	1.000	0.927	0.750	0.000	0.771	0.742	0.909	0.000	0.700	0.846	0.714	0.000	0.942
	0.838				0.946				0.828				0.895				

National Data & Surveying Services Intersection Turning Movement Count

Location: Abernathy Rd & Rockville Rd
City: Fairfield
Control: 4-Way Yield

Project ID: 21-080323-002
Date: 12/4/2021

Data - HT

NS/EW Streets:	Abernathy Rd				Abernathy Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	3
2:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
2:30 PM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
2:45 PM	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	3
3:00 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
3:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	3
3:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	0	1	0	1	6	2	0	0	1	6	0	2	0	0	1	22
APPROACH %'s :	66.67%	0.00%	33.33%	0.00%	11.11%	66.67%	22.22%	0.00%	0.00%	14.29%	85.71%	0.00%	66.67%	0.00%	0.00%	33.33%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	0	3	0	1	0	0	1	6
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.750	0.000	0.250	0.000	0.000	0.250	0.500
						0.250				0.750				0.250			

National Data & Surveying Services Intersection Turning Movement Count

Location: Abernathy Rd & Rockville Rd
City: Fairfield
Control: 4-Way Yield

Project ID: 21-080323-002
Date: 12/4/2021

Data - Bikes

NS/EW Streets:	Abernathy Rd				Abernathy Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
2:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	1	0	0	0	0	0	0	1	2	0	0	0	0	0	5
APPROACH %'s :	50.00%	0.00%	50.00%	0.00%					0.00%	33.33%	66.67%	0.00%					
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.500
	0.250								0.250								

National Data & Surveying Services Intersection Turning Movement Count

Location: Abernathy Rd & Rockville Rd
City: Fairfield
Project ID: 21-080323-002
Date: 12/4/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Abernathy Rd		Abernathy Rd		Rockville Rd		Rockville Rd		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	03:00 PM - 04:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

6843-01

Prepared by National Data & Surveying Services

Suisun Valley Rd & Mangels Blvd/Business Center Dr

Peak Hour Turning Movement Count

ID: 21-080323-003
City: Fairfield

Day: Saturday
Date: 12/4/2021

PEAK HOURS	COUNT PERIODS
NONE	NONE
NONE	NONE
03:00 PM - 04:00 PM	2:00 PM - 05:00 PM

CONTROL: Signalized

	AM	NOON	PM
TEV	0	0	987
PHF			0.92

SOUTHBOUND (Suisun Valley Rd)

	Left	Thru	Right	U-Turn	
AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	98	115	5	0	PM

EASTBOUND (Mangels Blvd/Business Center Dr)

AM	NOON	PM	
0	0	346	⇦
0	0	1	↶ 0
0	0	61	↱ 0
0	0	119	→ 0
0	0	105	↷ 0

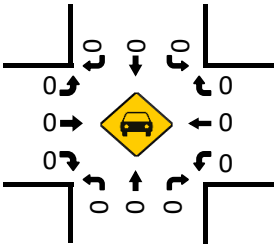
WESTBOUND (Mangels Blvd/Business Center Dr)

PM	NOON	AM	
7	0	0	0 ↰
112	0	0	0 ←
24	0	0	0 ↶
0	0	0	0 ↷
160	0	0	⇨

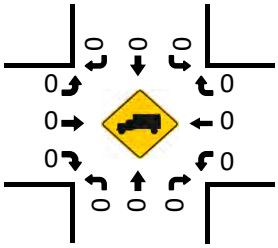
NORTHBOUND (Suisun Valley Rd)

	U-Turn	Left	Thru	Right	
PM	246	2	135	167	36	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

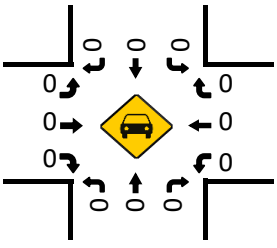
Cars (AM)



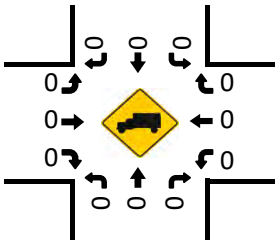
HT (AM)



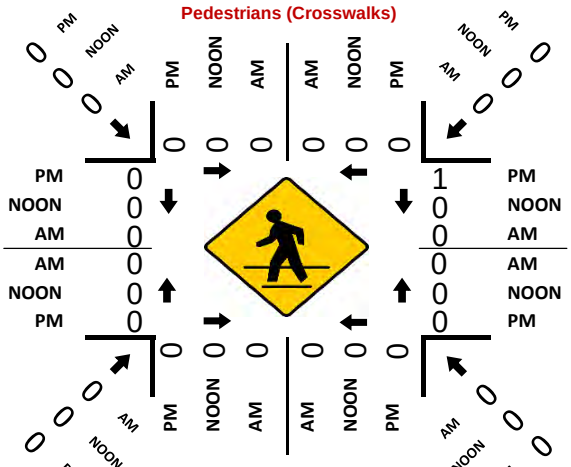
Cars (NOON)



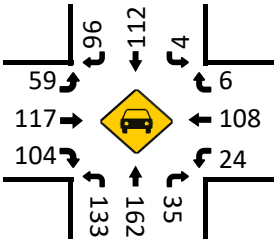
HT (NOON)



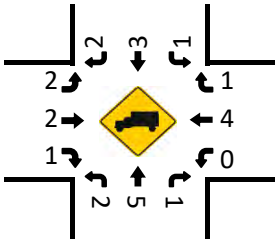
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Mangels Blvd/Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-003
Date: 12/4/2021

Data - Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Mangels Blvd/Business Center Dr				Mangels Blvd/Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	34	35	7	0	3	30	27	0	20	32	32	1	9	35	4	0	269
2:15 PM	20	36	8	0	2	28	27	0	6	29	30	1	7	30	3	0	227
2:30 PM	30	54	4	0	1	40	24	0	7	25	25	0	8	29	0	0	247
2:45 PM	28	28	4	0	0	15	26	0	12	32	31	0	1	33	3	0	213
3:00 PM	38	42	11	2	1	35	31	0	14	32	28	0	8	24	1	0	267
3:15 PM	39	38	8	0	1	30	23	0	18	27	22	0	5	35	3	0	249
3:30 PM	33	42	8	0	1	27	16	0	13	30	21	0	6	21	2	0	220
3:45 PM	25	45	9	0	2	23	28	0	16	30	34	1	5	32	1	0	251
4:00 PM	30	37	14	0	0	31	24	0	14	28	31	0	7	35	2	0	253
4:15 PM	34	35	8	0	0	36	24	0	12	17	21	0	16	23	2	0	228
4:30 PM	28	32	15	0	2	30	18	0	11	24	25	0	14	40	2	0	241
4:45 PM	20	40	16	0	0	25	28	0	14	29	38	0	7	27	2	0	246
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	359	464	112	2	13	350	296	0	157	335	338	3	93	364	25	0	2911
APPROACH %'s :	38.31%	49.52%	11.95%	0.21%	1.97%	53.11%	44.92%	0.00%	18.85%	40.22%	40.58%	0.36%	19.29%	75.52%	5.19%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	135	167	36	2	5	115	98	0	61	119	105	1	24	112	7	0	987
PEAK HR FACTOR :	0.865	0.928	0.818	0.250	0.625	0.821	0.790	0.000	0.847	0.930	0.772	0.250	0.750	0.800	0.583	0.000	0.924
	0.914				0.813				0.883				0.831				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Mangels Blvd/Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-003
Date: 12/4/2021

Data - Cars

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Mangels Blvd/Business Center Dr				Mangels Blvd/Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	34	35	7	0	3	30	27	0	20	32	32	1	9	35	4	0	269
2:15 PM	20	35	8	0	2	28	24	0	4	29	30	1	7	29	2	0	219
2:30 PM	30	53	4	0	0	39	22	0	5	25	25	0	8	29	0	0	240
2:45 PM	28	27	4	0	0	15	26	0	12	32	31	0	1	33	3	0	212
3:00 PM	38	41	10	2	1	35	30	0	14	32	27	0	8	23	1	0	262
3:15 PM	39	36	8	0	1	29	22	0	17	26	22	0	5	32	2	0	239
3:30 PM	32	40	8	0	0	26	16	0	12	29	21	0	6	21	2	0	213
3:45 PM	24	45	9	0	2	22	28	0	16	30	34	1	5	32	1	0	249
4:00 PM	30	37	14	0	0	31	23	0	14	28	31	0	7	33	2	0	250
4:15 PM	34	35	8	0	0	34	22	0	12	17	21	0	15	22	1	0	221
4:30 PM	28	32	15	0	2	28	18	0	11	23	25	0	14	39	2	0	237
4:45 PM	20	39	16	0	0	25	28	0	14	27	35	0	6	27	2	0	239
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	357	455	111	2	11	342	286	0	151	330	334	3	91	355	22	0	2850
APPROACH %'s :	38.59%	49.19%	12.00%	0.22%	1.72%	53.52%	44.76%	0.00%	18.46%	40.34%	40.83%	0.37%	19.44%	75.85%	4.70%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	133	162	35	2	4	112	96	0	59	117	104	1	24	108	6	0	963
PEAK HR FACTOR :	0.853	0.900	0.875	0.250	0.500	0.800	0.800	0.000	0.868	0.914	0.765	0.250	0.750	0.844	0.750	0.000	0.919
	0.912				0.803				0.867				0.885				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Mangels Blvd/Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-003
Date: 12/4/2021

Data - HT

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Mangels Blvd/Business Center Dr				Mangels Blvd/Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	1	0	0	0	0	3	0	2	0	0	0	0	1	1	0	8
2:30 PM	0	1	0	0	1	1	2	0	2	0	0	0	0	0	0	0	7
2:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	0	1	1	0	0	0	1	0	0	0	1	0	0	1	0	0	5
3:15 PM	0	2	0	0	0	1	1	0	1	1	0	0	0	3	1	0	10
3:30 PM	1	2	0	0	1	1	0	0	1	1	0	0	0	0	0	0	7
3:45 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	3
4:15 PM	0	0	0	0	0	2	2	0	0	0	0	0	1	1	1	0	7
4:30 PM	0	0	0	0	0	2	0	0	0	1	0	0	0	1	0	0	4
4:45 PM	0	1	0	0	0	0	0	0	0	2	3	0	1	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	9	1	0	2	8	10	0	6	5	4	0	2	9	3	0	61
APPROACH %'s :	16.67%	75.00%	8.33%	0.00%	10.00%	40.00%	50.00%	0.00%	40.00%	33.33%	26.67%	0.00%	14.29%	64.29%	21.43%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	2	5	1	0	1	3	2	0	2	2	1	0	0	4	1	0	24
PEAK HR FACTOR :	0.500	0.625	0.250	0.000	0.250	0.750	0.500	0.000	0.500	0.500	0.250	0.000	0.000	0.333	0.250	0.000	0.600
	0.667				0.750				0.625				0.313				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Mangels Blvd/Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-003
Date: 12/4/2021

Data - Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Mangels Blvd/Business Center Dr				Mangels Blvd/Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
2:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	3
3:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	2	0	0	1	0	0	3	1	0	0	0	1	2	0	12
APPROACH %'s :	0.00%	50.00%	50.00%	0.00%	0.00%	100.00%	0.00%	0.00%	75.00%	25.00%	0.00%	0.00%	0.00%	33.33%	66.67%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	0	0	1	0	0	1	0	0	1	0	0	0	0	1	1	0	5
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.417
	0.250				0.250				0.250				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Mangels Blvd/Business Center Dr Project ID: 21-080323-003
City: Fairfield Date: 12/4/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd		Mangels Blvd/Business Center Dr		Mangels Blvd/Business Center Dr		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	1	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	1	1	0	0	2
4:30 PM	0	0	0	1	0	0	1	0	2
4:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	1	1	2	1	0	5
APPROACH %'s :			0.00%	100.00%	33.33%	66.67%	100.00%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	1
PEAK HR FACTOR :						0.250			0.250
					0.250				

Prepared by National Data & Surveying Services

Suisun Valley Rd & Neitzel Rd

Peak Hour Turning Movement Count

ID: 21-080323-004
City: Fairfield

Day: Saturday
Date: 12/4/2021

PEAK HOURS	COUNT PERIODS
NONE	NONE
NONE	NONE
02:15 PM - 03:15 PM	2:00 PM - 05:00 PM

SOUTHBOUND (Suisun Valley Rd)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	42	214	0	0	303	PM

EASTBOUND (Neitzel Rd)

AM	NOON	PM	
0	0	159	⇦
0	0	0	↶ 0
0	0	75	↱ 0
0	0	0	→ 0
0	0	271	↴ 0
AM	NOON	PM	

WESTBOUND (Neitzel Rd)

PM	NOON	AM	
0	0	0	↰ 0
0	0	0	← 0
0	0	0	↰ 0
0	0	0	↶ 0
0	0	0	⇨
PM	NOON	AM	

NORTHBOUND (Suisun Valley Rd)

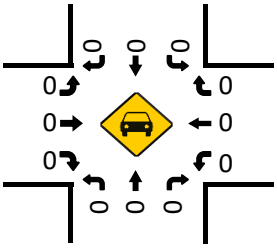
PM	489	4	117	228	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

CONTROL

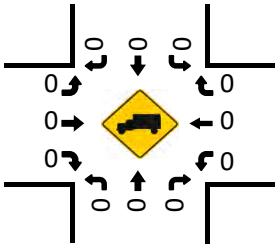
3-Way Stop(NB/SB/EB)

	AM	NOON	PM
TEV	0	0	951
PHF			0.89

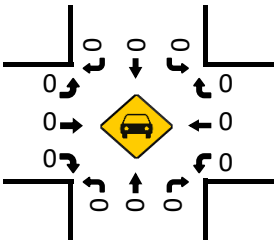
Cars (AM)



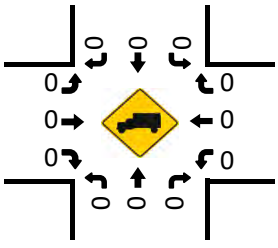
HT (AM)



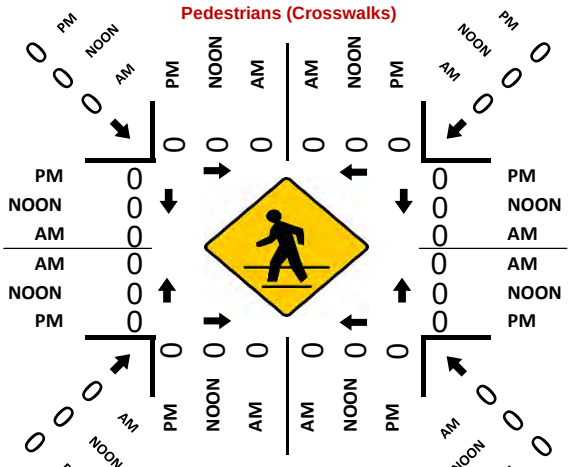
Cars (NOON)



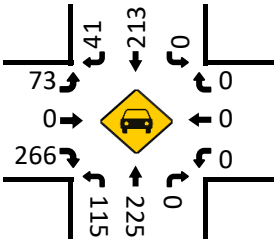
HT (NOON)



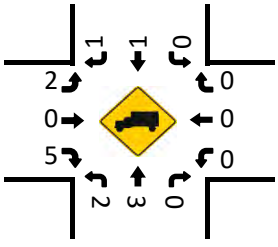
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Neitzel Rd
City: Fairfield
Control: 3-Way Stop(NB/SB/EB)

Project ID: 21-080323-004
Date: 12/4/2021

Data - Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Neitzel Rd				Neitzel Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	32	58	0	0	0	57	14	0	21	0	76	0	0	0	0	0	258
2:15 PM	33	51	0	0	0	55	6	0	11	0	57	0	0	0	0	0	213
2:30 PM	26	64	0	2	0	59	17	0	23	0	77	0	0	0	0	0	268
2:45 PM	27	48	0	0	0	39	9	0	17	0	63	0	0	0	0	0	203
3:00 PM	31	65	0	2	0	61	10	0	24	0	74	0	0	0	0	0	267
3:15 PM	24	54	0	2	0	46	8	0	32	0	46	0	0	0	0	0	212
3:30 PM	26	58	0	1	0	52	7	0	29	0	64	0	0	0	0	0	237
3:45 PM	25	50	0	0	0	53	7	0	25	0	65	0	0	0	0	0	225
4:00 PM	24	60	0	0	0	64	7	0	23	0	71	1	0	0	0	0	250
4:15 PM	27	56	0	0	0	60	11	0	18	0	58	0	0	0	0	0	230
4:30 PM	18	56	0	1	0	56	15	0	21	0	59	0	0	0	0	0	226
4:45 PM	26	58	0	0	0	63	6	0	20	0	52	0	0	0	0	0	225
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	319	678	0	8	0	665	117	0	264	0	762	1	0	0	0	0	2814
APPROACH %'s :	31.74%	67.46%	0.00%	0.80%	0.00%	85.04%	14.96%	0.00%	25.71%	0.00%	74.20%	0.10%					
PEAK HR :	02:15 PM - 03:15 PM																TOTAL
PEAK HR VOL :	117	228	0	4	0	214	42	0	75	0	271	0	0	0	0	0	951
PEAK HR FACTOR :	0.886	0.877	0.000	0.500	0.000	0.877	0.618	0.000	0.781	0.000	0.880	0.000	0.000	0.000	0.000	0.000	0.887
	0.890				0.842				0.865								

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Neitzel Rd
City: Fairfield
Control: 3-Way Stop(NB/SB/EB)

Project ID: 21-080323-004
Date: 12/4/2021

Data - Cars

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Neitzel Rd				Neitzel Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	32	58	0	0	0	57	14	0	21	0	74	0	0	0	0	0	256
2:15 PM	31	51	0	0	0	55	6	0	10	0	56	0	0	0	0	0	209
2:30 PM	26	63	0	2	0	59	16	0	23	0	75	0	0	0	0	0	264
2:45 PM	27	47	0	0	0	39	9	0	16	0	62	0	0	0	0	0	200
3:00 PM	31	64	0	2	0	60	10	0	24	0	73	0	0	0	0	0	264
3:15 PM	24	53	0	2	0	45	8	0	31	0	46	0	0	0	0	0	209
3:30 PM	26	56	0	1	0	52	6	0	28	0	63	0	0	0	0	0	232
3:45 PM	25	49	0	0	0	53	6	0	25	0	65	0	0	0	0	0	223
4:00 PM	24	60	0	0	0	63	7	0	23	0	70	1	0	0	0	0	248
4:15 PM	27	56	0	0	0	59	10	0	18	0	58	0	0	0	0	0	228
4:30 PM	18	56	0	1	0	54	15	0	21	0	58	0	0	0	0	0	223
4:45 PM	25	57	0	0	0	59	6	0	20	0	50	0	0	0	0	0	217
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	316	670	0	8	0	655	113	0	260	0	750	1	0	0	0	0	2773
APPROACH %'s :	31.79%	67.40%	0.00%	0.80%	0.00%	85.29%	14.71%	0.00%	25.72%	0.00%	74.18%	0.10%					
PEAK HR :	02:15 PM - 03:15 PM																TOTAL
PEAK HR VOL :	115	225	0	4	0	213	41	0	73	0	266	0	0	0	0	0	937
PEAK HR FACTOR :	0.927	0.879	0.000	0.500	0.000	0.888	0.641	0.000	0.760	0.000	0.887	0.000	0.000	0.000	0.000	0.000	0.887
	0.887				0.847				0.865								

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Neitzel Rd
City: Fairfield
Control: 3-Way Stop(NB/SB/EB)

Project ID: 21-080323-004
Date: 12/4/2021

Data - HT

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Neitzel Rd				Neitzel Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
2:15 PM	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	4
2:30 PM	0	1	0	0	0	0	1	0	0	0	2	0	0	0	0	0	4
2:45 PM	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3
3:00 PM	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	3
3:15 PM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
3:30 PM	0	2	0	0	0	0	1	0	1	0	1	0	0	0	0	0	5
3:45 PM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
4:00 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	3
4:45 PM	1	1	0	0	0	4	0	0	0	0	2	0	0	0	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	8	0	0	0	10	4	0	4	0	12	0	0	0	0	0	41
APPROACH %'s :	27.27%	72.73%	0.00%	0.00%	0.00%	71.43%	28.57%	0.00%	25.00%	0.00%	75.00%	0.00%					
PEAK HR :	02:15 PM - 03:15 PM																TOTAL
PEAK HR VOL :	2	3	0	0	0	1	1	0	2	0	5	0	0	0	0	0	14
PEAK HR FACTOR :	0.250	0.750	0.000	0.000	0.000	0.250	0.250	0.000	0.500	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.875
	0.625				0.500				0.875								

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Neitzel Rd
City: Fairfield
Control: 3-Way Stop(NB/SB/EB)

Project ID: 21-080323-004
Date: 12/4/2021

Data - Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Neitzel Rd				Neitzel Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	1	0	0	1	0	0	0	0	0	0	0	5
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%					
PEAK HR :	02:15 PM - 03:15 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
		0.250															

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Neitzel Rd
City: Fairfield

Project ID: 21-080323-004
Date: 12/4/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd		Neitzel Rd		Neitzel Rd		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	02:15 PM - 03:15 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

Pittman Rd & I-80 EB Ramps

Peak Hour Turning Movement Count

ID: 21-080323-005
City: Fairfield

Day: Saturday
Date: 12/4/2021

PEAK HOURS	COUNT PERIODS
NONE	NONE
NONE	NONE
02:15 PM - 03:15 PM	2:00 PM - 05:00 PM

CONTROL: Signalized

	AM	NOON	PM
TEV	0	0	1556
PHF			0.95

SOUTHBOUND (Pittman Rd)

	L	T	R	U	Total	
AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	371	111	0	348	PM

EASTBOUND (I-80 EB Ramps)

AM	NOON	PM	
0	0	0	⇦
0	0	0	↶ 0
0	0	124	↱ 0
0	0	4	→ 0
0	0	299	↴ 0
AM	NOON	PM	

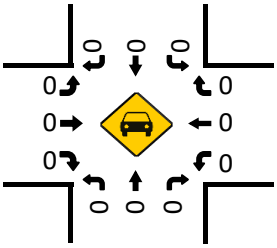
WESTBOUND (I-80 EB Ramps)

PM	NOON	AM	
0	0	0	0 ↰
0	0	0	0 ←
0	0	0	0 ↰
0	0	0	0 ↶
538	0	0	⇨
PM	NOON	AM	

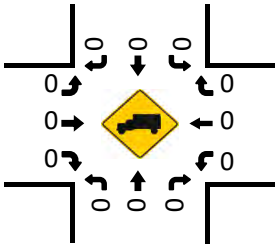
NORTHBOUND (Pittman Rd)

	L	T	T	R	Total	
PM	670	0	0	224	423	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

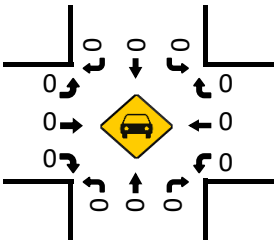
Cars (AM)



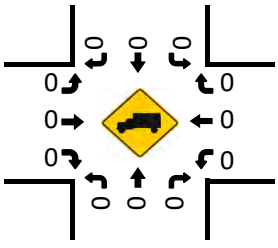
HT (AM)



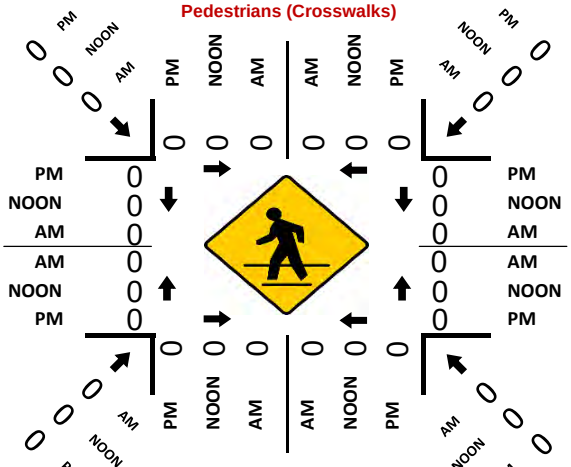
Cars (NOON)



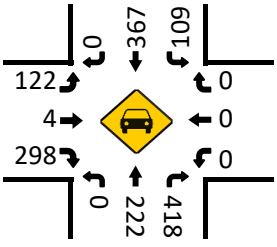
HT (NOON)



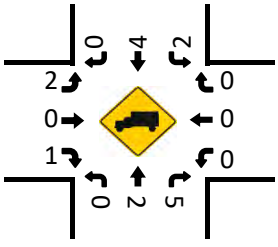
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Pittman Rd & I-80 EB Ramps
City: Fairfield
Control: Signalized

Project ID: 21-080323-005
Date: 12/4/2021

Data - Total

NS/EW Streets:	Pittman Rd				Pittman Rd				I-80 EB Ramps				I-80 EB Ramps				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	56	113	0	27	109	0	0	32	2	70	0	0	0	0	0	409
2:15 PM	0	56	109	0	31	79	0	0	29	4	72	0	0	0	0	0	380
2:30 PM	0	53	98	0	27	112	0	0	38	0	74	0	0	0	0	0	402
2:45 PM	0	55	98	0	22	80	0	0	23	0	85	0	0	0	0	0	363
3:00 PM	0	60	118	0	31	100	0	0	34	0	68	0	0	0	0	0	411
3:15 PM	0	48	102	0	25	76	0	0	33	0	84	0	0	0	0	0	368
3:30 PM	0	51	86	0	24	87	0	0	38	1	71	0	0	0	0	0	358
3:45 PM	0	41	85	0	28	94	0	0	31	0	70	0	0	0	0	0	349
4:00 PM	0	63	118	0	28	108	0	0	23	1	66	0	0	0	0	0	407
4:15 PM	0	53	96	0	29	87	0	0	28	0	77	0	0	0	0	0	370
4:30 PM	0	45	99	0	28	91	0	0	33	1	92	0	0	0	0	0	389
4:45 PM	0	49	102	0	29	80	0	0	34	1	65	0	0	0	0	0	360
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	630	1224	0	329	1103	0	0	376	10	894	0	0	0	0	0	4566
APPROACH %'s :	0.00%	33.98%	66.02%	0.00%	22.97%	77.03%	0.00%	0.00%	29.38%	0.78%	69.84%	0.00%					
PEAK HR :	02:15 PM - 03:15 PM																TOTAL
PEAK HR VOL :	0	224	423	0	111	371	0	0	124	4	299	0	0	0	0	0	1556
PEAK HR FACTOR :	0.000	0.933	0.896	0.000	0.895	0.828	0.000	0.000	0.816	0.250	0.879	0.000	0.000	0.000	0.000	0.000	0.946
		0.909				0.867				0.953							

National Data & Surveying Services Intersection Turning Movement Count

Location: Pittman Rd & I-80 EB Ramps
City: Fairfield
Control: Signalized

Project ID: 21-080323-005
Date: 12/4/2021

Data - Cars

NS/EW Streets:	Pittman Rd				Pittman Rd				I-80 EB Ramps				I-80 EB Ramps				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	56	112	0	25	109	0	0	32	2	68	0	0	0	0	0	404
2:15 PM	0	55	106	0	31	78	0	0	29	4	72	0	0	0	0	0	375
2:30 PM	0	53	97	0	27	111	0	0	37	0	73	0	0	0	0	0	398
2:45 PM	0	54	97	0	21	79	0	0	23	0	85	0	0	0	0	0	359
3:00 PM	0	60	118	0	30	99	0	0	33	0	68	0	0	0	0	0	408
3:15 PM	0	48	102	0	24	76	0	0	32	0	84	0	0	0	0	0	366
3:30 PM	0	51	86	0	24	86	0	0	36	1	71	0	0	0	0	0	355
3:45 PM	0	40	85	0	28	94	0	0	30	0	67	0	0	0	0	0	344
4:00 PM	0	63	117	0	27	108	0	0	23	1	64	0	0	0	0	0	403
4:15 PM	0	53	96	0	28	86	0	0	28	0	77	0	0	0	0	0	368
4:30 PM	0	45	96	0	26	90	0	0	33	1	90	0	0	0	0	0	381
4:45 PM	0	48	102	0	27	77	0	0	33	1	65	0	0	0	0	0	353
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	626	1214	0	318	1093	0	0	369	10	884	0	0	0	0	0	4514
APPROACH %'s :	0.00%	34.02%	65.98%	0.00%	22.54%	77.46%	0.00%	0.00%	29.22%	0.79%	69.99%	0.00%					
PEAK HR :	02:15 PM - 03:15 PM																TOTAL
PEAK HR VOL :	0	222	418	0	109	367	0	0	122	4	298	0	0	0	0	0	1540
PEAK HR FACTOR :	0.000	0.925	0.886	0.000	0.879	0.827	0.000	0.000	0.824	0.250	0.876	0.000	0.000	0.000	0.000	0.000	0.944
		0.899				0.862				0.964							

National Data & Surveying Services Intersection Turning Movement Count

Location: Pittman Rd & I-80 EB Ramps
City: Fairfield
Control: Signalized

Project ID: 21-080323-005
Date: 12/4/2021

Data - HT

NS/EW Streets:	Pittman Rd				Pittman Rd				I-80 EB Ramps				I-80 EB Ramps				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	1	0	2	0	0	0	0	0	2	0	0	0	0	0	5
2:15 PM	0	1	3	0	0	1	0	0	0	0	0	0	0	0	0	0	5
2:30 PM	0	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	4
2:45 PM	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	4
3:00 PM	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	3
3:15 PM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2
3:30 PM	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	3
3:45 PM	0	1	0	0	0	0	0	0	1	0	3	0	0	0	0	0	5
4:00 PM	0	0	1	0	1	0	0	0	0	0	2	0	0	0	0	0	4
4:15 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	3	0	2	1	0	0	0	0	2	0	0	0	0	0	8
4:45 PM	0	1	0	0	2	3	0	0	1	0	0	0	0	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	10	0	11	10	0	0	7	0	10	0	0	0	0	0	52
APPROACH %'s :	0.00%	28.57%	71.43%	0.00%	52.38%	47.62%	0.00%	0.00%	41.18%	0.00%	58.82%	0.00%					
PEAK HR :	02:15 PM - 03:15 PM																TOTAL
PEAK HR VOL :	0	2	5	0	2	4	0	0	2	0	1	0	0	0	0	0	16
PEAK HR FACTOR :	0.000	0.500	0.417	0.000	0.500	1.000	0.000	0.000	0.500	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.800
	0.438				0.750				0.375								

National Data & Surveying Services Intersection Turning Movement Count

Location: Pittman Rd & I-80 EB Ramps
City: Fairfield
Control: Signalized

Project ID: 21-080323-005
Date: 12/4/2021

Data - Bikes

NS/EW Streets:	Pittman Rd				Pittman Rd				I-80 EB Ramps				I-80 EB Ramps				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	1	0	0	1	0	0	0	0	0	0	0	0	0	0	5
APPROACH %'s :	0.00%	75.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	02:15 PM - 03:15 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
		0.250															

National Data & Surveying Services Intersection Turning Movement Count

Location: Pittman Rd & I-80 EB Ramps
City: Fairfield
Project ID: 21-080323-005
Date: 12/4/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Pittman Rd		Pittman Rd		I-80 EB Ramps		I-80 EB Ramps		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	1	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	1	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	1	0	0	0	1
4:45 PM	0	0	0	0	0	0	1	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	2	1	1	0	4
APPROACH %'s :					66.67%	33.33%	100.00%	0.00%	
PEAK HR :	02:15 PM - 03:15 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

Green Valley Rd & Business Center Dr

Peak Hour Turning Movement Count

ID: 21-080323-006
City: Fairfield

Day: Saturday
Date: 12/4/2021

PEAK HOURS	COUNT PERIODS
NONE	NONE
NONE	NONE
02:30 PM - 03:30 PM	2:00 PM - 05:00 PM

CONTROL: Signalized

	AM	NOON	PM
TEV	0	0	2895
PHF			0.97

SOUTHBOUND (Green Valley Rd)

	L	T	R	U	Total	
AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	116	235	4	0	366	PM

WESTBOUND (Business Center Dr)

	L	T	R	U	Total	
AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	87	475	245	1	200	PM

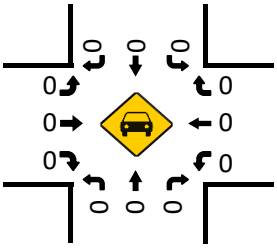
NORTHBOUND (Green Valley Rd)

	L	T	R	U	Total	
AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	1298	0	436	161	45	PM

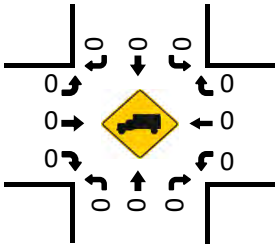
EASTBOUND (Business Center Dr)

	L	T	R	U	Total	
AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	4	818	1031	PM

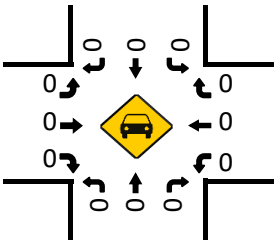
Cars (AM)



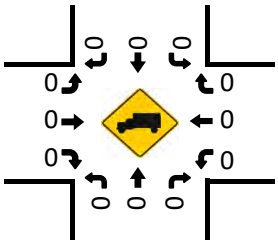
HT (AM)



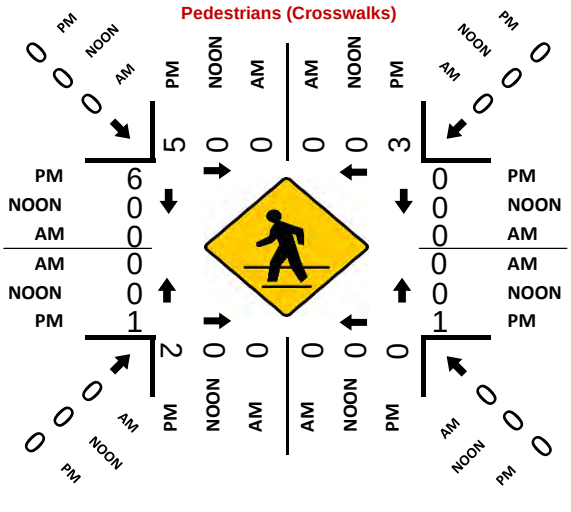
Cars (NOON)



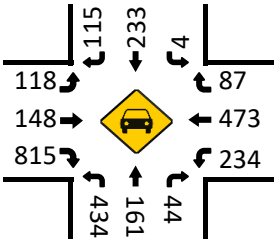
HT (NOON)



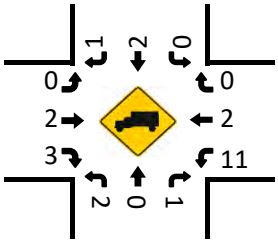
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Green Valley Rd & Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-006
Date: 12/4/2021

Data - Total

NS/EW Streets:	Green Valley Rd				Green Valley Rd				Business Center Dr				Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	72	51	14	0	2	72	25	0	20	39	213	1	72	143	30	0	754
2:15 PM	96	45	11	0	0	47	15	0	27	29	172	1	65	153	19	0	680
2:30 PM	100	32	13	0	1	75	25	0	29	24	212	0	57	121	15	1	705
2:45 PM	123	39	14	0	2	44	32	0	30	43	207	2	63	120	24	0	743
3:00 PM	95	43	5	0	1	65	33	0	24	47	197	1	63	115	25	0	714
3:15 PM	118	47	13	0	0	51	26	0	35	36	202	1	62	119	23	0	733
3:30 PM	74	44	19	0	1	70	30	0	28	33	189	0	55	126	15	0	684
3:45 PM	103	41	4	0	1	58	30	0	22	34	198	2	59	104	20	0	676
4:00 PM	79	46	6	0	1	87	41	0	37	32	192	0	50	86	17	1	675
4:15 PM	81	46	6	0	0	43	35	0	27	31	171	0	72	114	21	0	647
4:30 PM	84	51	7	0	2	71	31	0	27	35	191	1	55	92	19	0	666
4:45 PM	78	39	5	0	0	63	32	0	39	39	199	0	75	114	19	0	702
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1103	524	117	0	11	746	355	0	345	422	2343	9	748	1407	247	2	8379
APPROACH %'s :	63.25%	30.05%	6.71%	0.00%	0.99%	67.09%	31.92%	0.00%	11.06%	13.53%	75.12%	0.29%	31.11%	58.53%	10.27%	0.08%	
PEAK HR :	02:30 PM - 03:30 PM																TOTAL
PEAK HR VOL :	436	161	45	0	4	235	116	0	118	150	818	4	245	475	87	1	2895
PEAK HR FACTOR :	0.886	0.856	0.804	0.000	0.500	0.783	0.879	0.000	0.843	0.798	0.965	0.500	0.972	0.981	0.870	0.250	0.974
	0.902				0.879				0.966				0.976				

National Data & Surveying Services Intersection Turning Movement Count

Location: Green Valley Rd & Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-006
Date: 12/4/2021

Data - Cars

NS/EW Streets:	Green Valley Rd				Green Valley Rd				Business Center Dr				Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	72	51	14	0	2	72	25	0	20	39	212	1	72	143	28	0	751
2:15 PM	95	44	11	0	0	47	15	0	27	28	172	1	60	152	19	0	671
2:30 PM	99	32	12	0	1	75	24	0	29	24	211	0	54	121	15	1	698
2:45 PM	123	39	14	0	2	43	32	0	30	43	207	1	62	120	24	0	740
3:00 PM	95	43	5	0	1	64	33	0	24	47	196	1	58	114	25	0	706
3:15 PM	117	47	13	0	0	51	26	0	35	34	201	1	60	118	23	0	726
3:30 PM	74	44	18	0	1	69	30	0	28	33	187	0	53	126	15	0	678
3:45 PM	103	41	4	0	1	58	30	0	22	34	197	2	55	104	20	0	671
4:00 PM	78	46	5	0	1	84	41	0	37	32	190	0	46	86	17	1	664
4:15 PM	81	46	6	0	0	42	35	0	27	30	171	0	69	113	21	0	641
4:30 PM	83	51	6	0	2	70	31	0	27	35	191	1	51	92	19	0	659
4:45 PM	78	39	4	0	0	62	32	0	39	39	199	0	71	113	19	0	695
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1098	523	112	0	11	737	354	0	345	418	2334	8	711	1402	245	2	8300
APPROACH %'s :	63.36%	30.18%	6.46%	0.00%	1.00%	66.88%	32.12%	0.00%	11.11%	13.46%	75.17%	0.26%	30.13%	59.41%	10.38%	0.08%	
PEAK HR :	02:30 PM - 03:30 PM																TOTAL
PEAK HR VOL :	434	161	44	0	4	233	115	0	118	148	815	3	234	473	87	1	2870
PEAK HR FACTOR :	0.882	0.856	0.786	0.000	0.500	0.777	0.871	0.000	0.843	0.787	0.966	0.750	0.944	0.977	0.870	0.250	0.970
	0.903				0.880				0.964				0.965				

National Data & Surveying Services Intersection Turning Movement Count

Location: Green Valley Rd & Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-006
Date: 12/4/2021

Data - HT

NS/EW Streets:	Green Valley Rd				Green Valley Rd				Business Center Dr				Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3
2:15 PM	1	1	0	0	0	0	0	0	0	1	0	0	5	1	0	0	9
2:30 PM	1	0	1	0	0	0	1	0	0	0	1	0	3	0	0	0	7
2:45 PM	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	3
3:00 PM	0	0	0	0	0	1	0	0	0	0	1	0	5	1	0	0	8
3:15 PM	1	0	0	0	0	0	0	0	0	2	1	0	2	1	0	0	7
3:30 PM	0	0	1	0	0	1	0	0	0	0	2	0	2	0	0	0	6
3:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	4	0	0	0	5
4:00 PM	1	0	1	0	0	3	0	0	0	0	2	0	4	0	0	0	11
4:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	3	1	0	0	6
4:30 PM	1	0	1	0	0	1	0	0	0	0	0	0	4	0	0	0	7
4:45 PM	0	0	1	0	0	1	0	0	0	0	0	0	4	1	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	1	5	0	0	9	1	0	0	4	9	1	37	5	2	0	79
APPROACH %'s :	45.45%	9.09%	45.45%	0.00%	0.00%	90.00%	10.00%	0.00%	0.00%	28.57%	64.29%	7.14%	84.09%	11.36%	4.55%	0.00%	
PEAK HR :	02:30 PM - 03:30 PM																TOTAL
PEAK HR VOL :	2	0	1	0	0	2	1	0	0	2	3	1	11	2	0	0	25
PEAK HR FACTOR :	0.500	0.000	0.250	0.000	0.000	0.500	0.250	0.000	0.000	0.250	0.750	0.250	0.550	0.500	0.000	0.000	0.781
	0.375				0.750				0.500				0.542				

National Data & Surveying Services Intersection Turning Movement Count

Location: Green Valley Rd & Business Center Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-006
Date: 12/4/2021

Data - Bikes

NS/EW Streets:	Green Valley Rd				Green Valley Rd				Business Center Dr				Business Center Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
3:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	0	0	0	2	1	0	1	1	0	0	2	0	3	0	14
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	50.00%	50.00%	0.00%	0.00%	40.00%	0.00%	60.00%	0.00%	
PEAK HR :	02:30 PM - 03:30 PM																TOTAL
PEAK HR VOL :	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.375
		0.500												0.250			

National Data & Surveying Services Intersection Turning Movement Count

Location: Green Valley Rd & Business Center Dr
City: Fairfield

Project ID: 21-080323-006
Date: 12/4/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Green Valley Rd		Green Valley Rd		Business Center Dr		Business Center Dr		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	0	0	1	1
2:15 PM	0	0	0	0	0	0	0	0	0
2:30 PM	0	2	0	0	0	0	1	2	5
2:45 PM	0	1	1	0	0	0	0	4	6
3:00 PM	0	0	1	0	1	0	0	0	2
3:15 PM	5	0	0	0	0	0	0	0	5
3:30 PM	0	0	0	0	0	0	2	0	2
3:45 PM	0	0	0	0	0	0	0	1	1
4:00 PM	0	0	0	1	0	0	0	0	1
4:15 PM	0	0	0	0	0	1	5	0	6
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	1	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	5	3	2	1	1	1	8	9	30
APPROACH %'s :	62.50%	37.50%	66.67%	33.33%	50.00%	50.00%	47.06%	52.94%	
PEAK HR :	02:30 PM - 03:30 PM								TOTAL
PEAK HR VOL :	5	3	2	0	1	0	1	6	18
PEAK HR FACTOR :	0.250	0.375	0.500		0.250		0.250	0.375	0.750
	0.400		0.500		0.250		0.438		

6843-01

Prepared by National Data & Surveying Services

Lopes Rd/Green Valley Rd & I-80 WB On Ramp

Peak Hour Turning Movement Count

ID: 21-080323-007
City: Fairfield

Day: Saturday
Date: 12/4/2021

Lopes Rd/Green Valley Rd

SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	545	751	0	0	646	PM

PEAK HOURS: AM NONE; NOON NONE; PM 02:30 PM - 03:30 PM

COUNT PERIODS: AM NONE; NOON NONE; PM 2:00 PM - 05:00 PM

EASTBOUND

AM	NOON	PM	
0	0	675	⇦
0	0	0	↶ 0
0	0	0	↰ 0
0	0	0	→ 0
0	0	0	↷ 0
AM	NOON	PM	

WESTBOUND

PM	NOON	AM	
0	0	0	0 ↷
0	0	0	0 ←
0	0	0	0 ↰
0	0	0	0 ↶
0	0	0	⇨
PM	NOON	AM	

I-80 WB On Ramp

I-80 WB On Ramp

CONTROL			
Signalized			
TEV	0 AM	0 NOON	2072 PM
PHF			0.96

0 0 0 0

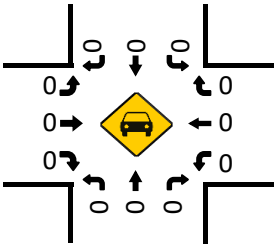
0 0 0 0

PM	751	0	130	646	0 PM
NOON	0	0	0	0	0 NOON
AM	0	0	0	0	0 AM

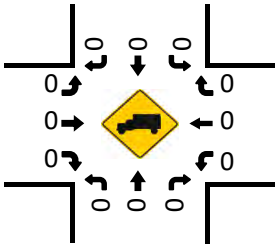
NORTHBOUND

Lopes Rd/Green Valley Rd

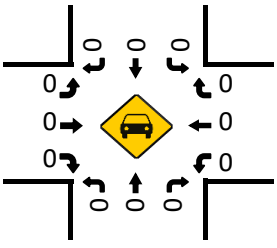
Cars (AM)



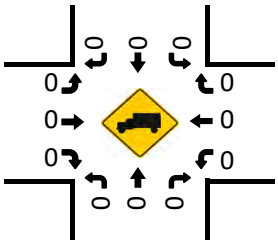
HT (AM)



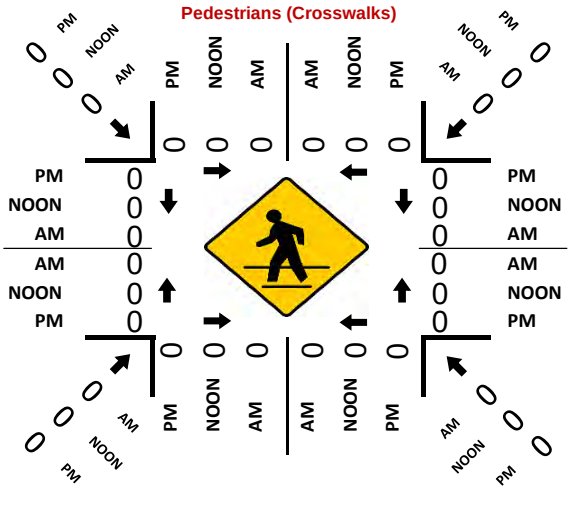
Cars (NOON)



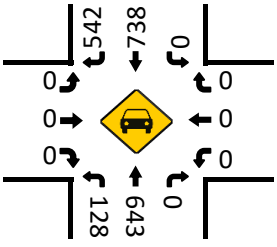
HT (NOON)



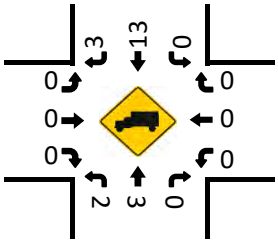
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Lopes Rd/Green Valley Rd & I-80 WB On Ramp
City: Fairfield
Control: Signalized

Project ID: 21-080323-007
Date: 12/4/2021

Data - Total

NS/EW Streets:	Lopes Rd/Green Valley Rd				Lopes Rd/Green Valley Rd				I-80 WB On Ramp				I-80 WB On Ramp				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	37	143	0	0	0	184	171	0	0	0	0	0	0	0	0	0	535
2:15 PM	32	147	0	0	0	166	121	0	0	0	0	0	0	0	0	0	466
2:30 PM	43	160	0	0	0	191	145	0	0	0	0	0	0	0	0	0	539
2:45 PM	31	160	0	0	0	185	138	0	0	0	0	0	0	0	0	0	514
3:00 PM	29	162	0	0	0	189	126	0	0	0	0	0	0	0	0	0	506
3:15 PM	27	164	0	0	0	186	136	0	0	0	0	0	0	0	0	0	513
3:30 PM	38	133	0	0	0	198	110	0	0	0	0	0	0	0	0	0	479
3:45 PM	22	152	0	0	0	192	132	0	0	0	0	0	0	0	0	0	498
4:00 PM	22	127	0	0	0	196	128	0	0	0	0	0	0	0	0	0	473
4:15 PM	30	134	0	0	0	182	106	0	0	0	0	0	0	0	0	0	452
4:30 PM	27	147	0	0	0	182	137	0	0	0	0	0	0	0	0	0	493
4:45 PM	25	117	0	0	0	202	128	0	0	0	0	0	0	0	0	0	472
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	363	1746	0	0	0	2253	1578	0	0	0	0	0	0	0	0	0	5940
APPROACH %'s :	17.21%	82.79%	0.00%	0.00%	0.00%	58.81%	41.19%	0.00%									
PEAK HR :	02:30 PM - 03:30 PM																TOTAL
PEAK HR VOL :	130	646	0	0	0	751	545	0	0	0	0	0	0	0	0	0	2072
PEAK HR FACTOR :	0.756	0.985	0.000	0.000	0.000	0.983	0.940	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.961
	0.956				0.964												

National Data & Surveying Services Intersection Turning Movement Count

Location: Lopes Rd/Green Valley Rd & I-80 WB On Ramp
City: Fairfield
Control: Signalized

Project ID: 21-080323-007
Date: 12/4/2021

Data - Cars

NS/EW Streets:	Lopes Rd/Green Valley Rd				Lopes Rd/Green Valley Rd				I-80 WB On Ramp				I-80 WB On Ramp				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	35	142	0	0	0	182	170	0	0	0	0	0	0	0	0	0	529
2:15 PM	32	146	0	0	0	162	120	0	0	0	0	0	0	0	0	0	460
2:30 PM	41	158	0	0	0	189	143	0	0	0	0	0	0	0	0	0	531
2:45 PM	31	160	0	0	0	183	138	0	0	0	0	0	0	0	0	0	512
3:00 PM	29	161	0	0	0	184	125	0	0	0	0	0	0	0	0	0	499
3:15 PM	27	164	0	0	0	182	136	0	0	0	0	0	0	0	0	0	509
3:30 PM	38	132	0	0	0	194	109	0	0	0	0	0	0	0	0	0	473
3:45 PM	21	152	0	0	0	188	131	0	0	0	0	0	0	0	0	0	492
4:00 PM	21	125	0	0	0	189	126	0	0	0	0	0	0	0	0	0	461
4:15 PM	30	134	0	0	0	178	106	0	0	0	0	0	0	0	0	0	448
4:30 PM	25	145	0	0	0	179	135	0	0	0	0	0	0	0	0	0	484
4:45 PM	25	115	0	0	0	199	126	0	0	0	0	0	0	0	0	0	465
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	355	1734	0	0	0	2209	1565	0	0	0	0	0	0	0	0	0	5863
APPROACH %'s :	16.99%	83.01%	0.00%	0.00%	0.00%	58.53%	41.47%	0.00%									
PEAK HR :	02:30 PM - 03:30 PM																TOTAL
PEAK HR VOL :	128	643	0	0	0	738	542	0	0	0	0	0	0	0	0	0	2051
PEAK HR FACTOR :	0.780	0.980	0.000	0.000	0.000	0.976	0.948	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.966
	0.969				0.964												

National Data & Surveying Services Intersection Turning Movement Count

Location: Lopes Rd/Green Valley Rd & I-80 WB On Ramp
City: Fairfield
Control: Signalized

Project ID: 21-080323-007
Date: 12/4/2021

Data - HT

NS/EW Streets:	Lopes Rd/Green Valley Rd				Lopes Rd/Green Valley Rd				I-80 WB On Ramp				I-80 WB On Ramp				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	2	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	6
2:15 PM	0	1	0	0	0	4	1	0	0	0	0	0	0	0	0	0	6
2:30 PM	2	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	8
2:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
3:00 PM	0	1	0	0	0	5	1	0	0	0	0	0	0	0	0	0	7
3:15 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
3:30 PM	0	1	0	0	0	4	1	0	0	0	0	0	0	0	0	0	6
3:45 PM	1	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	6
4:00 PM	1	2	0	0	0	7	2	0	0	0	0	0	0	0	0	0	12
4:15 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
4:30 PM	2	2	0	0	0	3	2	0	0	0	0	0	0	0	0	0	9
4:45 PM	0	2	0	0	0	3	2	0	0	0	0	0	0	0	0	0	7
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	8	12	0	0	0	44	13	0	0	0	0	0	0	0	0	0	77
APPROACH %'s :	40.00%	60.00%	0.00%	0.00%	0.00%	77.19%	22.81%	0.00%									
PEAK HR :	02:30 PM - 03:30 PM																TOTAL
PEAK HR VOL :	2	3	0	0	0	13	3	0	0	0	0	0	0	0	0	0	21
PEAK HR FACTOR :	0.250	0.375	0.000	0.000	0.000	0.650	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.656
	0.313				0.667												

National Data & Surveying Services Intersection Turning Movement Count

Location: Lopes Rd/Green Valley Rd & I-80 WB On Ramp
City: Fairfield
Control: Signalized

Project ID: 21-080323-007
Date: 12/4/2021

Data - Bikes

NS/EW Streets:	Lopes Rd/Green Valley Rd				Lopes Rd/Green Valley Rd				I-80 WB On Ramp				I-80 WB On Ramp				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	3
4:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	4	0	0	1	0	1	0	0	0	0	0	9
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%					
PEAK HR :	02:30 PM - 03:30 PM																TOTAL
PEAK HR VOL :	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750
	0.500				0.250												

National Data & Surveying Services Intersection Turning Movement Count

Location: Lopes Rd/Green Valley Rd & I-80 WB On Ramp Project ID: 21-080323-007
City: Fairfield Date: 12/4/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Lopes Rd/Green Valley Rd		Lopes Rd/Green Valley Rd		I-80 WB On Ramp		I-80 WB On Ramp		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	0	0	1	1
2:15 PM	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	2	0	2
4:45 PM	0	0	0	0	0	0	0	1	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	2	2	4
APPROACH %'s :							50.00%	50.00%	
PEAK HR :	02:30 PM - 03:30 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

Suisun Valley Rd & Oakwood Dr/Solano College Rd

Peak Hour Turning Movement Count

ID: 21-080323-008
City: Fairfield

Day: Saturday
Date: 12/4/2021

PEAK HOURS

AM	NONE
NOON	NONE
PM	02:00 PM - 03:00 PM

COUNT PERIODS

AM	NONE
NOON	NONE
PM	2:00 PM - 05:00 PM

SOUTHBOUND (Suisun Valley Rd)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	4	206	1	0	208	PM

EASTBOUND (Oakwood Dr/Solano College Rd)

AM	NOON	PM	
0	0	33	
0	0	0	0
0	0	2	0
0	0	1	0
0	0	24	0
AM	NOON	PM	

WESTBOUND (Oakwood Dr/Solano College Rd)

PM	NOON	AM	
3	0	0	0
1	0	0	0
9	0	0	0
0	0	0	0
14	0	0	
PM	NOON	AM	

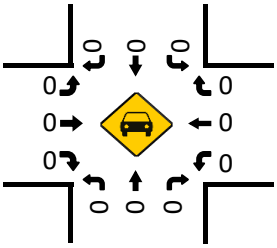
CONTROL: Signalized

TEV	0 AM	0 NOON	503 PM
PHF			0.94

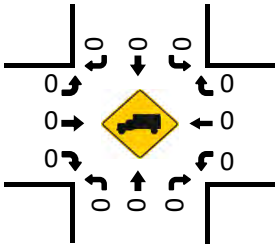
NORTHBOUND (Suisun Valley Rd)

PM	248	9	28	203	12	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

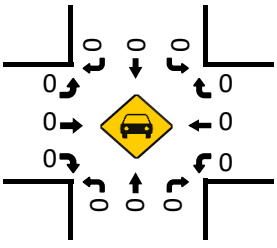
Cars (AM)



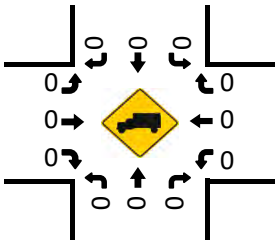
HT (AM)



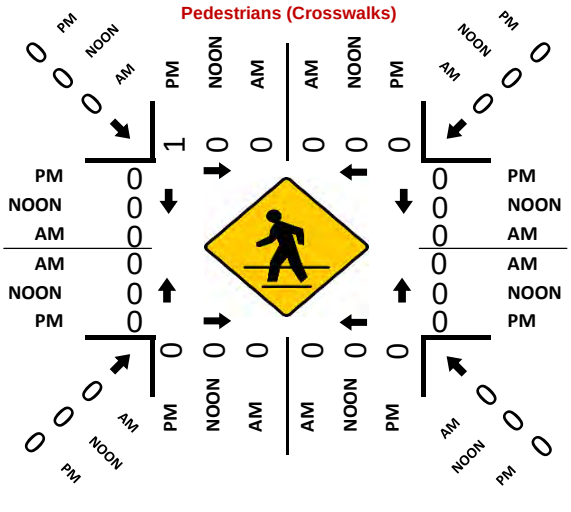
Cars (NOON)



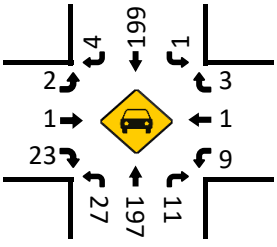
HT (NOON)



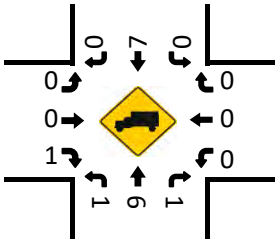
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Oakwood Dr/Solano College Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-008
Date: 12/4/2021

Data - Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Oakwood Dr/Solano College Rd				Oakwood Dr/Solano College Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	4	56	2	1	0	56	1	0	0	0	8	0	2	0	2	0	132
2:15 PM	9	39	4	2	0	45	0	0	1	0	4	0	4	0	0	0	108
2:30 PM	7	52	3	6	1	47	2	0	1	0	7	0	2	0	1	0	129
2:45 PM	8	56	3	0	0	58	1	0	0	1	5	0	1	1	0	0	134
3:00 PM	1	45	5	1	1	56	2	2	1	0	5	0	0	2	1	0	122
3:15 PM	4	42	6	3	0	29	4	0	1	0	3	0	4	0	0	0	96
3:30 PM	14	55	4	2	1	41	2	0	0	1	7	0	1	0	0	0	128
3:45 PM	2	31	3	4	0	36	0	0	2	0	7	0	2	1	0	0	88
4:00 PM	5	44	0	4	1	36	4	0	0	0	2	0	3	0	1	0	100
4:15 PM	10	32	3	3	0	52	1	0	1	0	8	0	2	1	2	0	115
4:30 PM	9	40	2	1	0	57	0	0	3	0	4	0	3	0	0	0	119
4:45 PM	10	32	2	5	0	52	6	1	0	0	6	0	0	0	0	0	114
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	83	524	37	32	4	565	23	3	10	2	66	0	24	5	7	0	1385
APPROACH %'s :	12.28%	77.51%	5.47%	4.73%	0.67%	94.96%	3.87%	0.50%	12.82%	2.56%	84.62%	0.00%	66.67%	13.89%	19.44%	0.00%	
PEAK HR :	02:00 PM - 03:00 PM																TOTAL
PEAK HR VOL :	28	203	12	9	1	206	4	0	2	1	24	0	9	1	3	0	503
PEAK HR FACTOR :	0.778	0.906	0.750	0.375	0.250	0.888	0.500	0.000	0.500	0.250	0.750	0.000	0.563	0.250	0.375	0.000	0.938
	0.926				0.894				0.844				0.813				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Oakwood Dr/Solano College Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-008
Date: 12/4/2021

Data - Cars

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Oakwood Dr/Solano College Rd				Oakwood Dr/Solano College Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	4	56	1	1	0	56	1	0	0	0	8	0	2	0	2	0	131
2:15 PM	9	38	4	2	0	43	0	0	1	0	4	0	4	0	0	0	105
2:30 PM	7	52	3	6	1	43	2	0	1	0	7	0	2	0	1	0	125
2:45 PM	7	51	3	0	0	57	1	0	0	1	4	0	1	1	0	0	126
3:00 PM	1	45	4	1	1	56	2	2	1	0	5	0	0	2	1	0	121
3:15 PM	4	42	6	3	0	28	4	0	1	0	3	0	4	0	0	0	95
3:30 PM	14	52	3	2	1	38	2	0	0	1	7	0	1	0	0	0	121
3:45 PM	2	29	3	4	0	36	0	0	2	0	7	0	2	1	0	0	86
4:00 PM	5	44	0	4	1	35	4	0	0	0	2	0	3	0	1	0	99
4:15 PM	10	32	2	3	0	50	1	0	1	0	8	0	2	1	2	0	112
4:30 PM	9	40	2	1	0	54	0	0	3	0	4	0	3	0	0	0	116
4:45 PM	10	32	2	5	0	51	6	1	0	0	6	0	0	0	0	0	113
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	82	513	33	32	4	547	23	3	10	2	65	0	24	5	7	0	1350
APPROACH %'s :	12.42%	77.73%	5.00%	4.85%	0.69%	94.80%	3.99%	0.52%	12.99%	2.60%	84.42%	0.00%	66.67%	13.89%	19.44%	0.00%	
PEAK HR :	02:00 PM - 03:00 PM																TOTAL
PEAK HR VOL :	27	197	11	9	1	199	4	0	2	1	23	0	9	1	3	0	487
PEAK HR FACTOR :	0.750	0.879	0.688	0.375	0.250	0.873	0.500	0.000	0.500	0.250	0.719	0.000	0.563	0.250	0.375	0.000	0.929
	0.897				0.879				0.813				0.813				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Oakwood Dr/Solano College Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-008
Date: 12/4/2021

Data - HT

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Oakwood Dr/Solano College Rd				Oakwood Dr/Solano College Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:15 PM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
2:30 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
2:45 PM	1	5	0	0	0	1	0	0	0	0	1	0	0	0	0	0	8
3:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:30 PM	0	3	1	0	0	3	0	0	0	0	0	0	0	0	0	0	7
3:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3
4:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	11	4	0	0	18	0	0	0	0	1	0	0	0	0	0	35
APPROACH %'s :	6.25%	68.75%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%					
PEAK HR :	02:00 PM - 03:00 PM																TOTAL
PEAK HR VOL :	1	6	1	0	0	7	0	0	0	0	1	0	0	0	0	0	16
PEAK HR FACTOR :	0.250	0.300	0.250	0.000	0.000	0.438	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.500
	0.333				0.438				0.250								

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Oakwood Dr/Solano College Rd
City: Fairfield
Control: Signalized

Project ID: 21-080323-008
Date: 12/4/2021

Data - Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Oakwood Dr/Solano College Rd				Oakwood Dr/Solano College Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
2:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:30 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	3
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	2	0	0	5	0	0	0	0	0	0	0	1	0	0	10
APPROACH %'s :	0.00%	50.00%	50.00%	0.00%	0.00%	100.00%	0.00%	0.00%					0.00%	100.00%	0.00%	0.00%	
PEAK HR :	02:00 PM - 03:00 PM																TOTAL
PEAK HR VOL :	0	1	2	0	0	2	0	0	0	0	0	0	0	1	0	0	6
PEAK HR FACTOR :	0.000	0.250	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.500
	0.375				0.500								0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Oakwood Dr/Solano College Rd Project ID: 21-080323-008
City: Fairfield Date: 12/4/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd		Oakwood Dr/Solano College Rd		Oakwood Dr/Solano College Rd		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	1	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	1	0	0	0	0	2	0	0	3
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	1	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	1	0	0	0	0	0	1	0	2
4:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	3	1	0	0	0	2	1	0	7
APPROACH %'s :	75.00%	25.00%			0.00%	100.00%	100.00%	0.00%	
PEAK HR :	02:00 PM - 03:00 PM								TOTAL
PEAK HR VOL :	1	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.250								0.250
	0.250								

6843-01

Prepared by National Data & Surveying Services

Suisun Valley Rd & Westamerica Dr/Kaiser Dr

Peak Hour Turning Movement Count

ID: 21-080323-009
City: Fairfield

Day: Saturday
Date: 12/4/2021

PEAK HOURS	COUNT PERIODS
NONE	NONE
NONE	NONE
02:30 PM - 03:30 PM	2:00 PM - 05:00 PM

SOUTHBOUND (Suisun Valley Rd)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	25	194	4	5	219	PM

EASTBOUND (Westamerica Dr/Kaiser Dr)

AM	NOON	PM	
0	0	68	⇦
0	0	0	↶ 0
0	0	33	↱ 0
0	0	16	→ 0
0	0	23	↷ 0
AM	NOON	PM	

WESTBOUND (Westamerica Dr/Kaiser Dr)

PM	NOON	AM	
8	0	0	0 ↰
13	0	0	0 ←
10	0	0	0 ↰
0	0	0	0 ↶
37	0	0	⇨
PM	NOON	AM	

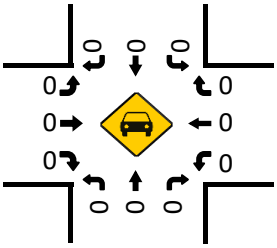
CONTROL: Signalized

TEV	0 AM	0 NOON	551 PM
PHF			0.92

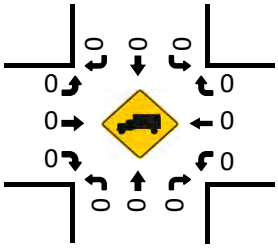
NORTHBOUND (Suisun Valley Rd)

PM	227	0	30	173	17	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

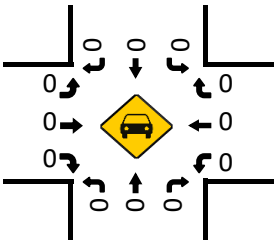
Cars (AM)



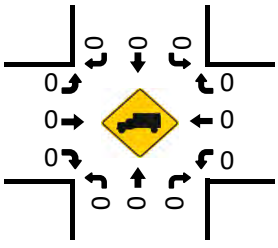
HT (AM)



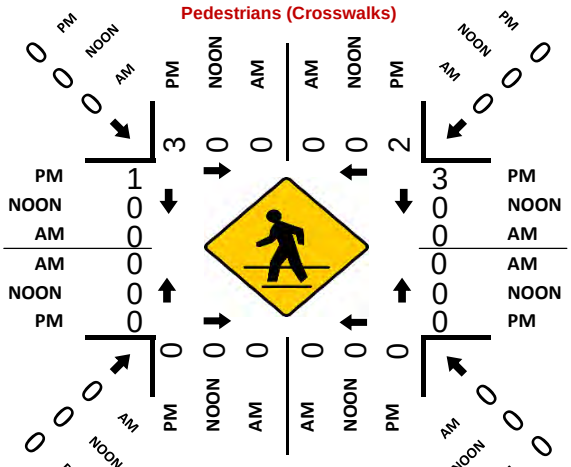
Cars (NOON)



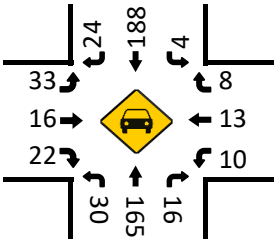
HT (NOON)



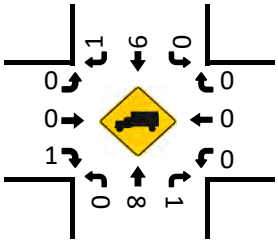
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Westamerica Dr/Kaiser Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-009
Date: 12/4/2021

Data - Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Westamerica Dr/Kaiser Dr				Westamerica Dr/Kaiser Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	10	45	5	0	0	50	8	0	7	1	3	0	2	3	1	1	136
2:15 PM	4	38	3	0	2	52	10	1	4	1	5	0	2	8	1	0	131
2:30 PM	10	42	7	0	2	56	5	2	6	4	4	0	3	6	3	0	150
2:45 PM	3	39	4	0	2	39	8	0	7	7	3	0	2	1	4	0	119
3:00 PM	6	46	3	0	0	51	6	2	14	2	10	0	3	4	1	0	148
3:15 PM	11	46	3	0	0	48	6	1	6	3	6	0	2	2	0	0	134
3:30 PM	4	47	5	0	0	35	2	1	7	4	7	0	3	3	1	1	120
3:45 PM	9	46	5	0	0	38	7	0	6	5	2	0	11	3	4	0	136
4:00 PM	5	43	7	1	1	44	5	0	7	1	6	0	7	4	4	0	135
4:15 PM	3	41	4	0	0	51	8	1	7	4	6	0	3	3	2	0	133
4:30 PM	7	36	3	0	3	44	9	1	10	1	3	0	0	5	5	0	127
4:45 PM	3	43	6	1	1	47	8	0	12	5	8	0	2	4	7	0	147
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	75	512	55	2	11	555	82	9	93	38	63	0	40	46	33	2	1616
APPROACH %'s :	11.65%	79.50%	8.54%	0.31%	1.67%	84.47%	12.48%	1.37%	47.94%	19.59%	32.47%	0.00%	33.06%	38.02%	27.27%	1.65%	
PEAK HR :	02:30 PM - 03:30 PM																TOTAL
PEAK HR VOL :	30	173	17	0	4	194	25	5	33	16	23	0	10	13	8	0	551
PEAK HR FACTOR :	0.682	0.940	0.607	0.000	0.500	0.866	0.781	0.625	0.589	0.571	0.575	0.000	0.833	0.542	0.500	0.000	0.918
	0.917				0.877				0.692				0.646				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Westamerica Dr/Kaiser Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-009
Date: 12/4/2021

Data - Cars

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Westamerica Dr/Kaiser Dr				Westamerica Dr/Kaiser Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	10	45	5	0	0	50	7	0	7	1	3	0	2	3	1	1	135
2:15 PM	4	34	3	0	2	50	10	1	4	1	5	0	1	8	1	0	124
2:30 PM	10	40	6	0	2	52	5	2	6	4	4	0	3	6	3	0	143
2:45 PM	3	37	4	0	2	39	8	0	7	7	3	0	2	1	4	0	117
3:00 PM	6	46	3	0	0	50	5	2	14	2	10	0	3	4	1	0	146
3:15 PM	11	42	3	0	0	47	6	1	6	3	5	0	2	2	0	0	128
3:30 PM	4	45	4	0	0	34	2	1	7	4	7	0	2	3	1	1	115
3:45 PM	9	46	5	0	0	37	7	0	6	5	2	0	11	3	4	0	135
4:00 PM	5	43	7	1	1	42	5	0	7	1	6	0	7	4	4	0	133
4:15 PM	3	40	4	0	0	49	8	1	7	4	6	0	3	3	2	0	130
4:30 PM	7	36	3	0	3	42	9	1	10	1	3	0	0	5	5	0	125
4:45 PM	3	43	5	1	1	46	7	0	12	5	8	0	2	4	7	0	144
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	75	497	52	2	11	538	79	9	93	38	62	0	38	46	33	2	1575
APPROACH %'s :	11.98%	79.39%	8.31%	0.32%	1.73%	84.46%	12.40%	1.41%	48.19%	19.69%	32.12%	0.00%	31.93%	38.66%	27.73%	1.68%	
PEAK HR :	02:30 PM - 03:30 PM																TOTAL
PEAK HR VOL :	30	165	16	0	4	188	24	5	33	16	22	0	10	13	8	0	534
PEAK HR FACTOR :	0.682	0.897	0.667	0.000	0.500	0.904	0.750	0.625	0.589	0.571	0.550	0.000	0.833	0.542	0.500	0.000	0.914
	0.942				0.906				0.683				0.646				

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Westamerica Dr/Kaiser Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-009
Date: 12/4/2021

Data - HT

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Westamerica Dr/Kaiser Dr				Westamerica Dr/Kaiser Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
2:15 PM	0	4	0	0	0	2	0	0	0	0	0	0	1	0	0	0	7
2:30 PM	0	2	1	0	0	4	0	0	0	0	0	0	0	0	0	0	7
2:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:00 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
3:15 PM	0	4	0	0	0	1	0	0	0	0	1	0	0	0	0	0	6
3:30 PM	0	2	1	0	0	1	0	0	0	0	0	0	1	0	0	0	5
3:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
4:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	15	3	0	0	17	3	0	0	0	1	0	2	0	0	0	41
APPROACH %'s :	0.00%	83.33%	16.67%	0.00%	0.00%	85.00%	15.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	
PEAK HR :	02:30 PM - 03:30 PM																TOTAL
PEAK HR VOL :	0	8	1	0	0	6	1	0	0	0	1	0	0	0	0	0	17
PEAK HR FACTOR :	0.000	0.500	0.250	0.000	0.000	0.375	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.607
	0.563				0.438				0.250								

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Westamerica Dr/Kaiser Dr
City: Fairfield
Control: Signalized

Project ID: 21-080323-009
Date: 12/4/2021

Data - Bikes

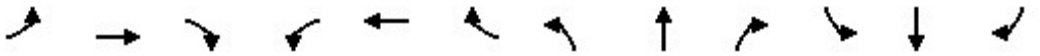
NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Westamerica Dr/Kaiser Dr				Westamerica Dr/Kaiser Dr				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:15 PM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
2:30 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
2:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	4
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	7	0	1	1	2	1	0	1	0	0	0	0	0	0	0	14
APPROACH %'s :	11.11%	77.78%	0.00%	11.11%	25.00%	50.00%	25.00%	0.00%	100.00%	0.00%	0.00%	0.00%					
PEAK HR :	02:30 PM - 03:30 PM																TOTAL
PEAK HR VOL :	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	4
PEAK HR FACTOR :	0.000	0.250	0.000	0.250	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
	0.500				0.500												

National Data & Surveying Services Intersection Turning Movement Count

Location: Suisun Valley Rd & Westamerica Dr/Kaiser Dr
City: Fairfield
Project ID: 21-080323-009
Date: 12/4/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd		Westamerica Dr/Kaiser Dr		Westamerica Dr/Kaiser Dr		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	1	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	1	0	0	0	0	0	0	1	2
3:00 PM	2	0	0	0	0	3	0	0	5
3:15 PM	0	2	0	0	0	0	0	0	2
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	1	1	0	0	1	1	0	0	4
4:30 PM	1	0	0	0	0	0	0	0	1
4:45 PM	1	0	0	0	0	0	2	0	3
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	6	3	1	0	1	4	2	1	18
APPROACH %'s :	66.67%	33.33%	100.00%	0.00%	20.00%	80.00%	66.67%	33.33%	
PEAK HR :	02:30 PM - 03:30 PM								TOTAL
PEAK HR VOL :	3	2	0	0	0	3	0	1	9
PEAK HR FACTOR :	0.375	0.250				0.250		0.250	0.450
	0.625				0.250		0.250		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	120	32	133	158	38	55	200	261	67	164	27
Future Volume (veh/h)	18	120	32	133	158	38	55	200	261	67	164	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	21	138	37	153	182	0	63	230	300	77	189	31
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	44	204	173	205	385		96	349	563	102	250	41
Arrive On Green	0.02	0.11	0.11	0.11	0.21	0.00	0.24	0.24	0.24	0.22	0.22	0.22
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	398	1453	1585	470	1154	189
Grp Volume(v), veh/h	21	138	37	153	182	0	293	0	300	297	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1850	0	1585	1813	0	0
Q Serve(g_s), s	0.7	4.1	1.2	4.8	4.9	0.0	8.2	0.0	8.7	8.8	0.0	0.0
Cycle Q Clear(g_c), s	0.7	4.1	1.2	4.8	4.9	0.0	8.2	0.0	8.7	8.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.22		1.00	0.26		0.10
Lane Grp Cap(c), veh/h	44	204	173	205	385		444	0	563	393	0	0
V/C Ratio(X)	0.48	0.68	0.21	0.75	0.47		0.66	0.00	0.53	0.76	0.00	0.00
Avail Cap(c_a), veh/h	464	1460	1237	1391	1460		1445	0	1419	943	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.7	24.7	23.4	24.7	20.1	0.0	19.8	0.0	14.8	21.1	0.0	0.0
Incr Delay (d2), s/veh	2.9	1.5	0.2	5.4	1.9	0.0	1.7	0.0	0.8	3.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.8	0.4	2.2	2.2	0.0	3.5	0.0	3.0	3.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.7	26.2	23.7	30.1	22.0	0.0	21.5	0.0	15.6	24.1	0.0	0.0
LnGrp LOS	C	C	C	C	C		C	A	B	C	A	A
Approach Vol, veh/h		196			335			593			297	
Approach Delay, s/veh		26.2			25.7			18.5			24.1	
Approach LOS		C			C			B			C	

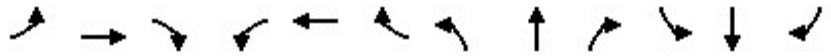
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.2	10.9		17.1	5.6	16.5		18.4				
Change Period (Y+Rc), s	4.6	4.6		4.6	* 4.2	4.6		4.6				
Max Green Setting (Gmax), s	45.0	45.0		30.0	* 15	45.0		45.0				
Max Q Clear Time (g_c+I1), s	6.8	6.1		10.8	2.7	6.9		10.7				
Green Ext Time (p_c), s	0.5	0.6		1.8	0.0	2.2		3.2				

Intersection Summary			
HCM 6th Ctrl Delay		22.4	
HCM 6th LOS		C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	1	68	46	2	0	81	480	10	7	330	3
Future Volume (veh/h)	8	1	68	46	2	0	81	480	10	7	330	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	9	2	72	79	0	0	86	511	0	12	351	3
Peak Hour Factor	0.94	0.60	0.94	0.60	0.60	0.60	0.94	0.94	0.60	0.60	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	26	125	271	0		143	1229		28	1015	9
Arrive On Green	0.08	0.08	0.08	0.08	0.00	0.00	0.08	0.35	0.00	0.02	0.28	0.28
Sat Flow, veh/h	1470	327	1585	3563	0	1585	1781	3554	1585	1781	3611	31
Grp Volume(v), veh/h	11	0	72	79	0	0	86	511	0	12	173	181
Grp Sat Flow(s),veh/h/ln	1797	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1865
Q Serve(g_s), s	0.2	0.0	1.6	0.7	0.0	0.0	1.7	3.9	0.0	0.2	2.8	2.8
Cycle Q Clear(g_c), s	0.2	0.0	1.6	0.7	0.0	0.0	1.7	3.9	0.0	0.2	2.8	2.8
Prop In Lane	0.82		1.00	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	141	0	125	271	0		143	1229		28	499	524
V/C Ratio(X)	0.08	0.00	0.58	0.29	0.00		0.60	0.42		0.43	0.35	0.35
Avail Cap(c_a), veh/h	1010	0	891	4007	0		1002	3997		1502	1998	2097
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	0.0	15.8	15.5	0.0	0.0	15.8	8.9	0.0	17.3	10.2	10.2
Incr Delay (d2), s/veh	0.1	0.0	1.6	0.6	0.0	0.0	1.5	0.2	0.0	3.8	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.5	0.3	0.0	0.0	0.6	1.0	0.0	0.1	0.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.3	0.0	17.4	16.1	0.0	0.0	17.3	9.1	0.0	21.2	10.6	10.6
LnGrp LOS	B	A	B	B	A		B	A		C	B	B
Approach Vol, veh/h		83			79			597			366	
Approach Delay, s/veh		17.1			16.1			10.3			10.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.1	14.6		6.9	4.8	16.9		7.0
Change Period (Y+Rc), s	* 4.2	4.6		* 4.2	* 4.2	4.6		4.2
Max Green Setting (Gmax), s	* 2.8	40.0		* 40	* 30	40.0		20.0
Max Q Clear Time (g_c+I1), s	3.7	4.8		2.7	2.2	5.9		3.6
Green Ext Time (p_c), s	0.1	2.1		0.3	0.0	3.6		0.1

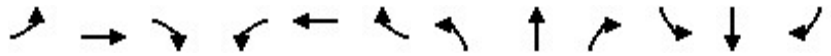
Intersection Summary	
HCM 6th Ctrl Delay	11.4
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	104	36	56	38	33	49	399	37	27	353	88
Future Volume (veh/h)	171	104	36	56	38	33	49	399	37	27	353	88
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	192	117	40	63	43	37	55	448	42	30	397	99
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	257	268	92	112	229	175	101	1278	118	63	878	392
Arrive On Green	0.14	0.20	0.20	0.06	0.12	0.12	0.06	0.27	0.27	0.04	0.25	0.25
Sat Flow, veh/h	1781	1333	456	1781	1916	1467	1781	4755	440	1781	3554	1585
Grp Volume(v), veh/h	192	0	157	63	39	41	55	319	171	30	397	99
Grp Sat Flow(s),veh/h/ln	1781	0	1788	1781	1777	1606	1781	1702	1791	1781	1777	1585
Q Serve(g_s), s	4.2	0.0	3.1	1.4	0.8	0.9	1.2	3.1	3.1	0.7	3.8	2.0
Cycle Q Clear(g_c), s	4.2	0.0	3.1	1.4	0.8	0.9	1.2	3.1	3.1	0.7	3.8	2.0
Prop In Lane	1.00		0.25	1.00		0.91	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	257	0	359	112	212	192	101	915	481	63	878	392
V/C Ratio(X)	0.75	0.00	0.44	0.56	0.19	0.21	0.54	0.35	0.36	0.48	0.45	0.25
Avail Cap(c_a), veh/h	880	0	663	1100	658	595	880	2944	1549	880	3073	1371
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	0.0	14.2	18.4	16.1	16.1	18.6	11.9	12.0	19.2	12.9	12.2
Incr Delay (d2), s/veh	4.3	0.0	0.8	4.4	0.4	0.5	4.4	0.3	0.5	2.1	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	1.1	0.6	0.3	0.3	0.5	0.9	1.0	0.3	1.2	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.9	0.0	15.0	22.8	16.5	16.6	23.0	12.2	12.5	21.2	13.4	12.6
LnGrp LOS	C	A	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		349			143			545			526	
Approach Delay, s/veh		18.3			19.3			13.4			13.7	
Approach LOS		B			B			B			B	

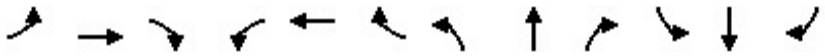
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.6	15.5	6.7	12.6	6.5	14.6	10.0	9.3
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.5	* 4.2	4.6	* 4.2	4.5
Max Green Setting (Gmax), s	* 2.8	35.0	* 25	15.0	* 20	35.0	* 20	15.0
Max Q Clear Time (g_c+I1), s	2.7	5.1	3.4	5.1	3.2	5.8	6.2	2.9
Green Ext Time (p_c), s	0.0	3.7	0.1	0.5	0.1	3.5	0.4	0.2

Intersection Summary	
HCM 6th Ctrl Delay	15.1
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	156	278	469	32	148	13	534	318	81	7	156	185
Future Volume (veh/h)	156	278	469	32	148	13	534	318	81	7	156	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	177	316	533	36	168	15	607	361	92	8	177	210
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	267	1143	532	160	1457	127	698	1010	254	35	595	266
Arrive On Green	0.08	0.34	0.34	0.05	0.30	0.30	0.20	0.36	0.36	0.01	0.17	0.17
Sat Flow, veh/h	3456	3404	1585	3456	4782	418	3456	2812	708	3456	3554	1585
Grp Volume(v), veh/h	177	316	533	36	119	64	607	226	227	8	177	210
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1795	1728	1777	1743	1728	1777	1585
Q Serve(g_s), s	4.4	6.1	30.0	0.9	2.2	2.3	15.2	8.4	8.6	0.2	3.9	11.4
Cycle Q Clear(g_c), s	4.4	6.1	30.0	0.9	2.2	2.3	15.2	8.4	8.6	0.2	3.9	11.4
Prop In Lane	1.00		1.00	1.00		0.23	1.00		0.41	1.00		1.00
Lane Grp Cap(c), veh/h	267	1143	532	160	1037	547	698	638	626	35	595	266
V/C Ratio(X)	0.66	0.28	1.00	0.23	0.11	0.12	0.87	0.35	0.36	0.23	0.30	0.79
Avail Cap(c_a), veh/h	774	1143	532	774	1143	603	774	638	626	774	994	444
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	21.7	29.7	41.1	22.4	22.4	34.5	21.0	21.1	43.9	32.6	35.7
Incr Delay (d2), s/veh	3.4	0.2	39.3	0.9	0.1	0.1	10.1	0.4	0.4	4.0	0.3	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	2.3	16.3	0.4	0.9	0.9	7.0	3.3	3.3	0.1	1.6	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.4	21.9	69.0	41.9	22.4	22.5	44.6	21.4	21.5	47.8	32.9	42.0
LnGrp LOS	D	C	F	D	C	C	D	C	C	D	C	D
Approach Vol, veh/h		1026			219			1060			395	
Approach Delay, s/veh		50.1			25.7			34.7			38.0	
Approach LOS		D			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	38.0	9.3	35.9	23.2	20.9	12.1	33.1
Change Period (Y+Rc), s	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9
Max Green Setting (Gmax), s	* 20	25.0	* 20	30.0	* 20	25.0	* 20	30.0
Max Q Clear Time (g_c+I1), s	12.2	10.6	2.9	32.0	17.2	13.4	6.4	4.3
Green Ext Time (p_c), s	0.0	2.6	0.1	0.0	0.8	1.6	0.5	1.2

Intersection Summary	
HCM 6th Ctrl Delay	40.3
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	23.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	186	0	293	0	0	0	2	159	565	0	1	427	46
Future Vol, veh/h	186	0	293	0	0	0	2	159	565	0	1	427	46
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	216	0	341	0	0	0	2	185	657	0	1	497	53
Number of Lanes	2	0	1	0	0	0	0	1	2	0	0	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	3	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	3
HCM Control Delay	14.8	27.1	26.7
HCM LOS	B	D	D

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	100%	0%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%	100%	82%
Vol Right, %	0%	0%	0%	0%	0%	100%	0%	18%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	161	283	283	93	93	293	215	260
LT Vol	161	0	0	93	93	0	1	0
Through Vol	0	283	283	0	0	0	214	214
RT Vol	0	0	0	0	0	293	0	46
Lane Flow Rate	187	328	328	108	108	341	249	302
Geometry Grp	8	8	8	7	7	7	8	8
Degree of Util (X)	0.442	0.73	0.73	0.261	0.261	0.539	0.595	0.709
Departure Headway (Hd)	8.509	7.997	7.997	8.697	8.697	5.694	8.591	8.461
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	423	450	450	413	413	630	419	425
Service Time	6.282	5.769	5.769	6.456	6.456	3.452	6.378	6.248
HCM Lane V/C Ratio	0.442	0.729	0.729	0.262	0.262	0.541	0.594	0.711
HCM Control Delay	17.9	29.7	29.7	14.5	14.5	15	23.3	29.5
HCM Lane LOS	C	D	D	B	B	B	C	D
HCM 95th-tile Q	2.2	5.8	5.8	1	1	3.2	3.7	5.4



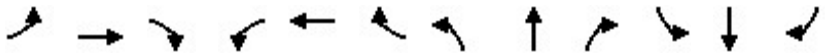
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	1	356	0	0	0	0	409	453	211	509	0
Future Volume (veh/h)	315	1	356	0	0	0	0	409	453	211	509	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	342	1	387				0	445	492	229	553	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	502	1	448				0	627	531	355	974	0
Arrive On Green	0.28	0.28	0.28				0.00	0.34	0.34	0.10	0.52	0.00
Sat Flow, veh/h	1776	5	1585				0	1870	1585	3456	1870	0
Grp Volume(v), veh/h	343	0	387				0	445	492	229	553	0
Grp Sat Flow(s),veh/h/ln	1782	0	1585				0	1870	1585	1728	1870	0
Q Serve(g_s), s	7.7	0.0	10.4				0.0	9.3	13.4	2.8	9.0	0.0
Cycle Q Clear(g_c), s	7.7	0.0	10.4				0.0	9.3	13.4	2.8	9.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	504	0	448				0	627	531	355	974	0
V/C Ratio(X)	0.68	0.00	0.86				0.00	0.71	0.93	0.65	0.57	0.00
Avail Cap(c_a), veh/h	1194	0	1063				0	627	531	1236	974	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	14.3	0.0	15.2				0.0	13.0	14.3	19.3	7.3	0.0
Incr Delay (d2), s/veh	0.6	0.0	2.0				0.0	3.2	22.0	0.7	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	3.2				0.0	3.4	6.8	1.0	2.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	0.0	17.2				0.0	16.2	36.4	20.0	7.8	0.0
LnGrp LOS	B	A	B				A	B	D	C	A	A
Approach Vol, veh/h		730						937			782	
Approach Delay, s/veh		16.1						26.8			11.4	
Approach LOS		B						C			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		27.9			8.3	19.6		16.9				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.2				
Max Green Setting (Gmax), s		15.0			16.0	15.0		30.0				
Max Q Clear Time (g_c+I1), s		11.0			4.8	15.4		12.4				
Green Ext Time (p_c), s		0.3			0.0	0.0		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			18.7									
HCM 6th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	178	700	384	435	109	388	261	85	4	282	112
Future Volume (veh/h)	132	178	700	384	435	109	388	261	85	4	282	112
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	138	185	729	322	562	114	404	272	89	4	294	117
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	463	486	1191	437	741	150	401	961	428	9	399	155
Arrive On Green	0.26	0.26	0.26	0.25	0.25	0.25	0.12	0.27	0.27	0.01	0.16	0.16
Sat Flow, veh/h	1781	1870	3170	1781	3020	611	3456	3554	1585	1781	2500	973
Grp Volume(v), veh/h	138	185	729	322	347	329	404	272	89	4	207	204
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1760	1728	1777	1585	1781	1777	1695
Q Serve(g_s), s	5.8	7.6	17.5	15.6	16.2	16.3	10.9	5.7	4.1	0.2	10.4	10.8
Cycle Q Clear(g_c), s	5.8	7.6	17.5	15.6	16.2	16.3	10.9	5.7	4.1	0.2	10.4	10.8
Prop In Lane	1.00		1.00	1.00		0.35	1.00		1.00	1.00		0.57
Lane Grp Cap(c), veh/h	463	486	1191	437	459	432	401	961	428	9	284	270
V/C Ratio(X)	0.30	0.38	0.61	0.74	0.76	0.76	1.01	0.28	0.21	0.43	0.73	0.75
Avail Cap(c_a), veh/h	853	896	1887	702	737	694	401	1173	523	95	624	596
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.9	28.6	23.8	32.6	32.8	32.9	41.5	27.1	26.5	46.6	37.5	37.7
Incr Delay (d2), s/veh	0.4	0.5	0.5	2.4	2.6	2.8	46.8	0.2	0.2	27.7	3.6	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	3.4	6.2	6.7	7.3	6.9	7.1	2.3	1.5	0.2	4.6	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.3	29.1	24.3	35.1	35.4	35.7	88.3	27.2	26.7	74.3	41.2	41.9
LnGrp LOS	C	C	C	D	D	D	F	C	C	E	D	D
Approach Vol, veh/h		1052			998			765			415	
Approach Delay, s/veh		25.6			35.4			59.4			41.9	
Approach LOS		C			D			E			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.2	30.8		29.5	15.6	20.4		28.4
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.4
Max Green Setting (Gmax), s	* 5	31.0		45.0	* 11	33.0		37.0
Max Q Clear Time (g_c+I1), s	12.3	7.7		19.5	12.9	12.8		18.3
Green Ext Time (p_c), s	0.0	1.9		4.9	0.0	2.2		4.8

Intersection Summary	
HCM 6th Ctrl Delay	38.7
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	176	734	830	543
Future Volume (veh/h)	0	0	176	734	830	543
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			189	789	892	584
Peak Hour Factor			0.93	0.93	0.93	0.93
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			427	1622	1189	1008
Arrive On Green			0.12	0.87	0.64	0.64
Sat Flow, veh/h			3456	1870	1870	1585
Grp Volume(v), veh/h			189	789	892	584
Grp Sat Flow(s),veh/h/ln			1728	1870	1870	1585
Q Serve(g_s), s			2.2	4.2	14.5	9.3
Cycle Q Clear(g_c), s			2.2	4.2	14.5	9.3
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			427	1622	1189	1008
V/C Ratio(X)			0.44	0.49	0.75	0.58
Avail Cap(c_a), veh/h			1583	3171	2100	1779
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			17.7	0.7	5.5	4.6
Incr Delay (d2), s/veh			0.7	0.2	1.0	0.5
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.8	0.1	2.5	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			18.5	0.9	6.5	5.1
LnGrp LOS			B	A	A	A
Approach Vol, veh/h				978	1476	
Approach Delay, s/veh				4.3	6.0	
Approach LOS				A	A	

Timer - Assigned Phs	2		5	6
Phs Duration (G+Y+Rc), s	43.6		10.1	33.6
Change Period (Y+Rc), s	5.8		* 4.7	5.8
Max Green Setting (Gmax), s	74.0		* 20	49.0
Max Q Clear Time (g_c+I1), s	6.2		4.2	16.5
Green Ext Time (p_c), s	6.9		0.5	11.3

Intersection Summary	
HCM 6th Ctrl Delay	5.3
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	511	5	5	324
Future Vol, veh/h	5	5	511	5	5	324
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	5	555	5	5	352

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	920	558	0	0	560	0
Stage 1	558	-	-	-	-	-
Stage 2	362	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	301	529	-	-	1011	-
Stage 1	573	-	-	-	-	-
Stage 2	704	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	299	529	-	-	1011	-
Mov Cap-2 Maneuver	299	-	-	-	-	-
Stage 1	573	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.7	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	382	1011	-
HCM Lane V/C Ratio	-	-	0.028	0.005	-
HCM Control Delay (s)	-	-	14.7	8.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

MOVEMENT SUMMARY

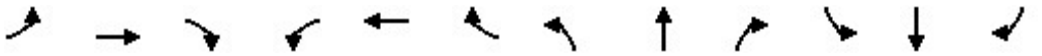
Site: 2 [Rockville Rd / Abernathy Rd (Site Folder: General)]

Existing PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Abernathy Rd														
3	L2	114	2.0	127	2.0	0.669	15.7	LOS B	7.7	196.8	0.82	1.05	1.43	29.8
8	T1	274	2.0	304	2.0	0.669	15.7	LOS B	7.7	196.8	0.82	1.05	1.43	29.7
18	R2	125	2.0	139	2.0	0.669	15.7	LOS B	7.7	196.8	0.82	1.05	1.43	29.0
Approach		513	2.0	570	2.0	0.669	15.7	LOS B	7.7	196.8	0.82	1.05	1.43	29.6
East: Rockville Rd														
1	L2	32	2.0	36	2.0	0.333	8.8	LOS A	1.5	38.9	0.65	0.65	0.65	33.0
6	T1	164	2.0	182	2.0	0.333	8.8	LOS A	1.5	38.9	0.65	0.65	0.65	32.9
16	R2	29	2.0	32	2.0	0.333	8.8	LOS A	1.5	38.9	0.65	0.65	0.65	32.0
Approach		225	2.0	250	2.0	0.333	8.8	LOS A	1.5	38.9	0.65	0.65	0.65	32.8
North: Abernathy Rd														
7	L2	69	2.0	77	2.0	0.342	7.5	LOS A	1.7	44.2	0.56	0.47	0.56	33.4
4	T1	176	2.0	196	2.0	0.342	7.5	LOS A	1.7	44.2	0.56	0.47	0.56	33.3
14	R2	46	2.0	51	2.0	0.342	7.5	LOS A	1.7	44.2	0.56	0.47	0.56	32.4
Approach		291	2.0	323	2.0	0.342	7.5	LOS A	1.7	44.2	0.56	0.47	0.56	33.1
West: Rockville Rd														
5	L2	122	2.0	136	2.0	0.511	10.0	LOS A	3.6	92.2	0.62	0.57	0.71	32.0
2	T1	203	7.0	226	7.0	0.511	10.1	LOS B	3.6	92.2	0.62	0.57	0.71	31.9
12	R2	122	2.0	136	2.0	0.511	10.0	LOS A	3.6	92.2	0.62	0.57	0.71	31.1
Approach		447	4.3	497	4.3	0.511	10.0	LOS B	3.6	92.2	0.62	0.57	0.71	31.7
All Vehicles		1476	2.7	1640	2.7	0.669	11.3	LOS B	7.7	196.8	0.68	0.73	0.92	31.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	107	34	167	131	77	26	172	102	69	184	30
Future Volume (veh/h)	31	107	34	167	131	77	26	172	102	69	184	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	35	122	39	190	149	0	30	195	116	78	209	34
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	67	187	158	252	395		45	295	515	104	278	45
Arrive On Green	0.04	0.10	0.10	0.14	0.21	0.00	0.18	0.18	0.18	0.24	0.24	0.24
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	248	1610	1585	441	1181	192
Grp Volume(v), veh/h	35	122	39	190	149	0	225	0	116	321	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1858	0	1585	1814	0	0
Q Serve(g_s), s	1.0	3.4	1.2	5.5	3.7	0.0	6.1	0.0	2.9	8.9	0.0	0.0
Cycle Q Clear(g_c), s	1.0	3.4	1.2	5.5	3.7	0.0	6.1	0.0	2.9	8.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.13		1.00	0.24		0.11
Lane Grp Cap(c), veh/h	67	187	158	252	395		340	0	515	427	0	0
V/C Ratio(X)	0.52	0.65	0.25	0.75	0.38		0.66	0.00	0.23	0.75	0.00	0.00
Avail Cap(c_a), veh/h	494	1556	1318	1482	1556		1545	0	1543	1006	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.5	23.4	22.5	22.3	18.3	0.0	20.5	0.0	13.3	19.2	0.0	0.0
Incr Delay (d2), s/veh	2.3	1.4	0.3	4.5	1.3	0.0	2.2	0.0	0.2	2.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.5	0.4	2.5	1.6	0.0	2.7	0.0	1.0	3.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.8	24.9	22.8	26.9	19.6	0.0	22.7	0.0	13.5	21.9	0.0	0.0
LnGrp LOS	C	C	C	C	B		C	A	B	C	A	A
Approach Vol, veh/h		196			339			341			321	
Approach Delay, s/veh		25.0			23.7			19.6			21.9	
Approach LOS		C			C			B			C	

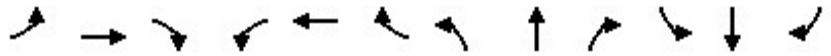
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.3	10.0		17.3	6.2	16.0		14.5				
Change Period (Y+Rc), s	4.6	4.6		4.6	* 4.2	4.6		4.6				
Max Green Setting (Gmax), s	45.0	45.0		30.0	* 15	45.0		45.0				
Max Q Clear Time (g_c+I1), s	7.5	5.4		10.9	3.0	5.7		8.1				
Green Ext Time (p_c), s	0.6	0.5		1.9	0.0	1.8		1.9				

Intersection Summary		
HCM 6th Ctrl Delay		22.3
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	1	43	16	1	12	45	262	18	3	370	10
Future Volume (veh/h)	8	1	43	16	1	12	45	262	18	3	370	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	9	1	46	22	0	0	48	279	0	4	394	11
Peak Hour Factor	0.94	0.75	0.94	0.75	0.75	0.75	0.94	0.94	0.75	0.75	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	11	97	99	0		97	1291		10	1110	31
Arrive On Green	0.06	0.06	0.06	0.03	0.00	0.00	0.05	0.36	0.00	0.01	0.31	0.31
Sat Flow, veh/h	1611	179	1585	3563	0	1585	1781	3554	1585	1781	3531	98
Grp Volume(v), veh/h	10	0	46	22	0	0	48	279	0	4	198	207
Grp Sat Flow(s),veh/h/ln	1790	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1853
Q Serve(g_s), s	0.2	0.0	0.9	0.2	0.0	0.0	0.8	1.7	0.0	0.1	2.7	2.7
Cycle Q Clear(g_c), s	0.2	0.0	0.9	0.2	0.0	0.0	0.8	1.7	0.0	0.1	2.7	2.7
Prop In Lane	0.90		1.00	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	110	0	97	99	0		97	1291		10	559	583
V/C Ratio(X)	0.09	0.00	0.47	0.22	0.00		0.50	0.22		0.41	0.35	0.36
Avail Cap(c_a), veh/h	1128	0	999	4491	0		1123	4480		1684	2240	2335
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.1	0.0	14.4	15.1	0.0	0.0	14.6	7.0	0.0	15.7	8.4	8.4
Incr Delay (d2), s/veh	0.1	0.0	1.3	1.1	0.0	0.0	1.5	0.1	0.0	10.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.3	0.1	0.0	0.0	0.3	0.4	0.0	0.0	0.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.2	0.0	15.7	16.2	0.0	0.0	16.0	7.1	0.0	25.7	8.8	8.8
LnGrp LOS	B	A	B	B	A		B	A		C	A	A
Approach Vol, veh/h		56			22			327			409	
Approach Delay, s/veh		15.4			16.2			8.4			8.9	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.9	14.6		5.1	4.4	16.1		6.1
Change Period (Y+Rc), s	* 4.2	4.6		* 4.2	* 4.2	4.6		4.2
Max Green Setting (Gmax), s	* 2.8	40.0		* 40	* 30	40.0		20.0
Max Q Clear Time (g_c+I1), s	2.2	4.7		2.2	2.1	3.7		2.9
Green Ext Time (p_c), s	0.0	2.4		0.0	0.0	1.9		0.1

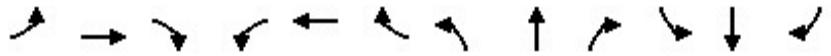
Intersection Summary	
HCM 6th Ctrl Delay	9.4
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	19	55	39	57	14	51	282	17	13	353	45
Future Volume (veh/h)	33	19	55	39	57	14	51	282	17	13	353	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	36	21	60	42	62	15	55	307	18	14	384	49
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	75	51	147	85	359	84	105	1589	92	32	999	446
Arrive On Green	0.04	0.12	0.12	0.05	0.13	0.13	0.06	0.32	0.32	0.02	0.28	0.28
Sat Flow, veh/h	1781	428	1222	1781	2859	668	1781	4937	286	1781	3554	1585
Grp Volume(v), veh/h	36	0	81	42	38	39	55	211	114	14	384	49
Grp Sat Flow(s),veh/h/ln	1781	0	1650	1781	1777	1750	1781	1702	1819	1781	1777	1585
Q Serve(g_s), s	0.7	0.0	1.6	0.8	0.7	0.7	1.1	1.6	1.6	0.3	3.1	0.8
Cycle Q Clear(g_c), s	0.7	0.0	1.6	0.8	0.7	0.7	1.1	1.6	1.6	0.3	3.1	0.8
Prop In Lane	1.00		0.74	1.00		0.38	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	75	0	198	85	223	220	105	1096	586	32	999	446
V/C Ratio(X)	0.48	0.00	0.41	0.49	0.17	0.18	0.52	0.19	0.20	0.43	0.38	0.11
Avail Cap(c_a), veh/h	1002	0	696	1253	750	738	1002	3351	1791	1002	3499	1560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	0.0	14.5	16.5	13.9	13.9	16.2	8.7	8.7	17.3	10.3	9.5
Incr Delay (d2), s/veh	4.7	0.0	1.4	4.4	0.4	0.4	4.0	0.1	0.2	3.4	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.5	0.4	0.2	0.2	0.5	0.4	0.4	0.1	0.8	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.3	0.0	15.8	20.9	14.2	14.3	20.2	8.8	8.9	20.6	10.6	9.6
LnGrp LOS	C	A	B	C	B	B	C	A	A	C	B	A
Approach Vol, veh/h		117			119			380			447	
Approach Delay, s/veh		17.5			16.6			10.5			10.8	
Approach LOS		B			B			B			B	

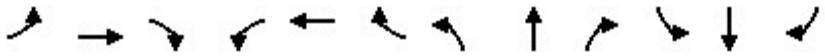
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.8	16.0	5.9	8.8	6.3	14.6	5.7	9.0
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.5	* 4.2	4.6	* 4.2	4.5
Max Green Setting (Gmax), s	* 2.6	35.0	* 25	15.0	* 20	35.0	* 20	15.0
Max Q Clear Time (g_c+I1), s	2.3	3.6	2.8	3.6	3.1	5.1	2.7	2.7
Green Ext Time (p_c), s	0.0	2.4	0.1	0.2	0.1	3.2	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	12.1
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	147	115	37	139	15	137	236	36	10	236	201
Future Volume (veh/h)	91	147	115	37	139	15	137	236	36	10	236	201
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	160	125	40	151	16	149	257	39	11	257	218
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	341	753	350	201	848	87	392	949	142	49	735	328
Arrive On Green	0.10	0.22	0.22	0.06	0.18	0.18	0.11	0.31	0.31	0.01	0.21	0.21
Sat Flow, veh/h	3456	3404	1585	3456	4702	485	3456	3099	464	3456	3554	1585
Grp Volume(v), veh/h	99	160	125	40	108	59	149	146	150	11	257	218
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1783	1728	1777	1787	1728	1777	1585
Q Serve(g_s), s	1.5	2.1	3.7	0.6	1.5	1.5	2.2	3.4	3.5	0.2	3.4	7.0
Cycle Q Clear(g_c), s	1.5	2.1	3.7	0.6	1.5	1.5	2.2	3.4	3.5	0.2	3.4	7.0
Prop In Lane	1.00		1.00	1.00		0.27	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	341	753	350	201	614	322	392	544	547	49	735	328
V/C Ratio(X)	0.29	0.21	0.36	0.20	0.18	0.18	0.38	0.27	0.27	0.23	0.35	0.67
Avail Cap(c_a), veh/h	1247	1843	858	1247	1843	965	1247	802	806	1247	1603	715
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	17.6	18.3	24.9	19.2	19.3	22.8	14.5	14.6	27.0	18.8	20.2
Incr Delay (d2), s/veh	0.6	0.2	0.7	0.6	0.2	0.3	0.7	0.3	0.3	2.8	0.3	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.7	1.2	0.2	0.5	0.6	0.8	1.2	1.2	0.1	1.3	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.7	17.8	19.0	25.5	19.4	19.6	23.5	14.8	14.9	29.8	19.1	23.0
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	C
Approach Vol, veh/h		384			207			445			486	
Approach Delay, s/veh		19.7			20.6			17.8			21.1	
Approach LOS		B			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	22.9	8.4	18.2	11.5	17.4	10.7	15.9
Change Period (Y+Rc), s	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9
Max Green Setting (Gmax), s	* 20	25.0	* 20	30.0	* 20	25.0	* 20	30.0
Max Q Clear Time (g_c+I1), s	2.2	5.5	2.6	5.7	4.2	9.0	3.5	3.5
Green Ext Time (p_c), s	0.0	1.8	0.1	2.0	0.5	2.4	0.3	1.1

Intersection Summary	
HCM 6th Ctrl Delay	19.7
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	12.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	82	0	311	0	0	0	137	327	0	0	331	49
Future Vol, veh/h	82	0	311	0	0	0	137	327	0	0	331	49
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	92	0	349	0	0	0	154	367	0	0	372	55
Number of Lanes	2	0	1	0	0	0	1	2	0	1	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	3	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	3	3	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	3
HCM Control Delay	10.6	11.9	14.4
HCM LOS	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	100%	0%	0%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%	100%	100%	69%
Vol Right, %	0%	0%	0%	0%	0%	100%	0%	0%	31%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	137	164	164	41	41	311	0	221	159
LT Vol	137	0	0	41	41	0	0	0	0
Through Vol	0	164	164	0	0	0	0	221	110
RT Vol	0	0	0	0	0	311	0	0	49
Lane Flow Rate	154	184	184	46	46	349	0	248	179
Geometry Grp	8	8	8	7	7	7	8	8	8
Degree of Util (X)	0.311	0.345	0.255	0.094	0.094	0.429	0	0.472	0.33
Departure Headway (Hd)	7.272	6.765	5.005	7.381	7.381	4.415	6.847	6.847	6.628
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	493	529	711	484	484	807	0	523	539
Service Time	5.053	4.546	2.785	5.156	5.156	2.188	4.627	4.627	4.409
HCM Lane V/C Ratio	0.312	0.348	0.259	0.095	0.095	0.432	0	0.474	0.332
HCM Control Delay	13.3	13.1	9.5	10.9	10.9	10.5	9.6	15.7	12.7
HCM Lane LOS	B	B	A	B	B	B	N	C	B
HCM 95th-tile Q	1.3	1.5	1	0.3	0.3	2.2	0	2.5	1.4



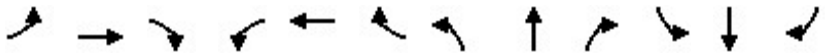
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	4	374	0	0	0	0	296	529	148	494	0
Future Volume (veh/h)	164	4	374	0	0	0	0	296	529	148	494	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	173	4	394				0	312	557	156	520	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	498	12	453				0	649	550	271	955	0
Arrive On Green	0.29	0.29	0.29				0.00	0.35	0.35	0.08	0.51	0.00
Sat Flow, veh/h	1743	40	1585				0	1870	1585	3456	1870	0
Grp Volume(v), veh/h	177	0	394				0	312	557	156	520	0
Grp Sat Flow(s),veh/h/ln	1783	0	1585				0	1870	1585	1728	1870	0
Q Serve(g_s), s	3.4	0.0	10.2				0.0	5.7	15.0	1.9	8.1	0.0
Cycle Q Clear(g_c), s	3.4	0.0	10.2				0.0	5.7	15.0	1.9	8.1	0.0
Prop In Lane	0.98		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	510	0	453				0	649	550	271	955	0
V/C Ratio(X)	0.35	0.00	0.87				0.00	0.48	1.01	0.58	0.54	0.00
Avail Cap(c_a), veh/h	1237	0	1100				0	649	550	1279	955	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.2	0.0	14.7				0.0	11.1	14.1	19.2	7.2	0.0
Incr Delay (d2), s/veh	0.2	0.0	2.1				0.0	0.2	41.7	0.7	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	3.1				0.0	1.7	10.2	0.7	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.4	0.0	16.7				0.0	11.3	55.8	20.0	7.5	0.0
LnGrp LOS	B	A	B				A	B	F	B	A	A
Approach Vol, veh/h		571						869			676	
Approach Delay, s/veh		15.4						39.8			10.4	
Approach LOS		B						D			B	

Timer - Assigned Phs	2		5	6		8
Phs Duration (G+Y+Rc), s	26.7		7.1	19.6		16.6
Change Period (Y+Rc), s	4.6		3.7	4.6		4.2
Max Green Setting (Gmax), s	15.0		16.0	15.0		30.0
Max Q Clear Time (g_c+I1), s	10.1		3.9	17.0		12.2
Green Ext Time (p_c), s	0.3		0.0	0.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	23.8
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	150	818	246	475	87	436	161	45	4	235	116
Future Volume (veh/h)	122	150	818	246	475	87	436	161	45	4	235	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	126	155	843	254	490	90	449	166	46	4	242	120
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	401	421	1203	390	673	123	534	1043	465	9	336	161
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.15	0.29	0.29	0.01	0.14	0.14
Sat Flow, veh/h	1781	1870	3170	1781	3077	562	3456	3554	1585	1781	2329	1117
Grp Volume(v), veh/h	126	155	843	254	297	283	449	166	46	4	183	179
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1769	1728	1777	1585	1781	1777	1669
Q Serve(g_s), s	4.7	5.6	18.0	10.4	11.8	11.9	10.1	2.8	1.7	0.2	7.8	8.2
Cycle Q Clear(g_c), s	4.7	5.6	18.0	10.4	11.8	11.9	10.1	2.8	1.7	0.2	7.8	8.2
Prop In Lane	1.00		1.00	1.00		0.32	1.00		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	401	421	1203	390	409	387	534	1043	465	9	256	241
V/C Ratio(X)	0.31	0.37	0.70	0.65	0.73	0.73	0.84	0.16	0.10	0.42	0.71	0.74
Avail Cap(c_a), veh/h	401	421	1203	637	669	632	583	1235	551	111	429	403
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	26.2	21.0	28.5	29.0	29.1	32.9	20.9	20.6	39.7	32.7	32.8
Incr Delay (d2), s/veh	0.4	0.5	1.8	1.8	2.5	2.7	10.0	0.1	0.1	27.2	3.7	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.4	6.3	4.4	5.2	5.0	4.7	1.1	0.6	0.1	3.4	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.3	26.7	22.8	30.3	31.5	31.8	42.8	21.0	20.7	66.9	36.3	37.3
LnGrp LOS	C	C	C	C	C	C	D	C	C	E	D	D
Approach Vol, veh/h		1124			834			661			366	
Approach Delay, s/veh		23.7			31.2			35.8			37.1	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	28.9		23.1	17.1	16.9		22.9
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.4
Max Green Setting (Gmax), s	* 5	27.8		18.0	* 14	19.3		28.6
Max Q Clear Time (g_c+I1), s	12.2	4.8		20.0	12.1	10.2		13.9
Green Ext Time (p_c), s	0.0	1.0		0.0	0.3	1.3		3.6

Intersection Summary	
HCM 6th Ctrl Delay	30.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	130	646	751	545
Future Volume (veh/h)	0	0	130	646	751	545
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			135	673	782	568
Peak Hour Factor			0.96	0.96	0.96	0.96
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			418	1581	1120	949
Arrive On Green			0.12	0.85	0.60	0.60
Sat Flow, veh/h			3456	1870	1870	1585
Grp Volume(v), veh/h			135	673	782	568
Grp Sat Flow(s),veh/h/ln			1728	1870	1870	1585
Q Serve(g_s), s			1.3	3.3	10.8	8.4
Cycle Q Clear(g_c), s			1.3	3.3	10.8	8.4
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			418	1581	1120	949
V/C Ratio(X)			0.32	0.43	0.70	0.60
Avail Cap(c_a), veh/h			1844	3693	2445	2072
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			15.1	0.7	5.2	4.7
Incr Delay (d2), s/veh			0.4	0.2	0.8	0.6
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.4	0.1	1.7	1.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			15.5	0.9	6.0	5.3
LnGrp LOS			B	A	A	A
Approach Vol, veh/h				808	1350	
Approach Delay, s/veh				3.3	5.7	
Approach LOS				A	A	

Timer - Assigned Phs	2		5	6
Phs Duration (G+Y+Rc), s	37.5		9.2	28.2
Change Period (Y+Rc), s	5.8		* 4.7	5.8
Max Green Setting (Gmax), s	74.0		* 20	49.0
Max Q Clear Time (g_c+I1), s	5.3		3.3	12.8
Green Ext Time (p_c), s	5.3		0.3	9.7

Intersection Summary	
HCM 6th Ctrl Delay	4.8
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	295	5	5	380
Future Vol, veh/h	5	5	295	5	5	380
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	5	321	5	5	413

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	747	324	0	0	326	0
Stage 1	324	-	-	-	-	-
Stage 2	423	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	381	717	-	-	1234	-
Stage 1	733	-	-	-	-	-
Stage 2	661	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	379	717	-	-	1234	-
Mov Cap-2 Maneuver	379	-	-	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	658	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	496	1234	-
HCM Lane V/C Ratio	-	-	0.022	0.004	-
HCM Control Delay (s)	-	-	12.4	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

MOVEMENT SUMMARY

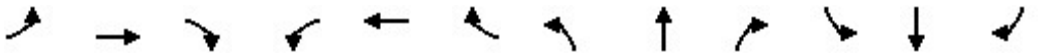
Site: 2 [Rockville Rd / Abernathy Rd (Site Folder: General)]

Existing Saturday
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Abernathy Rd														
3	L2	149	2.0	162	2.0	0.360	6.9	LOS A	2.0	50.8	0.47	0.33	0.47	33.2
8	T1	156	2.0	170	2.0	0.360	6.9	LOS A	2.0	50.8	0.47	0.33	0.47	33.1
18	R2	59	2.0	64	2.0	0.360	6.9	LOS A	2.0	50.8	0.47	0.33	0.47	32.2
Approach		364	2.0	396	2.0	0.360	6.9	LOS A	2.0	50.8	0.47	0.33	0.47	33.0
East: Rockville Rd														
1u	U	1	3.0	1	3.0	0.258	6.7	LOS A	1.2	30.6	0.54	0.47	0.54	34.7
1	L2	36	2.0	39	2.0	0.258	6.7	LOS A	1.2	30.6	0.54	0.47	0.54	33.9
6	T1	153	2.0	166	2.0	0.258	6.7	LOS A	1.2	30.6	0.54	0.47	0.54	33.9
16	R2	25	2.0	27	2.0	0.258	6.7	LOS A	1.2	30.6	0.54	0.47	0.54	32.9
Approach		215	2.0	234	2.0	0.258	6.7	LOS A	1.2	30.6	0.54	0.47	0.54	33.8
North: Abernathy Rd														
7	L2	15	2.0	16	2.0	0.229	6.2	LOS A	1.0	26.6	0.52	0.44	0.52	34.4
4	T1	112	2.0	122	2.0	0.229	6.2	LOS A	1.0	26.6	0.52	0.44	0.52	34.4
14	R2	67	2.0	73	2.0	0.229	6.2	LOS A	1.0	26.6	0.52	0.44	0.52	33.4
Approach		194	2.0	211	2.0	0.229	6.2	LOS A	1.0	26.6	0.52	0.44	0.52	34.0
West: Rockville Rd														
5	L2	51	2.0	55	2.0	0.281	5.8	LOS A	1.5	37.2	0.39	0.26	0.39	34.4
2	T1	130	2.0	141	2.0	0.281	5.8	LOS A	1.5	37.2	0.39	0.26	0.39	34.3
12	R2	114	2.0	124	2.0	0.281	5.8	LOS A	1.5	37.2	0.39	0.26	0.39	33.3
Approach		295	2.0	321	2.0	0.281	5.8	LOS A	1.5	37.2	0.39	0.26	0.39	33.9
All Vehicles		1068	2.0	1161	2.0	0.360	6.4	LOS A	2.0	50.8	0.47	0.36	0.47	33.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	127	33	133	159	39	58	209	259	67	186	27
Future Volume (veh/h)	18	127	33	133	159	39	58	209	259	67	186	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	21	146	38	153	183	0	67	240	298	77	214	31
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	44	212	180	204	392		96	345	559	100	277	40
Arrive On Green	0.02	0.11	0.11	0.11	0.21	0.00	0.24	0.24	0.24	0.23	0.23	0.23
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	404	1446	1585	435	1208	175
Grp Volume(v), veh/h	21	146	38	153	183	0	307	0	298	322	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1850	0	1585	1817	0	0
Q Serve(g_s), s	0.7	4.5	1.3	5.0	5.2	0.0	9.2	0.0	9.1	10.0	0.0	0.0
Cycle Q Clear(g_c), s	0.7	4.5	1.3	5.0	5.2	0.0	9.2	0.0	9.1	10.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.22		1.00	0.24		0.10
Lane Grp Cap(c), veh/h	44	212	180	204	392		441	0	559	417	0	0
V/C Ratio(X)	0.48	0.69	0.21	0.75	0.47		0.70	0.00	0.53	0.77	0.00	0.00
Avail Cap(c_a), veh/h	442	1393	1180	1327	1393		1378	0	1362	902	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.1	25.8	24.3	25.9	20.9	0.0	21.0	0.0	15.6	21.8	0.0	0.0
Incr Delay (d2), s/veh	3.0	1.5	0.2	5.5	1.8	0.0	2.0	0.0	0.8	3.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.0	0.5	2.4	2.4	0.0	4.0	0.0	3.1	4.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.1	27.3	24.6	31.4	22.8	0.0	23.0	0.0	16.4	24.9	0.0	0.0
LnGrp LOS	C	C	C	C	C		C	A	B	C	A	A
Approach Vol, veh/h		205			336			605			322	
Approach Delay, s/veh		27.3			26.7			19.7			24.9	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.5	11.4		18.5	5.7	17.3		19.0				
Change Period (Y+Rc), s	4.6	4.6		4.6	* 4.2	4.6		4.6				
Max Green Setting (Gmax), s	45.0	45.0		30.0	* 15	45.0		45.0				
Max Q Clear Time (g_c+I1), s	7.0	6.5		12.0	2.7	7.2		11.2				
Green Ext Time (p_c), s	0.5	0.6		1.9	0.0	2.3		3.3				

Intersection Summary		
HCM 6th Ctrl Delay	23.5	
HCM 6th LOS	C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	1	68	46	2	0	71	571	10	7	369	5
Future Volume (veh/h)	12	1	68	46	2	0	71	571	10	7	369	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	13	2	72	79	0	0	76	607	0	12	393	5
Peak Hour Factor	0.94	0.60	0.94	0.60	0.60	0.60	0.94	0.94	0.60	0.60	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	19	129	272	0		132	1212		28	1015	13
Arrive On Green	0.08	0.08	0.08	0.08	0.00	0.00	0.07	0.34	0.00	0.02	0.28	0.28
Sat Flow, veh/h	1554	239	1585	3563	0	1585	1781	3554	1585	1781	3593	46
Grp Volume(v), veh/h	15	0	72	79	0	0	76	607	0	12	194	204
Grp Sat Flow(s),veh/h/ln	1793	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1862
Q Serve(g_s), s	0.3	0.0	1.5	0.7	0.0	0.0	1.5	4.8	0.0	0.2	3.1	3.1
Cycle Q Clear(g_c), s	0.3	0.0	1.5	0.7	0.0	0.0	1.5	4.8	0.0	0.2	3.1	3.1
Prop In Lane	0.87		1.00	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	146	0	129	272	0		132	1212		28	502	526
V/C Ratio(X)	0.10	0.00	0.56	0.29	0.00		0.57	0.50		0.43	0.39	0.39
Avail Cap(c_a), veh/h	1013	0	895	4025	0		1006	4015		1509	2007	2104
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.1	0.0	15.7	15.4	0.0	0.0	15.8	9.3	0.0	17.3	10.2	10.2
Incr Delay (d2), s/veh	0.1	0.0	1.4	0.6	0.0	0.0	1.5	0.3	0.0	3.8	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.5	0.3	0.0	0.0	0.5	1.3	0.0	0.1	0.9	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.2	0.0	17.1	16.0	0.0	0.0	17.3	9.6	0.0	21.1	10.7	10.7
LnGrp LOS	B	A	B	B	A		B	A		C	B	B
Approach Vol, veh/h		87			79			683			410	
Approach Delay, s/veh		16.7			16.0			10.5			11.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.8	14.6		6.9	4.8	16.7		7.1
Change Period (Y+Rc), s	* 4.2	4.6		* 4.2	* 4.2	4.6		4.2
Max Green Setting (Gmax), s	* 2.6	40.0		* 40	* 30	40.0		20.0
Max Q Clear Time (g_c+I1), s	3.5	5.1		2.7	2.2	6.8		3.5
Green Ext Time (p_c), s	0.1	2.4		0.3	0.0	4.4		0.1

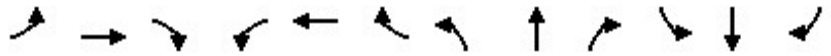
Intersection Summary	
HCM 6th Ctrl Delay	11.4
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	177	104	36	53	38	37	49	479	37	24	387	91
Future Volume (veh/h)	177	104	36	53	38	37	49	479	37	24	387	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	199	117	40	60	43	42	55	538	42	27	435	102
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	266	276	94	108	214	184	101	1316	102	58	881	393
Arrive On Green	0.15	0.21	0.21	0.06	0.12	0.12	0.06	0.27	0.27	0.03	0.25	0.25
Sat Flow, veh/h	1781	1333	456	1781	1813	1554	1781	4833	374	1781	3554	1585
Grp Volume(v), veh/h	199	0	157	60	42	43	55	377	203	27	435	102
Grp Sat Flow(s),veh/h/ln	1781	0	1788	1781	1777	1591	1781	1702	1803	1781	1777	1585
Q Serve(g_s), s	4.4	0.0	3.1	1.3	0.9	1.0	1.2	3.7	3.8	0.6	4.3	2.1
Cycle Q Clear(g_c), s	4.4	0.0	3.1	1.3	0.9	1.0	1.2	3.7	3.8	0.6	4.3	2.1
Prop In Lane	1.00		0.25	1.00		0.98	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	266	0	370	108	210	188	101	927	491	58	881	393
V/C Ratio(X)	0.75	0.00	0.42	0.56	0.20	0.23	0.54	0.41	0.41	0.47	0.49	0.26
Avail Cap(c_a), veh/h	871	0	656	1089	652	583	871	2913	1543	871	3041	1356
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.7	0.0	14.1	18.7	16.3	16.3	18.8	12.2	12.2	19.4	13.2	12.4
Incr Delay (d2), s/veh	4.2	0.0	0.8	4.5	0.5	0.6	4.5	0.3	0.7	2.2	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	1.1	0.6	0.3	0.3	0.5	1.1	1.2	0.2	1.4	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.9	0.0	14.9	23.1	16.7	17.0	23.3	12.5	12.9	21.6	13.7	12.8
LnGrp LOS	C	A	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		356			145			635			564	
Approach Delay, s/veh		18.2			19.5			13.6			13.9	
Approach LOS		B			B			B			B	

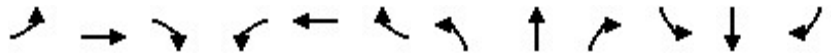
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.5	15.7	6.7	13.0	6.5	14.7	10.3	9.3
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.5	* 4.2	4.6	* 4.2	4.5
Max Green Setting (Gmax), s	* 2.8	35.0	* 25	15.0	* 20	35.0	* 20	15.0
Max Q Clear Time (g_c+I1), s	2.6	5.8	3.3	5.1	3.2	6.3	6.4	3.0
Green Ext Time (p_c), s	0.0	4.5	0.1	0.5	0.1	3.8	0.4	0.2

Intersection Summary	
HCM 6th Ctrl Delay	15.2
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	163	278	469	32	148	13	534	391	81	7	164	212
Future Volume (veh/h)	163	278	469	32	148	13	534	391	81	7	164	212
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	185	316	533	36	168	15	607	444	92	8	186	241
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	274	1113	518	158	1402	122	692	1102	227	35	659	294
Arrive On Green	0.08	0.33	0.33	0.05	0.29	0.29	0.20	0.38	0.38	0.01	0.19	0.19
Sat Flow, veh/h	3456	3404	1585	3456	4782	418	3456	2935	604	3456	3554	1585
Grp Volume(v), veh/h	185	316	533	36	119	64	607	268	268	8	186	241
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1795	1728	1777	1762	1728	1777	1585
Q Serve(g_s), s	4.8	6.3	30.0	0.9	2.3	2.4	15.6	10.2	10.3	0.2	4.1	13.4
Cycle Q Clear(g_c), s	4.8	6.3	30.0	0.9	2.3	2.4	15.6	10.2	10.3	0.2	4.1	13.4
Prop In Lane	1.00		1.00	1.00		0.23	1.00		0.34	1.00		1.00
Lane Grp Cap(c), veh/h	274	1113	518	158	998	527	692	667	661	35	659	294
V/C Ratio(X)	0.67	0.28	1.03	0.23	0.12	0.12	0.88	0.40	0.41	0.23	0.28	0.82
Avail Cap(c_a), veh/h	753	1113	518	753	1113	587	753	667	661	753	968	432
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	22.9	30.9	42.2	23.7	23.8	35.6	21.1	21.1	45.1	32.1	35.9
Incr Delay (d2), s/veh	3.5	0.2	47.1	0.9	0.1	0.1	11.1	0.5	0.5	4.0	0.3	8.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	2.4	17.4	0.4	0.9	1.0	7.4	4.1	4.1	0.1	1.7	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.6	23.1	78.0	43.1	23.8	23.9	46.7	21.5	21.6	49.1	32.4	44.7
LnGrp LOS	D	C	F	D	C	C	D	C	C	D	C	D
Approach Vol, veh/h		1034			219			1143			435	
Approach Delay, s/veh		55.2			27.0			34.9			39.5	
Approach LOS		E			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	40.4	9.4	35.9	23.6	22.9	12.5	32.8
Change Period (Y+Rc), s	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9
Max Green Setting (Gmax), s	* 20	25.0	* 20	30.0	* 20	25.0	* 20	30.0
Max Q Clear Time (g_c+I1), s	12.3	12.3	2.9	32.0	17.6	15.4	6.8	4.4
Green Ext Time (p_c), s	0.0	2.9	0.1	0.0	0.7	1.6	0.6	1.2

Intersection Summary	
HCM 6th Ctrl Delay	42.4
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	24.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	201	0	293	0	0	0	0	159	623	0	0	432	49
Future Vol, veh/h	201	0	293	0	0	0	0	159	623	0	0	432	49
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	234	0	341	0	0	0	0	185	724	0	0	502	57
Number of Lanes	2	0	1	0	0	0	0	1	2	0	0	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	3	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	3
HCM Control Delay	15	26.5	31.4
HCM LOS	B	D	D

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	100%	0%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%	100%	75%
Vol Right, %	0%	0%	0%	0%	0%	100%	0%	25%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	159	312	312	101	101	293	288	193
LT Vol	159	0	0	101	101	0	0	0
Through Vol	0	312	312	0	0	0	288	144
RT Vol	0	0	0	0	0	293	0	49
Lane Flow Rate	185	362	362	117	117	341	335	224
Geometry Grp	8	8	8	7	7	7	8	8
Degree of Util (X)	0.442	0.814	0.635	0.283	0.283	0.541	0.804	0.527
Departure Headway (Hd)	8.605	8.092	6.314	8.717	8.717	5.712	8.64	8.458
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	418	446	569	411	411	627	419	424
Service Time	6.386	5.873	4.093	6.484	6.484	3.477	6.439	6.257
HCM Lane V/C Ratio	0.443	0.812	0.636	0.285	0.285	0.544	0.8	0.528
HCM Control Delay	18.1	37.9	19.5	14.9	14.9	15.1	38.8	20.4
HCM Lane LOS	C	E	C	B	B	C	E	C
HCM 95th-tile Q	2.2	7.6	4.4	1.1	1.1	3.2	7.2	3



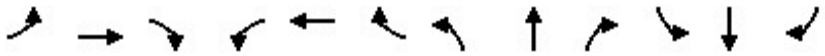
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	373	1	356	0	0	0	0	409	453	216	509	0
Future Volume (veh/h)	373	1	356	0	0	0	0	409	453	216	509	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	405	1	387				0	445	492	235	553	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	504	1	450				0	624	529	361	974	0
Arrive On Green	0.28	0.28	0.28				0.00	0.33	0.33	0.10	0.52	0.00
Sat Flow, veh/h	1777	4	1585				0	1870	1585	3456	1870	0
Grp Volume(v), veh/h	406	0	387				0	445	492	235	553	0
Grp Sat Flow(s),veh/h/ln	1782	0	1585				0	1870	1585	1728	1870	0
Q Serve(g_s), s	9.5	0.0	10.4				0.0	9.4	13.5	2.9	9.0	0.0
Cycle Q Clear(g_c), s	9.5	0.0	10.4				0.0	9.4	13.5	2.9	9.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	505	0	450				0	624	529	361	974	0
V/C Ratio(X)	0.80	0.00	0.86				0.00	0.71	0.93	0.65	0.57	0.00
Avail Cap(c_a), veh/h	1189	0	1058				0	624	529	1230	974	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	14.9	0.0	15.3				0.0	13.1	14.5	19.3	7.3	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.9				0.0	3.3	22.9	0.7	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	3.2				0.0	3.5	6.9	1.0	2.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.1	0.0	17.2				0.0	16.4	37.3	20.1	7.8	0.0
LnGrp LOS	B	A	B				A	B	D	C	A	A
Approach Vol, veh/h		793						937			788	
Approach Delay, s/veh		16.6						27.4			11.5	
Approach LOS		B						C			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		28.0			8.4	19.6		16.9				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.2				
Max Green Setting (Gmax), s		15.0			16.0	15.0		30.0				
Max Q Clear Time (g_c+I1), s		11.0			4.9	15.5		12.4				
Green Ext Time (p_c), s		0.3			0.0	0.0		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			19.0									
HCM 6th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	128	178	700	410	435	112	388	261	85	11	282	112
Future Volume (veh/h)	128	178	700	410	435	112	388	261	85	11	282	112
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	133	185	729	332	586	117	404	272	89	11	294	117
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	461	484	1183	449	764	152	394	923	412	24	397	155
Arrive On Green	0.26	0.26	0.26	0.25	0.25	0.25	0.11	0.26	0.26	0.01	0.16	0.16
Sat Flow, veh/h	1781	1870	3170	1781	3029	603	3456	3554	1585	1781	2500	973
Grp Volume(v), veh/h	133	185	729	332	361	342	404	272	89	11	207	204
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1762	1728	1777	1585	1781	1777	1695
Q Serve(g_s), s	5.7	7.8	17.9	16.4	17.1	17.2	10.9	5.9	4.2	0.6	10.6	11.0
Cycle Q Clear(g_c), s	5.7	7.8	17.9	16.4	17.1	17.2	10.9	5.9	4.2	0.6	10.6	11.0
Prop In Lane	1.00		1.00	1.00		0.34	1.00		1.00	1.00		0.57
Lane Grp Cap(c), veh/h	461	484	1183	449	472	445	394	923	412	24	282	269
V/C Ratio(X)	0.29	0.38	0.62	0.74	0.77	0.77	1.02	0.29	0.22	0.47	0.73	0.76
Avail Cap(c_a), veh/h	839	881	1856	690	725	683	394	1154	515	93	614	586
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.3	29.1	24.4	32.8	33.1	33.1	42.3	28.3	27.7	46.8	38.2	38.4
Incr Delay (d2), s/veh	0.3	0.5	0.5	2.4	2.6	2.8	51.6	0.2	0.3	13.6	3.7	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	3.5	6.4	7.0	7.7	7.3	7.3	2.4	1.6	0.3	4.7	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.7	29.6	24.9	35.2	35.7	36.0	93.9	28.5	28.0	60.4	41.9	42.7
LnGrp LOS	C	C	C	D	D	D	F	C	C	E	D	D
Approach Vol, veh/h		1047			1035			765			422	
Approach Delay, s/veh		26.2			35.6			63.0			42.8	
Approach LOS		C			D			E			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.0	30.2		29.8	15.6	20.6		29.5
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.4
Max Green Setting (Gmax), s	* 5	31.0		45.0	* 11	33.0		37.0
Max Q Clear Time (g_c+I1), s	2.6	7.9		19.9	12.9	13.0		19.2
Green Ext Time (p_c), s	0.0	1.9		4.8	0.0	2.2		4.9

Intersection Summary		
HCM 6th Ctrl Delay	39.9	
HCM 6th LOS	D	

Notes

User approved volume balancing among the lanes for turning movement.

User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	176	734	843	556
Future Volume (veh/h)	0	0	176	734	843	556
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			189	789	906	598
Peak Hour Factor			0.93	0.93	0.93	0.93
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			421	1626	1200	1017
Arrive On Green			0.12	0.87	0.64	0.64
Sat Flow, veh/h			3456	1870	1870	1585
Grp Volume(v), veh/h			189	789	906	598
Grp Sat Flow(s),veh/h/ln			1728	1870	1870	1585
Q Serve(g_s), s			2.3	4.2	15.0	9.6
Cycle Q Clear(g_c), s			2.3	4.2	15.0	9.6
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			421	1626	1200	1017
V/C Ratio(X)			0.45	0.49	0.75	0.59
Avail Cap(c_a), veh/h			1556	3115	2063	1748
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			18.1	0.7	5.5	4.6
Incr Delay (d2), s/veh			0.7	0.2	1.0	0.5
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.8	0.1	2.7	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			18.9	0.9	6.5	5.1
LnGrp LOS			B	A	A	A
Approach Vol, veh/h				978	1504	
Approach Delay, s/veh				4.4	6.0	
Approach LOS				A	A	

Timer - Assigned Phs	2		5	6
Phs Duration (G+Y+Rc), s	44.4		10.1	34.3
Change Period (Y+Rc), s	5.8		* 4.7	5.8
Max Green Setting (Gmax), s	74.0		* 20	49.0
Max Q Clear Time (g_c+I1), s	6.2		4.3	17.0
Green Ext Time (p_c), s	6.9		0.5	11.6

Intersection Summary	
HCM 6th Ctrl Delay	5.3
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	46	20	505	106	28	324
Future Vol, veh/h	46	20	505	106	28	324
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	22	549	115	30	352

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1019	607	0	0	664	0
Stage 1	607	-	-	-	-	-
Stage 2	412	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	263	496	-	-	925	-
Stage 1	544	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	252	496	-	-	925	-
Mov Cap-2 Maneuver	252	-	-	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	642	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21	0	0.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	296	925	-
HCM Lane V/C Ratio	-	-	0.242	0.033	-
HCM Control Delay (s)	-	-	21	9	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	446	7	24	327	4	13
Future Vol, veh/h	446	7	24	327	4	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	485	8	26	355	4	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	493	0	896	489
Stage 1	-	-	-	-	489	-
Stage 2	-	-	-	-	407	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1071	-	311	579
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	672	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1071	-	302	579
Mov Cap-2 Maneuver	-	-	-	-	302	-
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	652	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	476	-	-	1071	-
HCM Lane V/C Ratio	0.039	-	-	0.024	-
HCM Control Delay (s)	12.9	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

MOVEMENT SUMMARY

Site: 2 [PM Rd / Abernathy Rd (Site Folder: General)]

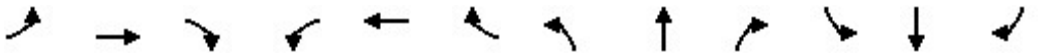
Existing plus Project PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Abernathy Rd														
3	L2	129	2.0	143	2.0	0.691	16.6	LOS B	8.5	215.5	0.84	1.10	1.52	29.4
8	T1	274	2.0	304	2.0	0.691	16.6	LOS B	8.5	215.5	0.84	1.10	1.52	29.3
18	R2	125	2.0	139	2.0	0.691	16.6	LOS B	8.5	215.5	0.84	1.10	1.52	28.6
Approach		528	2.0	587	2.0	0.691	16.6	LOS B	8.5	215.5	0.84	1.10	1.52	29.2
East: Rockville Rd														
1	L2	32	2.0	36	2.0	0.350	9.2	LOS A	1.7	42.2	0.66	0.67	0.69	32.8
6	T1	171	2.0	190	2.0	0.350	9.2	LOS A	1.7	42.2	0.66	0.67	0.69	32.7
16	R2	29	2.0	32	2.0	0.350	9.2	LOS A	1.7	42.2	0.66	0.67	0.69	31.8
Approach		232	2.0	258	2.0	0.350	9.2	LOS A	1.7	42.2	0.66	0.67	0.69	32.6
North: Abernathy Rd														
7	L2	69	2.0	77	2.0	0.351	7.8	LOS A	1.8	45.2	0.57	0.50	0.57	33.2
4	T1	176	2.0	196	2.0	0.351	7.8	LOS A	1.8	45.2	0.57	0.50	0.57	33.1
14	R2	46	2.0	51	2.0	0.351	7.8	LOS A	1.8	45.2	0.57	0.50	0.57	32.2
Approach		291	2.0	323	2.0	0.351	7.8	LOS A	1.8	45.2	0.57	0.50	0.57	33.0
West: Rockville Rd														
5	L2	122	2.0	136	2.0	0.523	10.2	LOS B	3.9	99.5	0.63	0.59	0.74	31.9
2	T1	206	7.0	229	7.0	0.523	10.4	LOS B	3.9	99.5	0.63	0.59	0.74	31.8
12	R2	130	2.0	144	2.0	0.523	10.2	LOS B	3.9	99.5	0.63	0.59	0.74	31.0
Approach		458	4.2	509	4.2	0.523	10.3	LOS B	3.9	99.5	0.63	0.59	0.74	31.6
All Vehicles		1509	2.7	1677	2.7	0.691	11.8	LOS B	8.5	215.5	0.70	0.76	0.97	31.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	115	35	167	133	79	30	187	101	69	211	30
Future Volume (veh/h)	31	115	35	167	133	79	30	187	101	69	211	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	35	131	40	190	151	0	34	212	115	78	240	34
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	196	166	249	401		49	307	526	100	309	44
Arrive On Green	0.04	0.10	0.10	0.14	0.21	0.00	0.19	0.19	0.19	0.25	0.25	0.25
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	257	1601	1585	403	1240	176
Grp Volume(v), veh/h	35	131	40	190	151	0	246	0	115	352	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1858	0	1585	1819	0	0
Q Serve(g_s), s	1.1	3.9	1.4	6.0	4.0	0.0	7.2	0.0	3.1	10.5	0.0	0.0
Cycle Q Clear(g_c), s	1.1	3.9	1.4	6.0	4.0	0.0	7.2	0.0	3.1	10.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.14		1.00	0.22		0.10
Lane Grp Cap(c), veh/h	66	196	166	249	401		356	0	526	453	0	0
V/C Ratio(X)	0.53	0.67	0.24	0.76	0.38		0.69	0.00	0.22	0.78	0.00	0.00
Avail Cap(c_a), veh/h	457	1439	1219	1370	1439		1429	0	1441	932	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.7	25.2	24.1	24.2	19.6	0.0	22.0	0.0	14.1	20.4	0.0	0.0
Incr Delay (d2), s/veh	2.4	1.5	0.3	4.8	1.2	0.0	2.4	0.0	0.2	2.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.8	0.5	2.7	1.8	0.0	3.2	0.0	1.0	4.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.1	26.7	24.3	29.0	20.9	0.0	24.4	0.0	14.3	23.3	0.0	0.0
LnGrp LOS	C	C	C	C	C		C	A	B	C	A	A
Approach Vol, veh/h		206			341			361			352	
Approach Delay, s/veh		26.8			25.4			21.2			23.3	
Approach LOS		C			C			C			C	

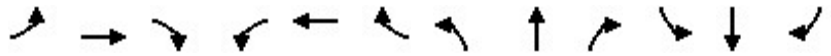
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.8	10.7		19.2	6.4	17.1		15.8				
Change Period (Y+Rc), s	4.6	4.6		4.6	* 4.2	4.6		4.6				
Max Green Setting (Gmax), s	45.0	45.0		30.0	* 15	45.0		45.0				
Max Q Clear Time (g_c+I1), s	8.0	5.9		12.5	3.1	6.0		9.2				
Green Ext Time (p_c), s	0.6	0.6		2.1	0.0	1.8		2.0				

Intersection Summary		
HCM 6th Ctrl Delay		23.9
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	1	43	16	1	12	36	373	18	3	438	13
Future Volume (veh/h)	13	1	43	16	1	12	36	373	18	3	438	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	1	46	22	0	0	38	397	0	4	466	14
Peak Hour Factor	0.94	0.75	0.94	0.75	0.75	0.75	0.94	0.94	0.75	0.75	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	109	8	104	99	0		80	1266		10	1116	33
Arrive On Green	0.07	0.07	0.07	0.03	0.00	0.00	0.04	0.36	0.00	0.01	0.32	0.32
Sat Flow, veh/h	1668	119	1585	3563	0	1585	1781	3554	1585	1781	3522	106
Grp Volume(v), veh/h	15	0	46	22	0	0	38	397	0	4	235	245
Grp Sat Flow(s),veh/h/ln	1787	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1851
Q Serve(g_s), s	0.2	0.0	0.9	0.2	0.0	0.0	0.7	2.6	0.0	0.1	3.3	3.3
Cycle Q Clear(g_c), s	0.2	0.0	0.9	0.2	0.0	0.0	0.7	2.6	0.0	0.1	3.3	3.3
Prop In Lane	0.93		1.00	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	117	0	104	99	0		80	1266		10	563	586
V/C Ratio(X)	0.13	0.00	0.44	0.22	0.00		0.48	0.31		0.41	0.42	0.42
Avail Cap(c_a), veh/h	1132	0	1004	4515	0		1129	4504		1693	2252	2346
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	14.2	15.0	0.0	0.0	14.7	7.4	0.0	15.6	8.5	8.5
Incr Delay (d2), s/veh	0.2	0.0	1.1	1.1	0.0	0.0	1.6	0.1	0.0	10.0	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.3	0.1	0.0	0.0	0.2	0.6	0.0	0.0	0.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.1	0.0	15.3	16.1	0.0	0.0	16.3	7.5	0.0	25.6	9.0	9.0
LnGrp LOS	B	A	B	B	A		B	A		C	A	A
Approach Vol, veh/h		61			22			435			484	
Approach Delay, s/veh		15.0			16.1			8.3			9.1	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.6	14.6		5.1	4.4	15.8		6.3
Change Period (Y+Rc), s	* 4.2	4.6		* 4.2	* 4.2	4.6		4.2
Max Green Setting (Gmax), s	* 2.8	40.0		* 40	* 30	40.0		20.0
Max Q Clear Time (g_c+I1), s	2.7	5.3		2.2	2.1	4.6		2.9
Green Ext Time (p_c), s	0.0	2.9		0.0	0.0	2.7		0.1

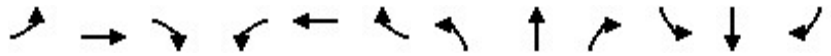
Intersection Summary	
HCM 6th Ctrl Delay	9.3
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	19	55	39	57	19	51	380	17	11	413	50
Future Volume (veh/h)	40	19	55	39	57	19	51	380	17	11	413	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	21	60	42	62	21	55	413	18	12	449	54
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	87	53	150	85	322	104	105	1623	70	28	996	444
Arrive On Green	0.05	0.12	0.12	0.05	0.12	0.12	0.06	0.32	0.32	0.02	0.28	0.28
Sat Flow, veh/h	1781	428	1222	1781	2641	853	1781	5018	217	1781	3554	1585
Grp Volume(v), veh/h	43	0	81	42	41	42	55	279	152	12	449	54
Grp Sat Flow(s),veh/h/ln	1781	0	1650	1781	1777	1717	1781	1702	1831	1781	1777	1585
Q Serve(g_s), s	0.8	0.0	1.6	0.8	0.7	0.8	1.1	2.2	2.2	0.2	3.7	0.9
Cycle Q Clear(g_c), s	0.8	0.0	1.6	0.8	0.7	0.8	1.1	2.2	2.2	0.2	3.7	0.9
Prop In Lane	1.00		0.74	1.00		0.50	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	87	0	203	85	217	209	105	1101	592	28	996	444
V/C Ratio(X)	0.50	0.00	0.40	0.49	0.19	0.20	0.52	0.25	0.26	0.43	0.45	0.12
Avail Cap(c_a), veh/h	998	0	694	1248	747	722	998	3339	1796	998	3485	1555
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.5	0.0	14.4	16.6	14.1	14.1	16.3	8.9	8.9	17.4	10.6	9.6
Incr Delay (d2), s/veh	4.3	0.0	1.3	4.4	0.4	0.5	4.0	0.1	0.3	3.8	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.5	0.4	0.3	0.3	0.5	0.5	0.6	0.1	1.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.9	0.0	15.7	21.0	14.5	14.6	20.3	9.0	9.2	21.2	11.0	9.7
LnGrp LOS	C	A	B	C	B	B	C	A	A	C	B	A
Approach Vol, veh/h		124			125			486			515	
Approach Delay, s/veh		17.5			16.7			10.4			11.1	
Approach LOS		B			B			B			B	

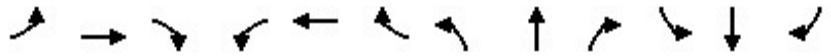
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.8	16.1	5.9	8.9	6.3	14.6	5.9	8.9
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.5	* 4.2	4.6	* 4.2	4.5
Max Green Setting (Gmax), s	* 2.8	35.0	* 25	15.0	* 20	35.0	* 20	15.0
Max Q Clear Time (g_c+I1), s	2.2	4.2	2.8	3.6	3.1	5.7	2.8	2.8
Green Ext Time (p_c), s	0.0	3.2	0.1	0.2	0.1	3.8	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	12.0
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	99	147	115	37	139	15	135	326	36	10	250	248
Future Volume (veh/h)	99	147	115	37	139	15	135	326	36	10	250	248
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	108	160	125	40	151	16	147	354	39	11	272	270
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	344	730	340	198	810	84	378	1072	117	48	840	375
Arrive On Green	0.10	0.21	0.21	0.06	0.17	0.17	0.11	0.33	0.33	0.01	0.24	0.24
Sat Flow, veh/h	3456	3404	1585	3456	4702	485	3456	3230	353	3456	3554	1585
Grp Volume(v), veh/h	108	160	125	40	108	59	147	194	199	11	272	270
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1783	1728	1777	1807	1728	1777	1585
Q Serve(g_s), s	1.7	2.2	3.9	0.6	1.6	1.6	2.3	4.7	4.8	0.2	3.7	9.1
Cycle Q Clear(g_c), s	1.7	2.2	3.9	0.6	1.6	1.6	2.3	4.7	4.8	0.2	3.7	9.1
Prop In Lane	1.00		1.00	1.00		0.27	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	344	730	340	198	586	307	378	590	600	48	840	375
V/C Ratio(X)	0.31	0.22	0.37	0.20	0.18	0.19	0.39	0.33	0.33	0.23	0.32	0.72
Avail Cap(c_a), veh/h	1191	1759	819	1191	1759	922	1191	765	778	1191	1531	683
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.3	18.8	19.4	26.1	20.5	20.6	24.0	14.5	14.6	28.3	18.3	20.4
Incr Delay (d2), s/veh	0.6	0.2	0.8	0.6	0.2	0.4	0.8	0.4	0.4	2.8	0.3	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.8	1.3	0.3	0.6	0.6	0.9	1.7	1.7	0.1	1.3	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.9	19.0	20.2	26.7	20.7	20.9	24.8	14.9	15.0	31.1	18.6	23.5
LnGrp LOS	C	B	C	C	C	C	C	B	B	C	B	C
Approach Vol, veh/h		393			207			540			553	
Approach Delay, s/veh		21.0			21.9			17.6			21.3	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	25.2	8.5	18.3	11.5	19.6	11.0	15.9
Change Period (Y+Rc), s	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9
Max Green Setting (Gmax), s	* 20	25.0	* 20	30.0	* 20	25.0	* 20	30.0
Max Q Clear Time (g_c+I1), s	2.2	6.8	2.6	5.9	4.3	11.1	3.7	3.6
Green Ext Time (p_c), s	0.0	2.4	0.1	2.0	0.5	2.6	0.3	1.1

Intersection Summary	
HCM 6th Ctrl Delay	20.1
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	13.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	0	311	0	0	0	133	399	0	0	340	54
Future Vol, veh/h	100	0	311	0	0	0	133	399	0	0	340	54
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	112	0	349	0	0	0	149	448	0	0	382	61
Number of Lanes	2	0	1	0	0	0	1	2	0	1	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	3	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	3	3	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	3
HCM Control Delay	11.2	12.9	15.5
HCM LOS	B	B	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	100%	0%	0%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%	100%	100%	68%
Vol Right, %	0%	0%	0%	0%	0%	100%	0%	0%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	133	200	200	50	50	311	0	227	167
LT Vol	133	0	0	50	50	0	0	0	0
Through Vol	0	200	200	0	0	0	0	227	113
RT Vol	0	0	0	0	0	311	0	0	54
Lane Flow Rate	149	224	224	56	56	349	0	255	188
Geometry Grp	8	8	8	7	7	7	8	8	8
Degree of Util (X)	0.309	0.431	0.322	0.118	0.118	0.447	0	0.503	0.359
Departure Headway (Hd)	7.437	6.929	5.167	7.579	7.579	4.607	7.103	7.103	6.873
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	480	516	688	470	470	772	0	504	519
Service Time	5.23	4.722	2.959	5.368	5.368	2.394	4.901	4.901	4.671
HCM Lane V/C Ratio	0.31	0.434	0.326	0.119	0.119	0.452	0	0.506	0.362
HCM Control Delay	13.6	14.9	10.4	11.4	11.4	11.1	9.9	17	13.5
HCM Lane LOS	B	B	B	B	B	B	N	C	B
HCM 95th-tile Q	1.3	2.1	1.4	0.4	0.4	2.3	0	2.8	1.6



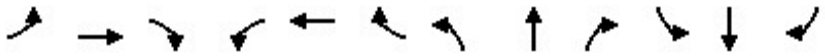
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	236	4	374	0	0	0	0	296	529	157	494	0
Future Volume (veh/h)	236	4	374	0	0	0	0	296	529	157	494	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	248	4	394				0	312	557	165	520	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	503	8	454				0	646	548	276	955	0
Arrive On Green	0.29	0.29	0.29				0.00	0.35	0.35	0.08	0.51	0.00
Sat Flow, veh/h	1754	28	1585				0	1870	1585	3456	1870	0
Grp Volume(v), veh/h	252	0	394				0	312	557	165	520	0
Grp Sat Flow(s),veh/h/ln	1783	0	1585				0	1870	1585	1728	1870	0
Q Serve(g_s), s	5.1	0.0	10.2				0.0	5.7	15.0	2.0	8.2	0.0
Cycle Q Clear(g_c), s	5.1	0.0	10.2				0.0	5.7	15.0	2.0	8.2	0.0
Prop In Lane	0.98		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	511	0	454				0	646	548	276	955	0
V/C Ratio(X)	0.49	0.00	0.87				0.00	0.48	1.02	0.60	0.54	0.00
Avail Cap(c_a), veh/h	1232	0	1095				0	646	548	1273	955	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.9	0.0	14.7				0.0	11.2	14.2	19.3	7.2	0.0
Incr Delay (d2), s/veh	0.3	0.0	2.0				0.0	0.2	42.9	0.8	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	3.1				0.0	1.7	10.3	0.7	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	0.0	16.7				0.0	11.4	57.1	20.1	7.6	0.0
LnGrp LOS	B	A	B				A	B	F	C	A	A
Approach Vol, veh/h		646						869			685	
Approach Delay, s/veh		15.3						40.7			10.6	
Approach LOS		B						D			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		26.8			7.2	19.6		16.7				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.2				
Max Green Setting (Gmax), s		15.0			16.0	15.0		30.0				
Max Q Clear Time (g_c+I1), s		10.2			4.0	17.0		12.2				
Green Ext Time (p_c), s		0.3			0.0	0.0		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			23.9									
HCM 6th LOS			C									

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	150	818	291	475	93	436	161	45	13	235	116
Future Volume (veh/h)	118	150	818	291	475	93	436	161	45	13	235	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	122	155	843	295	497	96	449	166	46	13	242	120
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	416	1194	400	685	132	533	1003	447	28	335	161
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.15	0.28	0.28	0.02	0.14	0.14
Sat Flow, veh/h	1781	1870	3170	1781	3049	586	3456	3554	1585	1781	2329	1117
Grp Volume(v), veh/h	122	155	843	295	304	289	449	166	46	13	183	179
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1765	1728	1777	1585	1781	1777	1669
Q Serve(g_s), s	4.6	5.7	18.0	12.4	12.2	12.3	10.2	2.8	1.7	0.6	7.9	8.3
Cycle Q Clear(g_c), s	4.6	5.7	18.0	12.4	12.2	12.3	10.2	2.8	1.7	0.6	7.9	8.3
Prop In Lane	1.00		1.00	1.00		0.33	1.00		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	397	416	1194	400	420	397	533	1003	447	28	256	240
V/C Ratio(X)	0.31	0.37	0.71	0.74	0.72	0.73	0.84	0.17	0.10	0.47	0.72	0.75
Avail Cap(c_a), veh/h	397	416	1194	630	662	624	577	1222	545	110	424	398
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	26.6	21.4	29.1	29.0	29.1	33.3	21.8	21.5	39.5	33.0	33.2
Incr Delay (d2), s/veh	0.4	0.6	1.9	2.7	2.4	2.6	10.3	0.1	0.1	11.6	3.7	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	2.5	6.4	5.3	5.4	5.1	4.8	1.1	0.6	0.3	3.5	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.7	27.2	23.3	31.8	31.4	31.6	43.6	21.9	21.6	51.1	36.7	37.8
LnGrp LOS	C	C	C	C	C	C	D	C	C	D	D	D
Approach Vol, veh/h		1120			888			661			375	
Approach Delay, s/veh		24.2			31.6			36.6			37.7	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.0	28.2		23.1	17.2	17.0		23.6
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.4
Max Green Setting (Gmax), s	* 5	27.8		18.0	* 14	19.3		28.6
Max Q Clear Time (g_c+I1), s	2.6	4.8		20.0	12.2	10.3		14.4
Green Ext Time (p_c), s	0.0	1.0		0.0	0.2	1.3		3.7

Intersection Summary	
HCM 6th Ctrl Delay	30.7
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	130	646	774	568
Future Volume (veh/h)	0	0	130	646	774	568
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			135	673	806	592
Peak Hour Factor			0.96	0.96	0.96	0.96
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			410	1590	1141	967
Arrive On Green			0.12	0.85	0.61	0.61
Sat Flow, veh/h			3456	1870	1870	1585
Grp Volume(v), veh/h			135	673	806	592
Grp Sat Flow(s),veh/h/ln			1728	1870	1870	1585
Q Serve(g_s), s			1.4	3.3	11.4	9.0
Cycle Q Clear(g_c), s			1.4	3.3	11.4	9.0
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			410	1590	1141	967
V/C Ratio(X)			0.33	0.42	0.71	0.61
Avail Cap(c_a), veh/h			1786	3576	2368	2007
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			15.6	0.7	5.2	4.7
Incr Delay (d2), s/veh			0.5	0.2	0.8	0.6
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.5	0.1	1.8	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			16.1	0.9	6.0	5.3
LnGrp LOS			B	A	A	A
Approach Vol, veh/h				808	1398	
Approach Delay, s/veh				3.4	5.7	
Approach LOS				A	A	

Timer - Assigned Phs	2		5	6
Phs Duration (G+Y+Rc), s	38.7		9.3	29.4
Change Period (Y+Rc), s	5.8		* 4.7	5.8
Max Green Setting (Gmax), s	74.0		* 20	49.0
Max Q Clear Time (g_c+I1), s	5.3		3.4	13.4
Green Ext Time (p_c), s	5.3		0.3	10.2

Intersection Summary	
HCM 6th Ctrl Delay	4.9
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	79	29	289	127	33	380
Future Vol, veh/h	79	29	289	127	33	380
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	32	314	138	36	413

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	868	383	0	0	452	0
Stage 1	383	-	-	-	-	-
Stage 2	485	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	323	664	-	-	1109	-
Stage 1	689	-	-	-	-	-
Stage 2	619	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	309	664	-	-	1109	-
Mov Cap-2 Maneuver	309	-	-	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	593	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.7	0	0.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	361	1109	-
HCM Lane V/C Ratio	-	-	0.325	0.032	-
HCM Control Delay (s)	-	-	19.7	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.4	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	276	9	29	373	6	21
Future Vol, veh/h	276	9	29	373	6	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	300	10	32	405	7	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	310	0	774	305
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	469	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1250	-	367	735
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	630	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1250	-	355	735
Mov Cap-2 Maneuver	-	-	-	-	355	-
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	609	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	594	-	-	1250	-
HCM Lane V/C Ratio	0.049	-	-	0.025	-
HCM Control Delay (s)	11.4	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

MOVEMENT SUMMARY

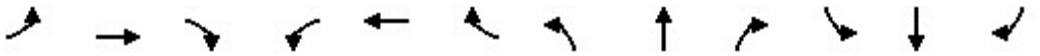
Site: 2 [Sat In Rockville Rd / Abernathy Rd (Site Folder: General)]

Existing plus Project Saturday
Special Event Inbound
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Abernathy Rd														
3	L2	167	2.0	186	2.0	0.393	7.4	LOS A	2.2	57.0	0.50	0.37	0.50	32.8
8	T1	156	2.0	173	2.0	0.393	7.4	LOS A	2.2	57.0	0.50	0.37	0.50	32.8
18	R2	59	2.0	66	2.0	0.393	7.4	LOS A	2.2	57.0	0.50	0.37	0.50	31.9
Approach		382	2.0	424	2.0	0.393	7.4	LOS A	2.2	57.0	0.50	0.37	0.50	32.7
East: Rockville Rd														
1	L2	36	2.0	40	2.0	0.282	7.1	LOS A	1.3	33.7	0.57	0.51	0.57	33.8
6	T1	162	2.0	180	2.0	0.282	7.1	LOS A	1.3	33.7	0.57	0.51	0.57	33.7
16	R2	25	2.0	28	2.0	0.282	7.1	LOS A	1.3	33.7	0.57	0.51	0.57	32.7
Approach		223	2.0	248	2.0	0.282	7.1	LOS A	1.3	33.7	0.57	0.51	0.57	33.6
North: Abernathy Rd														
7	L2	15	2.0	17	2.0	0.243	6.6	LOS A	1.1	28.2	0.54	0.48	0.54	34.2
4	T1	112	2.0	124	2.0	0.243	6.6	LOS A	1.1	28.2	0.54	0.48	0.54	34.2
14	R2	67	2.0	74	2.0	0.243	6.6	LOS A	1.1	28.2	0.54	0.48	0.54	33.2
Approach		194	2.0	216	2.0	0.243	6.6	LOS A	1.1	28.2	0.54	0.48	0.54	33.8
West: Rockville Rd														
5	L2	51	2.0	57	2.0	0.314	6.2	LOS A	1.6	42.4	0.41	0.27	0.41	34.1
2	T1	136	7.0	151	7.0	0.314	6.3	LOS A	1.6	42.4	0.41	0.27	0.41	34.0
12	R2	128	2.0	142	2.0	0.314	6.2	LOS A	1.6	42.4	0.41	0.27	0.41	33.1
Approach		315	4.2	350	4.2	0.314	6.3	LOS A	1.6	42.4	0.41	0.27	0.41	33.6
All Vehicles		1114	2.6	1238	2.6	0.393	6.9	LOS A	2.2	57.0	0.49	0.39	0.49	33.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	112	35	167	134	81	31	193	101	69	202	30
Future Volume (veh/h)	31	112	35	167	134	81	31	193	101	69	202	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	35	127	40	190	152	0	35	219	115	78	230	34
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	191	162	250	396		50	316	535	101	298	44
Arrive On Green	0.04	0.10	0.10	0.14	0.21	0.00	0.20	0.20	0.20	0.24	0.24	0.24
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	256	1602	1585	414	1222	181
Grp Volume(v), veh/h	35	127	40	190	152	0	254	0	115	342	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1858	0	1585	1817	0	0
Q Serve(g_s), s	1.1	3.8	1.3	6.0	4.0	0.0	7.4	0.0	3.0	10.2	0.0	0.0
Cycle Q Clear(g_c), s	1.1	3.8	1.3	6.0	4.0	0.0	7.4	0.0	3.0	10.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.14		1.00	0.23		0.10
Lane Grp Cap(c), veh/h	66	191	162	250	396		366	0	535	443	0	0
V/C Ratio(X)	0.53	0.67	0.25	0.76	0.38		0.69	0.00	0.22	0.77	0.00	0.00
Avail Cap(c_a), veh/h	460	1449	1228	1380	1449		1440	0	1450	939	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.5	25.1	24.0	24.0	19.6	0.0	21.7	0.0	13.7	20.5	0.0	0.0
Incr Delay (d2), s/veh	2.4	1.5	0.3	4.8	1.3	0.0	2.4	0.0	0.2	2.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.7	0.5	2.7	1.8	0.0	3.3	0.0	1.0	4.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.9	26.6	24.3	28.8	20.9	0.0	24.0	0.0	13.9	23.3	0.0	0.0
LnGrp LOS	C	C	C	C	C		C	A	B	C	A	A
Approach Vol, veh/h		202			342			369			342	
Approach Delay, s/veh		26.7			25.3			20.9			23.3	
Approach LOS		C			C			C			C	

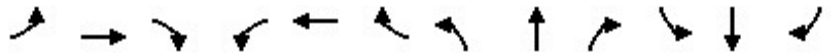
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.7	10.5		18.8	6.4	16.9		16.0				
Change Period (Y+Rc), s	4.6	4.6		4.6	* 4.2	4.6		4.6				
Max Green Setting (Gmax), s	45.0	45.0		30.0	* 15	45.0		45.0				
Max Q Clear Time (g_c+I1), s	8.0	5.8		12.2	3.1	6.0		9.4				
Green Ext Time (p_c), s	0.6	0.6		2.0	0.0	1.8		2.1				

Intersection Summary		
HCM 6th Ctrl Delay		23.7
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	1	43	16	1	12	36	337	18	3	471	15
Future Volume (veh/h)	12	1	43	16	1	12	36	337	18	3	471	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	13	1	46	22	0	0	38	359	0	4	501	16
Peak Hour Factor	0.94	0.75	0.94	0.75	0.75	0.75	0.94	0.94	0.75	0.75	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	108	8	103	99	0		80	1267		10	1114	36
Arrive On Green	0.06	0.06	0.06	0.03	0.00	0.00	0.04	0.36	0.00	0.01	0.32	0.32
Sat Flow, veh/h	1660	128	1585	3563	0	1585	1781	3554	1585	1781	3515	112
Grp Volume(v), veh/h	14	0	46	22	0	0	38	359	0	4	253	264
Grp Sat Flow(s),veh/h/ln	1787	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1850
Q Serve(g_s), s	0.2	0.0	0.9	0.2	0.0	0.0	0.7	2.3	0.0	0.1	3.6	3.6
Cycle Q Clear(g_c), s	0.2	0.0	0.9	0.2	0.0	0.0	0.7	2.3	0.0	0.1	3.6	3.6
Prop In Lane	0.93		1.00	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	116	0	103	99	0		80	1267		10	563	587
V/C Ratio(X)	0.12	0.00	0.45	0.22	0.00		0.48	0.28		0.41	0.45	0.45
Avail Cap(c_a), veh/h	1134	0	1005	4519	0		1130	4508		1695	2254	2347
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	0.0	14.2	15.0	0.0	0.0	14.7	7.3	0.0	15.6	8.6	8.6
Incr Delay (d2), s/veh	0.2	0.0	1.1	1.1	0.0	0.0	1.6	0.1	0.0	10.0	0.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.3	0.1	0.0	0.0	0.2	0.5	0.0	0.0	0.9	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.1	0.0	15.3	16.1	0.0	0.0	16.3	7.4	0.0	25.6	9.1	9.1
LnGrp LOS	B	A	B	B	A		B	A		C	A	A
Approach Vol, veh/h		60			22			397			521	
Approach Delay, s/veh		15.0			16.1			8.2			9.3	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.6	14.6		5.1	4.4	15.8		6.2
Change Period (Y+Rc), s	* 4.2	4.6		* 4.2	* 4.2	4.6		4.2
Max Green Setting (Gmax), s	* 2.8	40.0		* 40	* 30	40.0		20.0
Max Q Clear Time (g_c+I1), s	2.7	5.6		2.2	2.1	4.3		2.9
Green Ext Time (p_c), s	0.0	3.2		0.0	0.0	2.4		0.1

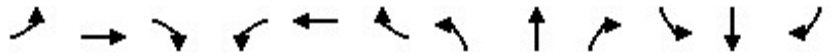
Intersection Summary	
HCM 6th Ctrl Delay	9.4
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	19	55	39	57	18	51	349	17	13	442	52
Future Volume (veh/h)	38	19	55	39	57	18	51	349	17	13	442	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	41	21	60	42	62	20	55	379	18	14	480	57
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	52	149	85	327	101	105	1611	76	32	1001	446
Arrive On Green	0.05	0.12	0.12	0.05	0.12	0.12	0.06	0.32	0.32	0.02	0.28	0.28
Sat Flow, veh/h	1781	428	1222	1781	2674	825	1781	4997	235	1781	3554	1585
Grp Volume(v), veh/h	41	0	81	42	40	42	55	257	140	14	480	57
Grp Sat Flow(s),veh/h/ln	1781	0	1650	1781	1777	1722	1781	1702	1828	1781	1777	1585
Q Serve(g_s), s	0.8	0.0	1.6	0.8	0.7	0.8	1.1	2.0	2.0	0.3	4.0	1.0
Cycle Q Clear(g_c), s	0.8	0.0	1.6	0.8	0.7	0.8	1.1	2.0	2.0	0.3	4.0	1.0
Prop In Lane	1.00		0.74	1.00		0.48	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	83	0	201	85	218	211	105	1097	589	32	1001	446
V/C Ratio(X)	0.49	0.00	0.40	0.49	0.18	0.20	0.52	0.23	0.24	0.43	0.48	0.13
Avail Cap(c_a), veh/h	998	0	693	1247	747	724	998	3338	1792	998	3484	1554
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	0.0	14.5	16.6	14.1	14.1	16.3	8.9	8.9	17.3	10.6	9.6
Incr Delay (d2), s/veh	4.4	0.0	1.3	4.4	0.4	0.5	4.0	0.1	0.2	3.4	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.5	0.4	0.3	0.3	0.5	0.5	0.6	0.1	1.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.0	0.0	15.8	21.0	14.5	14.5	20.3	9.0	9.1	20.7	11.1	9.7
LnGrp LOS	C	A	B	C	B	B	C	A	A	C	B	A
Approach Vol, veh/h		122			124			452			551	
Approach Delay, s/veh		17.6			16.7			10.4			11.2	
Approach LOS		B			B			B			B	

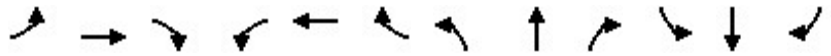
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.8	16.1	5.9	8.8	6.3	14.7	5.9	8.9
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.5	* 4.2	4.6	* 4.2	4.5
Max Green Setting (Gmax), s	* 20	35.0	* 25	15.0	* 20	35.0	* 20	15.0
Max Q Clear Time (g_c+I1), s	2.3	4.0	2.8	3.6	3.1	6.0	2.8	2.8
Green Ext Time (p_c), s	0.0	2.9	0.1	0.2	0.1	4.1	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	12.1
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	147	115	37	139	15	135	297	36	10	256	270
Future Volume (veh/h)	96	147	115	37	139	15	135	297	36	10	256	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	104	160	125	40	151	16	147	323	39	11	278	293
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	335	713	332	197	796	82	373	1098	131	48	887	395
Arrive On Green	0.10	0.21	0.21	0.06	0.17	0.17	0.11	0.34	0.34	0.01	0.25	0.25
Sat Flow, veh/h	3456	3404	1585	3456	4702	485	3456	3196	383	3456	3554	1585
Grp Volume(v), veh/h	104	160	125	40	108	59	147	178	184	11	278	293
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1783	1728	1777	1801	1728	1777	1585
Q Serve(g_s), s	1.7	2.3	4.0	0.7	1.6	1.7	2.3	4.3	4.4	0.2	3.8	10.0
Cycle Q Clear(g_c), s	1.7	2.3	4.0	0.7	1.6	1.7	2.3	4.3	4.4	0.2	3.8	10.0
Prop In Lane	1.00		1.00	1.00		0.27	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	335	713	332	197	577	302	373	610	619	48	887	395
V/C Ratio(X)	0.31	0.22	0.38	0.20	0.19	0.19	0.39	0.29	0.30	0.23	0.31	0.74
Avail Cap(c_a), veh/h	1171	1730	806	1171	1730	906	1171	753	763	1171	1505	671
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.8	19.4	20.0	26.5	21.0	21.1	24.5	14.1	14.2	28.8	18.0	20.4
Incr Delay (d2), s/veh	0.6	0.2	0.9	0.6	0.2	0.4	0.8	0.3	0.3	2.8	0.2	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.8	1.4	0.3	0.6	0.7	0.9	1.5	1.6	0.1	1.4	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.4	19.5	20.9	27.2	21.2	21.4	25.3	14.5	14.5	31.6	18.3	23.7
LnGrp LOS	C	B	C	C	C	C	C	B	B	C	B	C
Approach Vol, veh/h		389			207			509			582	
Approach Delay, s/veh		21.5			22.4			17.6			21.3	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	26.2	8.6	18.3	11.6	20.6	10.9	15.9
Change Period (Y+Rc), s	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9
Max Green Setting (Gmax), s	* 20	25.0	* 20	30.0	* 20	25.0	* 20	30.0
Max Q Clear Time (g_c+I1), s	12.3	6.4	2.7	6.0	4.3	12.0	3.7	3.7
Green Ext Time (p_c), s	0.0	2.2	0.1	2.0	0.5	2.7	0.3	1.1

Intersection Summary	
HCM 6th Ctrl Delay	20.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

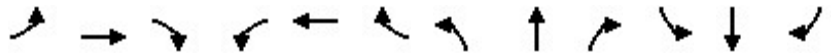
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	13
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	94	0	311	0	0	0	133	375	0	0	344	56
Future Vol, veh/h	94	0	311	0	0	0	133	375	0	0	344	56
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	106	0	349	0	0	0	149	421	0	0	387	63
Number of Lanes	2	0	1	0	0	0	1	2	0	1	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	3	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	3	3	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	3
HCM Control Delay	11.1	12.6	15.3
HCM LOS	B	B	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	100%	0%	0%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%	100%	100%	67%
Vol Right, %	0%	0%	0%	0%	0%	100%	0%	0%	33%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	133	188	188	47	47	311	0	229	171
LT Vol	133	0	0	47	47	0	0	0	0
Through Vol	0	188	188	0	0	0	0	229	115
RT Vol	0	0	0	0	0	311	0	0	56
Lane Flow Rate	149	211	211	53	53	349	0	258	192
Geometry Grp	8	8	8	7	7	7	8	8	8
Degree of Util (X)	0.308	0.404	0.301	0.111	0.111	0.443	0	0.503	0.362
Departure Headway (Hd)	7.415	6.907	5.145	7.537	7.537	4.567	7.025	7.025	6.791
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	481	518	691	473	473	779	0	510	525
Service Time	5.206	4.698	2.935	5.324	5.324	2.351	4.818	4.818	4.585
HCM Lane V/C Ratio	0.31	0.407	0.305	0.112	0.112	0.448	0	0.506	0.366
HCM Control Delay	13.5	14.4	10.2	11.3	11.3	11	9.8	16.8	13.4
HCM Lane LOS	B	B	B	B	B	B	N	C	B
HCM 95th-tile Q	1.3	1.9	1.3	0.4	0.4	2.3	0	2.8	1.6



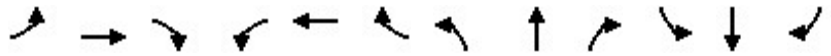
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	4	374	0	0	0	0	296	529	161	494	0
Future Volume (veh/h)	212	4	374	0	0	0	0	296	529	161	494	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	223	4	394				0	312	557	169	520	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	501	9	454				0	645	547	282	957	0
Arrive On Green	0.29	0.29	0.29				0.00	0.34	0.34	0.08	0.51	0.00
Sat Flow, veh/h	1751	31	1585				0	1870	1585	3456	1870	0
Grp Volume(v), veh/h	227	0	394				0	312	557	169	520	0
Grp Sat Flow(s),veh/h/ln	1783	0	1585				0	1870	1585	1728	1870	0
Q Serve(g_s), s	4.5	0.0	10.3				0.0	5.7	15.0	2.1	8.2	0.0
Cycle Q Clear(g_c), s	4.5	0.0	10.3				0.0	5.7	15.0	2.1	8.2	0.0
Prop In Lane	0.98		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	510	0	454				0	645	547	282	957	0
V/C Ratio(X)	0.44	0.00	0.87				0.00	0.48	1.02	0.60	0.54	0.00
Avail Cap(c_a), veh/h	1230	0	1093				0	645	547	1271	957	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.7	0.0	14.7				0.0	11.2	14.2	19.3	7.2	0.0
Incr Delay (d2), s/veh	0.2	0.0	2.0				0.0	0.2	43.4	0.8	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	3.1				0.0	1.8	10.4	0.7	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.9	0.0	16.8				0.0	11.4	57.6	20.1	7.6	0.0
LnGrp LOS	B	A	B				A	B	F	C	A	A
Approach Vol, veh/h		621						869			689	
Approach Delay, s/veh		15.4						41.0			10.6	
Approach LOS		B						D			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		26.8			7.2	19.6		16.7				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.2				
Max Green Setting (Gmax), s		15.0			16.0	15.0		30.0				
Max Q Clear Time (g_c+I1), s		10.2			4.1	17.0		12.3				
Green Ext Time (p_c), s		0.3			0.0	0.0		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			24.1									
HCM 6th LOS			C									

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	150	818	312	475	95	436	161	45	10	235	116
Future Volume (veh/h)	118	150	818	312	475	95	436	161	45	10	235	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	122	155	843	303	516	98	449	166	46	10	242	120
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	413	1187	409	701	133	531	1012	451	22	334	160
Arrive On Green	0.22	0.22	0.22	0.23	0.23	0.23	0.15	0.28	0.28	0.01	0.14	0.14
Sat Flow, veh/h	1781	1870	3170	1781	3058	578	3456	3554	1585	1781	2329	1117
Grp Volume(v), veh/h	122	155	843	303	315	299	449	166	46	10	183	179
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1766	1728	1777	1585	1781	1777	1669
Q Serve(g_s), s	4.7	5.7	18.0	12.9	12.7	12.8	10.3	2.9	1.7	0.5	8.0	8.4
Cycle Q Clear(g_c), s	4.7	5.7	18.0	12.9	12.7	12.8	10.3	2.9	1.7	0.5	8.0	8.4
Prop In Lane	1.00		1.00	1.00		0.33	1.00		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	393	413	1187	409	429	405	531	1012	451	22	255	239
V/C Ratio(X)	0.31	0.38	0.71	0.74	0.73	0.74	0.85	0.16	0.10	0.45	0.72	0.75
Avail Cap(c_a), veh/h	393	413	1187	625	656	620	572	1212	541	109	421	395
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	27.0	21.7	29.2	29.1	29.1	33.6	21.9	21.5	40.0	33.3	33.5
Incr Delay (d2), s/veh	0.4	0.6	2.0	2.7	2.4	2.7	10.6	0.1	0.1	13.7	3.8	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.5	6.5	5.5	5.6	5.4	4.9	1.1	0.6	0.3	3.5	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.0	27.5	23.7	31.8	31.5	31.8	44.2	22.0	21.6	53.7	37.1	38.2
LnGrp LOS	C	C	C	C	C	C	D	C	C	D	D	D
Approach Vol, veh/h		1120			917			661			372	
Approach Delay, s/veh		24.6			31.7			37.0			38.0	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	28.6		23.1	17.2	17.1		24.1
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.4
Max Green Setting (Gmax), s	* 5	27.8		18.0	* 14	19.3		28.6
Max Q Clear Time (g_c+I1), s	2.5	4.9		20.0	12.3	10.4		14.9
Green Ext Time (p_c), s	0.0	1.0		0.0	0.2	1.3		3.8

Intersection Summary	
HCM 6th Ctrl Delay	31.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	130	646	785	579
Future Volume (veh/h)	0	0	130	646	785	579
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			135	673	818	603
Peak Hour Factor			0.96	0.96	0.96	0.96
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			407	1594	1151	975
Arrive On Green			0.12	0.85	0.62	0.62
Sat Flow, veh/h			3456	1870	1870	1585
Grp Volume(v), veh/h			135	673	818	603
Grp Sat Flow(s),veh/h/ln			1728	1870	1870	1585
Q Serve(g_s), s			1.4	3.3	11.8	9.3
Cycle Q Clear(g_c), s			1.4	3.3	11.8	9.3
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			407	1594	1151	975
V/C Ratio(X)			0.33	0.42	0.71	0.62
Avail Cap(c_a), veh/h			1758	3520	2331	1975
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			15.9	0.7	5.2	4.7
Incr Delay (d2), s/veh			0.5	0.2	0.8	0.6
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.5	0.1	1.9	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			16.4	0.8	6.0	5.3
LnGrp LOS			B	A	A	A
Approach Vol, veh/h				808	1421	
Approach Delay, s/veh				3.4	5.7	
Approach LOS				A	A	

Timer - Assigned Phs		2			5	6
Phs Duration (G+Y+Rc), s		39.3			9.3	30.0
Change Period (Y+Rc), s		5.8			* 4.7	5.8
Max Green Setting (Gmax), s		74.0			* 20	49.0
Max Q Clear Time (g_c+I1), s		5.3			3.4	13.8
Green Ext Time (p_c), s		5.3			0.3	10.4

Intersection Summary	
HCM 6th Ctrl Delay	4.9
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	113	36	289	90	24	380
Future Vol, veh/h	113	36	289	90	24	380
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	123	39	314	98	26	413

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	828	363	0	0	412	0
Stage 1	363	-	-	-	-	-
Stage 2	465	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	341	682	-	-	1147	-
Stage 1	704	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	331	682	-	-	1147	-
Mov Cap-2 Maneuver	331	-	-	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	614	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.5	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	378	1147	-
HCM Lane V/C Ratio	-	-	0.428	0.023	-
HCM Control Delay (s)	-	-	21.5	8.2	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	2.1	0.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	276	6	20	373	9	31
Future Vol, veh/h	276	6	20	373	9	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	300	7	22	405	10	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	307	0	753	304
Stage 1	-	-	-	-	304	-
Stage 2	-	-	-	-	449	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1254	-	377	736
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	643	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1254	-	368	736
Mov Cap-2 Maneuver	-	-	-	-	368	-
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	628	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	601	-	-	1254	-
HCM Lane V/C Ratio	0.072	-	-	0.017	-
HCM Control Delay (s)	11.5	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

MOVEMENT SUMMARY

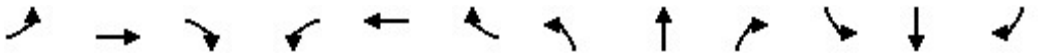
Site: 2 [Sat Out Rockville Rd / Abernathy Rd (Site Folder: General)]

Existing plus Project Saturday
Special Event Outbound
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Abernathy Rd														
3	L2	161	2.0	179	2.0	0.388	7.4	LOS A	2.2	55.9	0.50	0.37	0.50	32.9
8	T1	156	2.0	173	2.0	0.388	7.4	LOS A	2.2	55.9	0.50	0.37	0.50	32.8
18	R2	59	2.0	66	2.0	0.388	7.4	LOS A	2.2	55.9	0.50	0.37	0.50	31.9
Approach		376	2.0	418	2.0	0.388	7.4	LOS A	2.2	55.9	0.50	0.37	0.50	32.7
East: Rockville Rd														
1	L2	36	2.0	40	2.0	0.276	7.0	LOS A	1.3	32.9	0.56	0.50	0.56	33.8
6	T1	159	2.0	177	2.0	0.276	7.0	LOS A	1.3	32.9	0.56	0.50	0.56	33.7
16	R2	25	2.0	28	2.0	0.276	7.0	LOS A	1.3	32.9	0.56	0.50	0.56	32.8
Approach		220	2.0	244	2.0	0.276	7.0	LOS A	1.3	32.9	0.56	0.50	0.56	33.6
North: Abernathy Rd														
7	L2	15	2.0	17	2.0	0.240	6.5	LOS A	1.1	28.0	0.54	0.47	0.54	34.3
4	T1	112	2.0	124	2.0	0.240	6.5	LOS A	1.1	28.0	0.54	0.47	0.54	34.2
14	R2	67	2.0	74	2.0	0.240	6.5	LOS A	1.1	28.0	0.54	0.47	0.54	33.2
Approach		194	2.0	216	2.0	0.240	6.5	LOS A	1.1	28.0	0.54	0.47	0.54	33.9
West: Rockville Rd														
5	L2	51	2.0	57	2.0	0.321	6.3	LOS A	1.7	43.7	0.41	0.27	0.41	34.1
2	T1	138	7.0	153	7.0	0.321	6.4	LOS A	1.7	43.7	0.41	0.27	0.41	33.9
12	R2	134	2.0	149	2.0	0.321	6.3	LOS A	1.7	43.7	0.41	0.27	0.41	33.0
Approach		323	4.1	359	4.1	0.321	6.3	LOS A	1.7	43.7	0.41	0.27	0.41	33.6
All Vehicles		1113	2.6	1237	2.6	0.388	6.9	LOS A	2.2	55.9	0.49	0.38	0.49	33.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	135	35	135	160	40	60	220	285	80	190	30
Future Volume (veh/h)	20	135	35	135	160	40	60	220	285	80	190	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	155	40	155	184	0	69	253	328	92	218	34
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	46	219	186	204	396		99	363	577	116	274	43
Arrive On Green	0.03	0.12	0.12	0.11	0.21	0.00	0.25	0.25	0.25	0.24	0.24	0.24
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	397	1454	1585	485	1149	179
Grp Volume(v), veh/h	23	155	40	155	184	0	322	0	328	344	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1851	0	1585	1814	0	0
Q Serve(g_s), s	0.8	5.2	1.5	5.5	5.6	0.0	10.4	0.0	10.9	11.7	0.0	0.0
Cycle Q Clear(g_c), s	0.8	5.2	1.5	5.5	5.6	0.0	10.4	0.0	10.9	11.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.21		1.00	0.27		0.10
Lane Grp Cap(c), veh/h	46	219	186	204	396		462	0	577	432	0	0
V/C Ratio(X)	0.49	0.71	0.22	0.76	0.46		0.70	0.00	0.57	0.80	0.00	0.00
Avail Cap(c_a), veh/h	407	1282	1086	1221	1282		1268	0	1268	829	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.5	27.9	26.3	28.2	22.6	0.0	22.4	0.0	16.7	23.5	0.0	0.0
Incr Delay (d2), s/veh	3.0	1.6	0.2	5.7	1.8	0.0	1.9	0.0	0.9	3.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.4	0.6	2.6	2.6	0.0	4.5	0.0	3.8	5.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.6	29.5	26.5	33.9	24.4	0.0	24.3	0.0	17.6	26.9	0.0	0.0
LnGrp LOS	C	C	C	C	C		C	A	B	C	A	A
Approach Vol, veh/h		218			339			650			344	
Approach Delay, s/veh		29.5			28.8			20.9			26.9	
Approach LOS		C			C			C			C	

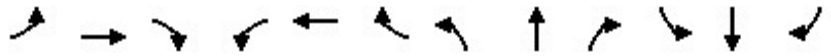
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.1	12.3		20.2	5.9	18.5		21.0				
Change Period (Y+Rc), s	4.6	4.6		4.6	* 4.2	4.6		4.6				
Max Green Setting (Gmax), s	45.0	45.0		30.0	* 15	45.0		45.0				
Max Q Clear Time (g_c+I1), s	7.5	7.2		13.7	2.8	7.6		12.9				
Green Ext Time (p_c), s	0.5	0.7		2.0	0.0	2.3		3.5				

Intersection Summary		
HCM 6th Ctrl Delay		25.2
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	5	80	55	5	5	100	505	20	15	340	5
Future Volume (veh/h)	10	5	80	55	5	5	100	505	20	15	340	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	8	85	98	0	0	106	537	0	25	362	5
Peak Hour Factor	0.94	0.60	0.94	0.60	0.60	0.60	0.94	0.94	0.60	0.60	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	93	68	141	306	0		160	1171		55	971	13
Arrive On Green	0.09	0.09	0.09	0.09	0.00	0.00	0.09	0.33	0.00	0.03	0.27	0.27
Sat Flow, veh/h	1052	765	1585	3563	0	1585	1781	3554	1585	1781	3589	50
Grp Volume(v), veh/h	19	0	85	98	0	0	106	537	0	25	179	188
Grp Sat Flow(s),veh/h/ln	1818	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1861
Q Serve(g_s), s	0.4	0.0	1.9	1.0	0.0	0.0	2.1	4.4	0.0	0.5	3.0	3.0
Cycle Q Clear(g_c), s	0.4	0.0	1.9	1.0	0.0	0.0	2.1	4.4	0.0	0.5	3.0	3.0
Prop In Lane	0.58		1.00	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	161	0	141	306	0		160	1171		55	481	503
V/C Ratio(X)	0.12	0.00	0.60	0.32	0.00		0.66	0.46		0.46	0.37	0.37
Avail Cap(c_a), veh/h	983	0	857	3855	0		964	3845		1445	1922	2014
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.5	0.0	16.2	15.9	0.0	0.0	16.3	9.8	0.0	17.6	10.9	10.9
Incr Delay (d2), s/veh	0.1	0.0	1.6	0.6	0.0	0.0	1.8	0.3	0.0	2.2	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.7	0.4	0.0	0.0	0.8	1.2	0.0	0.2	0.9	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.6	0.0	17.8	16.5	0.0	0.0	18.0	10.1	0.0	19.8	11.4	11.4
LnGrp LOS	B	A	B	B	A		B	B		B	B	B
Approach Vol, veh/h		104			98			643			392	
Approach Delay, s/veh		17.4			16.5			11.4			11.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.5	14.6		7.4	5.3	16.8		7.5
Change Period (Y+Rc), s	* 4.2	4.6		* 4.2	* 4.2	4.6		4.2
Max Green Setting (Gmax), s	* 3	40.0		* 40	* 30	40.0		20.0
Max Q Clear Time (g_c+I1), s	4.1	5.0		3.0	2.5	6.4		3.9
Green Ext Time (p_c), s	0.1	2.2		0.3	0.0	3.8		0.2

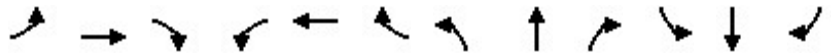
Intersection Summary	
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	100	35	55	35	35	45	430	35	235	385	95
Future Volume (veh/h)	185	100	35	55	35	35	45	430	35	235	385	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	208	112	39	62	39	39	51	483	39	264	433	107
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	271	257	89	103	179	156	91	1010	81	326	1215	542
Arrive On Green	0.15	0.19	0.19	0.06	0.10	0.10	0.05	0.21	0.21	0.18	0.34	0.34
Sat Flow, veh/h	1781	1326	462	1781	1796	1569	1781	4820	385	1781	3554	1585
Grp Volume(v), veh/h	208	0	151	62	39	39	51	340	182	264	433	107
Grp Sat Flow(s),veh/h/ln	1781	0	1787	1781	1777	1588	1781	1702	1801	1781	1777	1585
Q Serve(g_s), s	5.5	0.0	3.7	1.7	1.0	1.1	1.4	4.3	4.4	7.0	4.5	2.3
Cycle Q Clear(g_c), s	5.5	0.0	3.7	1.7	1.0	1.1	1.4	4.3	4.4	7.0	4.5	2.3
Prop In Lane	1.00		0.26	1.00		0.99	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	271	0	346	103	177	158	91	713	377	326	1215	542
V/C Ratio(X)	0.77	0.00	0.44	0.60	0.22	0.25	0.56	0.48	0.48	0.81	0.36	0.20
Avail Cap(c_a), veh/h	723	0	544	904	541	484	723	2419	1280	723	2525	1126
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	0.0	17.5	22.6	20.4	20.5	22.8	17.1	17.1	19.3	12.1	11.4
Incr Delay (d2), s/veh	4.5	0.0	0.9	5.5	0.6	0.8	5.3	0.6	1.2	1.8	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	1.4	0.8	0.4	0.4	0.6	1.5	1.6	2.6	1.4	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.6	0.0	18.3	28.1	21.0	21.3	28.2	17.7	18.3	21.1	12.4	11.7
LnGrp LOS	C	A	B	C	C	C	C	B	B	C	B	B
Approach Vol, veh/h		359			140			573			804	
Approach Delay, s/veh		21.9			24.2			18.8			15.1	
Approach LOS		C			C			B			B	

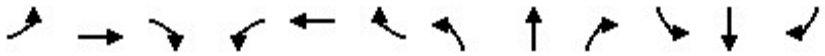
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.2	14.9	7.1	14.0	6.7	21.4	11.7	9.4
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.5	* 4.2	4.6	* 4.2	4.5
Max Green Setting (Gmax), s	* 20	35.0	* 25	15.0	* 20	35.0	* 20	15.0
Max Q Clear Time (g_c+I1), s	9.0	6.4	3.7	5.7	3.4	6.5	7.5	3.1
Green Ext Time (p_c), s	0.3	3.9	0.1	0.5	0.1	3.8	0.4	0.2

Intersection Summary	
HCM 6th Ctrl Delay	18.2
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	495	435	25	140	10	560	320	125	10	140	220
Future Volume (veh/h)	180	495	435	25	140	10	560	320	125	10	140	220
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	205	562	494	28	159	11	636	364	142	11	159	250
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	296	1107	515	134	1359	92	713	959	368	46	672	300
Arrive On Green	0.09	0.33	0.33	0.04	0.28	0.28	0.21	0.38	0.38	0.01	0.19	0.19
Sat Flow, veh/h	3456	3404	1585	3456	4883	332	3456	2509	964	3456	3554	1585
Grp Volume(v), veh/h	205	562	494	28	110	60	636	256	250	11	159	250
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1811	1728	1777	1697	1728	1777	1585
Q Serve(g_s), s	5.3	12.3	28.2	0.7	2.2	2.3	16.5	9.6	9.8	0.3	3.5	14.0
Cycle Q Clear(g_c), s	5.3	12.3	28.2	0.7	2.2	2.3	16.5	9.6	9.8	0.3	3.5	14.0
Prop In Lane	1.00		1.00	1.00		0.18	1.00		0.57	1.00		1.00
Lane Grp Cap(c), veh/h	296	1107	515	134	947	504	713	679	648	46	672	300
V/C Ratio(X)	0.69	0.51	0.96	0.21	0.12	0.12	0.89	0.38	0.39	0.24	0.24	0.83
Avail Cap(c_a), veh/h	749	1107	515	749	1107	589	749	679	648	749	963	430
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	25.2	30.5	43.0	24.8	24.9	35.6	20.6	20.7	45.1	31.7	36.0
Incr Delay (d2), s/veh	3.5	0.5	29.4	0.9	0.1	0.1	12.9	0.4	0.5	3.2	0.2	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	4.8	14.2	0.3	0.9	1.0	7.9	3.8	3.7	0.1	1.5	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.5	25.6	59.9	43.9	24.9	25.0	48.5	21.0	21.1	48.2	32.0	46.2
LnGrp LOS	D	C	E	D	C	C	D	C	C	D	C	D
Approach Vol, veh/h		1261			198			1142			420	
Approach Delay, s/veh		42.1			27.6			36.3			40.8	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	41.1	8.8	35.9	24.2	23.3	13.1	31.6
Change Period (Y+Rc), s	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9
Max Green Setting (Gmax), s	* 2.8	25.0	* 20	30.0	* 20	25.0	* 20	30.0
Max Q Clear Time (g_c+I1), s	2.3	11.8	2.7	30.2	18.5	16.0	7.3	4.3
Green Ext Time (p_c), s	0.0	2.8	0.0	0.0	0.5	1.4	0.6	1.1

Intersection Summary	
HCM 6th Ctrl Delay	38.8
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

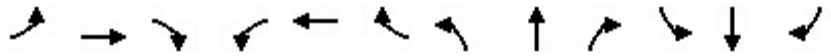
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	26.9
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	155	0	355	0	0	0	0	185	620	0	0	445	35
Future Vol, veh/h	155	0	355	0	0	0	0	185	620	0	0	445	35
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	180	0	413	0	0	0	0	215	721	0	0	517	41
Number of Lanes	2	0	1	0	0	0	0	1	2	0	0	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	3	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	3
HCM Control Delay	17.7	27.7	35.4
HCM LOS	C	D	E

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	100%	0%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%	100%	81%
Vol Right, %	0%	0%	0%	0%	0%	100%	0%	19%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	185	310	310	78	78	355	297	183
LT Vol	185	0	0	78	78	0	0	0
Through Vol	0	310	310	0	0	0	297	148
RT Vol	0	0	0	0	0	355	0	35
Lane Flow Rate	215	360	360	90	90	413	345	213
Geometry Grp	8	8	8	7	7	7	8	8
Degree of Util (X)	0.523	0.825	0.647	0.22	0.22	0.662	0.847	0.515
Departure Headway (Hd)	8.754	8.241	6.459	8.885	8.885	5.876	8.84	8.703
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	415	443	562	406	406	619	411	416
Service Time	6.454	5.941	4.159	6.585	6.585	3.576	6.569	6.432
HCM Lane V/C Ratio	0.518	0.813	0.641	0.222	0.222	0.667	0.839	0.512
HCM Control Delay	20.7	39.5	20.2	14.1	14.1	19.3	44.7	20.3
HCM Lane LOS	C	E	C	B	B	C	E	C
HCM 95th-tile Q	2.9	7.8	4.6	0.8	0.8	4.9	8.1	2.9



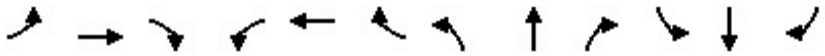
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	5	475	0	0	0	0	580	600	130	650	0
Future Volume (veh/h)	215	5	475	0	0	0	0	580	600	130	650	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	234	5	516				0	630	652	141	707	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	605	13	549				0	740	627	225	969	0
Arrive On Green	0.35	0.35	0.35				0.00	0.40	0.40	0.07	0.52	0.00
Sat Flow, veh/h	1746	37	1585				0	1870	1585	3456	1870	0
Grp Volume(v), veh/h	239	0	516				0	630	652	141	707	0
Grp Sat Flow(s),veh/h/ln	1783	0	1585				0	1870	1585	1728	1870	0
Q Serve(g_s), s	6.6	0.0	20.5				0.0	19.9	25.7	2.6	19.0	0.0
Cycle Q Clear(g_c), s	6.6	0.0	20.5				0.0	19.9	25.7	2.6	19.0	0.0
Prop In Lane	0.98		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	618	0	549				0	740	627	225	969	0
V/C Ratio(X)	0.39	0.00	0.94				0.00	0.85	1.04	0.63	0.73	0.00
Avail Cap(c_a), veh/h	631	0	561				0	740	627	654	1201	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.0	0.0	20.6				0.0	17.9	19.6	29.6	12.1	0.0
Incr Delay (d2), s/veh	0.1	0.0	23.3				0.0	8.9	46.6	1.1	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	10.2				0.0	9.0	16.0	1.0	6.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.2	0.0	43.8				0.0	26.8	66.2	30.6	13.3	0.0
LnGrp LOS	B	A	D				A	C	F	C	B	A
Approach Vol, veh/h		755						1282			848	
Approach Delay, s/veh		35.1						46.9			16.2	
Approach LOS		D						D			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		38.2			7.9	30.3		26.7				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.2				
Max Green Setting (Gmax), s		41.7			12.3	25.7		23.0				
Max Q Clear Time (g_c+I1), s		21.0			4.6	27.7		22.5				
Green Ext Time (p_c), s		0.6			0.0	0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			34.8
HCM 6th LOS			C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	230	900	760	460	130	395	300	165	5	380	80
Future Volume (veh/h)	100	230	900	760	460	130	395	300	165	5	380	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	104	240	938	469	932	135	411	312	172	5	396	83
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	298	313	978	627	1125	163	489	1037	463	11	460	95
Arrive On Green	0.17	0.17	0.17	0.35	0.35	0.35	0.14	0.29	0.29	0.01	0.16	0.16
Sat Flow, veh/h	1781	1870	3170	1781	3195	463	3456	3554	1585	1781	2929	608
Grp Volume(v), veh/h	104	240	938	469	546	521	411	312	172	5	239	240
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1787	1728	1777	1585	1781	1777	1761
Q Serve(g_s), s	5.8	13.9	18.9	26.2	30.1	30.2	13.1	7.7	9.7	0.3	14.8	15.1
Cycle Q Clear(g_c), s	5.8	13.9	18.9	26.2	30.1	30.2	13.1	7.7	9.7	0.3	14.8	15.1
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	298	313	978	627	659	629	489	1037	463	11	279	276
V/C Ratio(X)	0.35	0.77	0.96	0.75	0.83	0.83	0.84	0.30	0.37	0.44	0.86	0.87
Avail Cap(c_a), veh/h	298	313	978	766	804	769	682	1160	518	79	308	305
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.6	44.9	38.4	32.2	33.5	33.5	47.3	31.1	31.8	55.9	46.4	46.5
Incr Delay (d2), s/veh	0.7	10.9	19.5	3.2	6.1	6.3	6.7	0.2	0.5	24.1	19.2	21.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	7.3	14.9	11.4	14.2	13.6	6.0	3.3	3.7	0.2	7.9	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.3	55.9	57.8	35.4	39.5	39.8	54.0	31.2	32.3	80.0	65.6	67.7
LnGrp LOS	D	E	E	D	D	D	D	C	C	E	E	E
Approach Vol, veh/h		1282			1536			895			484	
Approach Delay, s/veh		56.2			38.4			41.9			66.8	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.4	38.4		24.0	20.7	23.1		45.2
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.4
Max Green Setting (Gmax), s	* 5	36.9		18.9	* 22	19.6		48.6
Max Q Clear Time (g_c+I1), s	2.3	11.7		20.9	15.1	17.1		32.2
Green Ext Time (p_c), s	0.0	2.5		0.0	0.9	0.7		7.6

Intersection Summary	
HCM 6th Ctrl Delay	47.8
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	60	875	1150	860
Future Volume (veh/h)	0	0	60	875	1150	860
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			65	941	1237	925
Peak Hour Factor			0.93	0.93	0.93	0.93
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			230	1686	1412	1197
Arrive On Green			0.07	0.90	0.76	0.76
Sat Flow, veh/h			3456	1870	1870	1585
Grp Volume(v), veh/h			65	941	1237	925
Grp Sat Flow(s),veh/h/ln			1728	1870	1870	1585
Q Serve(g_s), s			1.1	5.9	28.2	20.2
Cycle Q Clear(g_c), s			1.1	5.9	28.2	20.2
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			230	1686	1412	1197
V/C Ratio(X)			0.28	0.56	0.88	0.77
Avail Cap(c_a), veh/h			1173	2348	1555	1318
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			26.2	0.6	5.2	4.2
Incr Delay (d2), s/veh			0.7	0.3	5.6	2.7
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.4	0.1	5.5	2.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			26.8	0.9	10.8	6.9
LnGrp LOS			C	A	B	A
Approach Vol, veh/h				1006	2162	
Approach Delay, s/veh				2.5	9.1	
Approach LOS				A	A	

Timer - Assigned Phs	2		5	6
Phs Duration (G+Y+Rc), s	58.9		8.6	50.3
Change Period (Y+Rc), s	5.8		* 4.7	5.8
Max Green Setting (Gmax), s	74.0		* 20	49.0
Max Q Clear Time (g_c+I1), s	7.9		3.1	30.2
Green Ext Time (p_c), s	9.7		0.1	14.3

Intersection Summary	
HCM 6th Ctrl Delay	7.0
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	560	5	5	360
Future Vol, veh/h	5	5	560	5	5	360
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	5	609	5	5	391

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1013	612	0	0	614	0
Stage 1	612	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	265	493	-	-	965	-
Stage 1	541	-	-	-	-	-
Stage 2	676	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	263	493	-	-	965	-
Mov Cap-2 Maneuver	263	-	-	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	671	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.8	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	343	965	-
HCM Lane V/C Ratio	-	-	0.032	0.006	-
HCM Control Delay (s)	-	-	15.8	8.8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

MOVEMENT SUMMARY

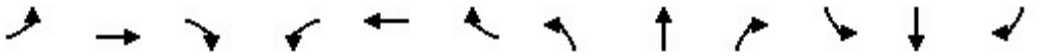
Site: 2 [Cum PM Rd / Abernathy Rd (Site Folder: General)]

Cumulative PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Abernathy Rd														
3	L2	135	2.0	150	2.0	0.845	27.9	LOS C	15.7	399.3	0.99	1.53	2.43	25.7
8	T1	310	2.0	344	2.0	0.845	27.9	LOS C	15.7	399.3	0.99	1.53	2.43	25.6
18	R2	165	2.0	183	2.0	0.845	27.9	LOS C	15.7	399.3	0.99	1.53	2.43	25.1
Approach		610	2.0	678	2.0	0.845	27.9	LOS C	15.7	399.3	0.99	1.53	2.43	25.5
East: Rockville Rd														
1	L2	35	2.0	39	2.0	0.367	10.0	LOS A	1.8	46.2	0.68	0.72	0.78	32.4
6	T1	165	2.0	183	2.0	0.367	10.0	LOS A	1.8	46.2	0.68	0.72	0.78	32.3
16	R2	30	2.0	33	2.0	0.367	10.0	LOS A	1.8	46.2	0.68	0.72	0.78	31.5
Approach		230	2.0	256	2.0	0.367	10.0	LOS A	1.8	46.2	0.68	0.72	0.78	32.2
North: Abernathy Rd														
7	L2	70	2.0	78	2.0	0.351	7.8	LOS A	1.8	45.1	0.58	0.51	0.58	33.2
4	T1	175	2.0	194	2.0	0.351	7.8	LOS A	1.8	45.1	0.58	0.51	0.58	33.1
14	R2	45	2.0	50	2.0	0.351	7.8	LOS A	1.8	45.1	0.58	0.51	0.58	32.2
Approach		290	2.0	322	2.0	0.351	7.8	LOS A	1.8	45.1	0.58	0.51	0.58	33.0
West: Rockville Rd														
5	L2	130	2.0	144	2.0	0.588	11.7	LOS B	5.7	146.9	0.68	0.71	0.94	31.3
2	T1	245	7.0	272	7.0	0.588	11.9	LOS B	5.7	146.9	0.68	0.71	0.94	31.2
12	R2	140	2.0	156	2.0	0.588	11.7	LOS B	5.7	146.9	0.68	0.71	0.94	30.4
Approach		515	4.4	572	4.4	0.588	11.8	LOS B	5.7	146.9	0.68	0.71	0.94	31.0
All Vehicles		1645	2.7	1828	2.7	0.845	16.8	LOS B	15.7	399.3	0.78	0.98	1.41	29.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	130	35	175	135	75	35	200	150	85	205	30
Future Volume (veh/h)	30	130	35	175	135	75	35	200	150	85	205	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	34	148	40	199	153	0	40	227	170	97	233	34
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	63	212	180	257	427		56	320	550	122	292	43
Arrive On Green	0.04	0.11	0.11	0.14	0.23	0.00	0.20	0.20	0.20	0.25	0.25	0.25
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	278	1578	1585	484	1162	170
Grp Volume(v), veh/h	34	148	40	199	153	0	267	0	170	364	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1856	0	1585	1816	0	0
Q Serve(g_s), s	1.2	4.9	1.5	6.9	4.4	0.0	8.5	0.0	5.0	12.0	0.0	0.0
Cycle Q Clear(g_c), s	1.2	4.9	1.5	6.9	4.4	0.0	8.5	0.0	5.0	12.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.15		1.00	0.27		0.09
Lane Grp Cap(c), veh/h	63	212	180	257	427		376	0	550	457	0	0
V/C Ratio(X)	0.54	0.70	0.22	0.78	0.36		0.71	0.00	0.31	0.80	0.00	0.00
Avail Cap(c_a), veh/h	419	1318	1117	1256	1318		1309	0	1346	853	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	30.3	27.2	25.7	26.3	20.7	0.0	23.7	0.0	15.3	22.4	0.0	0.0
Incr Delay (d2), s/veh	2.6	1.6	0.2	5.0	1.1	0.0	2.5	0.0	0.3	3.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	2.2	0.5	3.2	2.0	0.0	3.8	0.0	1.7	5.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.9	28.8	26.0	31.3	21.8	0.0	26.2	0.0	15.6	25.6	0.0	0.0
LnGrp LOS	C	C	C	C	C		C	A	B	C	A	A
Approach Vol, veh/h		222			352			437			364	
Approach Delay, s/veh		28.9			27.2			22.0			25.6	
Approach LOS		C			C			C			C	

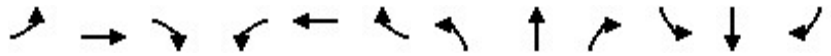
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.8	11.8		20.7	6.5	19.2		17.5				
Change Period (Y+Rc), s	4.6	4.6		4.6	* 4.2	4.6		4.6				
Max Green Setting (Gmax), s	45.0	45.0		30.0	* 15	45.0		45.0				
Max Q Clear Time (g_c+I1), s	8.9	6.9		14.0	3.2	6.4		10.5				
Green Ext Time (p_c), s	0.6	0.6		2.1	0.0	1.8		2.4				

Intersection Summary			
HCM 6th Ctrl Delay		25.4	
HCM 6th LOS		C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	5	65	30	5	25	75	300	25	5	375	15
Future Volume (veh/h)	15	5	65	30	5	25	75	300	25	5	375	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	7	69	45	0	0	80	319	0	7	399	16
Peak Hour Factor	0.94	0.75	0.94	0.75	0.75	0.75	0.94	0.94	0.75	0.75	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	47	135	181	0		138	1270		17	1007	40
Arrive On Green	0.08	0.08	0.08	0.05	0.00	0.00	0.08	0.36	0.00	0.01	0.29	0.29
Sat Flow, veh/h	1257	550	1585	3563	0	1585	1781	3554	1585	1781	3483	139
Grp Volume(v), veh/h	23	0	69	45	0	0	80	319	0	7	203	212
Grp Sat Flow(s),veh/h/ln	1807	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1845
Q Serve(g_s), s	0.4	0.0	1.4	0.4	0.0	0.0	1.5	2.2	0.0	0.1	3.2	3.2
Cycle Q Clear(g_c), s	0.4	0.0	1.4	0.4	0.0	0.0	1.5	2.2	0.0	0.1	3.2	3.2
Prop In Lane	0.70		1.00	1.00		1.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	153	0	135	181	0		138	1270		17	514	534
V/C Ratio(X)	0.15	0.00	0.51	0.25	0.00		0.58	0.25		0.42	0.40	0.40
Avail Cap(c_a), veh/h	1046	0	917	4124	0		1031	4113		1546	2057	2136
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.7	0.0	15.1	15.8	0.0	0.0	15.4	7.8	0.0	17.0	9.9	9.9
Incr Delay (d2), s/veh	0.2	0.0	1.1	0.7	0.0	0.0	1.4	0.1	0.0	6.1	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.5	0.2	0.0	0.0	0.5	0.6	0.0	0.1	0.9	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.8	0.0	16.3	16.5	0.0	0.0	16.8	7.9	0.0	23.1	10.4	10.3
LnGrp LOS	B	A	B	B	A		B	A		C	B	B
Approach Vol, veh/h		92			45			399			422	
Approach Delay, s/veh		15.9			16.5			9.7			10.6	
Approach LOS		B			B			A			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	14.6		6.0	4.5	16.9		7.1
Change Period (Y+Rc), s	* 4.2	4.6		* 4.2	* 4.2	4.6		4.2
Max Green Setting (Gmax), s	* 2.8	40.0		* 40	* 30	40.0		20.0
Max Q Clear Time (g_c+I1), s	3.5	5.2		2.4	2.1	4.2		3.4
Green Ext Time (p_c), s	0.1	2.5		0.1	0.0	2.1		0.1

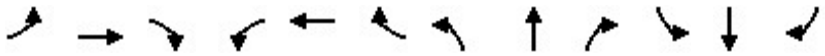
Intersection Summary	
HCM 6th Ctrl Delay	11.0
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	25	65	35	60	20	45	335	15	15	380	55
Future Volume (veh/h)	60	25	65	35	60	20	45	335	15	15	380	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	27	71	38	65	22	49	364	16	16	413	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	118	66	174	78	325	105	96	1547	67	37	978	436
Arrive On Green	0.07	0.15	0.15	0.04	0.12	0.12	0.05	0.31	0.31	0.02	0.28	0.28
Sat Flow, veh/h	1781	456	1199	1781	2641	853	1781	5016	219	1781	3554	1585
Grp Volume(v), veh/h	65	0	98	38	43	44	49	246	134	16	413	60
Grp Sat Flow(s),veh/h/ln	1781	0	1655	1781	1777	1717	1781	1702	1831	1781	1777	1585
Q Serve(g_s), s	1.3	0.0	2.0	0.8	0.8	0.8	1.0	2.0	2.0	0.3	3.5	1.0
Cycle Q Clear(g_c), s	1.3	0.0	2.0	0.8	0.8	0.8	1.0	2.0	2.0	0.3	3.5	1.0
Prop In Lane	1.00		0.72	1.00		0.50	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	118	0	241	78	219	211	96	1050	565	37	978	436
V/C Ratio(X)	0.55	0.00	0.41	0.49	0.20	0.21	0.51	0.23	0.24	0.44	0.42	0.14
Avail Cap(c_a), veh/h	981	0	683	1226	734	709	981	3280	1764	981	3424	1527
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	0.0	14.1	17.0	14.3	14.3	16.7	9.4	9.4	17.6	10.8	9.9
Incr Delay (d2), s/veh	4.0	0.0	1.1	4.6	0.4	0.5	4.2	0.1	0.3	3.0	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.6	0.4	0.3	0.3	0.4	0.5	0.6	0.1	1.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.4	0.0	15.2	21.6	14.7	14.8	20.9	9.5	9.6	20.6	11.1	10.1
LnGrp LOS	C	A	B	C	B	B	C	A	A	C	B	B
Approach Vol, veh/h		163			125			429			489	
Approach Delay, s/veh		17.3			16.9			10.8			11.3	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.9	15.8	5.8	9.8	6.2	14.6	6.6	9.0
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.5	* 4.2	4.6	* 4.2	4.5
Max Green Setting (Gmax), s	* 2.8	35.0	* 25	15.0	* 20	35.0	* 20	15.0
Max Q Clear Time (g_c+I1), s	2.3	4.0	2.8	4.0	3.0	5.5	3.3	2.8
Green Ext Time (p_c), s	0.0	2.8	0.1	0.3	0.1	3.5	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	595	120	20	140	10	200	250	105	25	160	260
Future Volume (veh/h)	135	595	120	20	140	10	200	250	105	25	160	260
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	147	647	130	22	152	11	217	272	114	27	174	283
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	363	1105	219	123	921	65	385	771	315	104	824	368
Arrive On Green	0.10	0.26	0.26	0.04	0.19	0.19	0.11	0.31	0.31	0.03	0.23	0.23
Sat Flow, veh/h	3456	4275	847	3456	4866	346	3456	2461	1005	3456	3554	1585
Grp Volume(v), veh/h	147	513	264	22	105	58	217	194	192	27	174	283
Grp Sat Flow(s),veh/h/ln	1728	1702	1718	1728	1702	1808	1728	1777	1689	1728	1777	1585
Q Serve(g_s), s	2.4	8.1	8.2	0.4	1.6	1.6	3.6	5.2	5.4	0.5	2.4	10.2
Cycle Q Clear(g_c), s	2.4	8.1	8.2	0.4	1.6	1.6	3.6	5.2	5.4	0.5	2.4	10.2
Prop In Lane	1.00		0.49	1.00		0.19	1.00		0.60	1.00		1.00
Lane Grp Cap(c), veh/h	363	880	444	123	644	342	385	557	529	104	824	368
V/C Ratio(X)	0.41	0.58	0.59	0.18	0.16	0.17	0.56	0.35	0.36	0.26	0.21	0.77
Avail Cap(c_a), veh/h	1128	1667	841	1128	1667	886	1128	725	690	1128	1451	647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.6	19.8	19.9	28.7	20.8	20.8	25.8	16.2	16.3	29.0	19.0	22.0
Incr Delay (d2), s/veh	0.9	0.7	1.5	0.8	0.1	0.3	1.6	0.5	0.5	1.6	0.2	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.9	3.1	0.2	0.6	0.6	1.4	1.9	1.9	0.2	0.9	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	20.6	21.4	29.5	20.9	21.1	27.4	16.7	16.8	30.6	19.2	26.1
LnGrp LOS	C	C	C	C	C	C	C	B	B	C	B	C
Approach Vol, veh/h		924			185			603			484	
Approach Delay, s/veh		21.8			22.0			20.6			23.9	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.0	25.1	7.4	21.7	12.0	20.1	11.6	17.5
Change Period (Y+Rc), s	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9
Max Green Setting (Gmax), s	* 20	25.0	* 20	30.0	* 20	25.0	* 20	30.0
Max Q Clear Time (g_c+I1), s	2.5	7.4	2.4	10.2	5.6	12.2	4.4	3.6
Green Ext Time (p_c), s	0.0	2.3	0.0	5.6	0.7	2.0	0.5	1.0

Intersection Summary	
HCM 6th Ctrl Delay	21.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

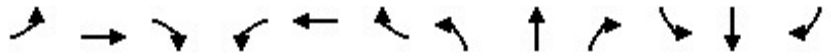
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	0	375	0	0	0	160	420	0	0	300	30
Future Vol, veh/h	75	0	375	0	0	0	160	420	0	0	300	30
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	0	421	0	0	0	180	472	0	0	337	34
Number of Lanes	2	0	1	0	0	0	1	2	0	1	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	3	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	3	3	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	3
HCM Control Delay	12.4	13.4	14.9
HCM LOS	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	100%	0%	0%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%	100%	100%	77%
Vol Right, %	0%	0%	0%	0%	0%	100%	0%	0%	23%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	160	210	210	38	38	375	0	200	130
LT Vol	160	0	0	38	38	0	0	0	0
Through Vol	0	210	210	0	0	0	0	200	100
RT Vol	0	0	0	0	0	375	0	0	30
Lane Flow Rate	180	236	236	42	42	421	0	225	146
Geometry Grp	8	8	8	7	7	7	8	8	8
Degree of Util (X)	0.373	0.457	0.341	0.089	0.089	0.534	0	0.46	0.293
Departure Headway (Hd)	7.478	6.97	5.206	7.636	7.636	4.681	7.375	7.375	7.211
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	484	519	694	471	471	775	0	490	500
Service Time	5.181	4.672	2.909	5.353	5.353	2.381	5.098	5.098	4.934
HCM Lane V/C Ratio	0.372	0.455	0.34	0.089	0.089	0.543	0	0.459	0.292
HCM Control Delay	14.6	15.4	10.6	11.1	11.1	12.6	10.1	16.2	12.9
HCM Lane LOS	B	C	B	B	B	B	N	C	B
HCM 95th-tile Q	1.7	2.4	1.5	0.3	0.3	3.2	0	2.4	1.2



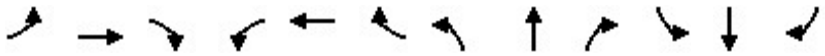
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	5	485	0	0	0	0	465	685	60	650	0
Future Volume (veh/h)	80	5	485	0	0	0	0	465	685	60	650	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	84	5	511				0	489	721	63	684	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	580	35	545				0	794	673	144	977	0
Arrive On Green	0.34	0.34	0.34				0.00	0.42	0.42	0.04	0.52	0.00
Sat Flow, veh/h	1686	100	1585				0	1870	1585	3456	1870	0
Grp Volume(v), veh/h	89	0	511				0	489	721	63	684	0
Grp Sat Flow(s),veh/h/ln	1786	0	1585				0	1870	1585	1728	1870	0
Q Serve(g_s), s	2.3	0.0	20.5				0.0	13.4	27.9	1.2	18.1	0.0
Cycle Q Clear(g_c), s	2.3	0.0	20.5				0.0	13.4	27.9	1.2	18.1	0.0
Prop In Lane	0.94		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	614	0	545				0	794	673	144	977	0
V/C Ratio(X)	0.14	0.00	0.94				0.00	0.62	1.07	0.44	0.70	0.00
Avail Cap(c_a), veh/h	701	0	622				0	794	673	384	1107	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	14.9	0.0	20.9				0.0	14.7	18.9	30.8	11.8	0.0
Incr Delay (d2), s/veh	0.0	0.0	19.6				0.0	1.1	55.6	0.8	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	9.7				0.0	5.0	18.8	0.5	6.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	0.0	40.5				0.0	15.8	74.5	31.5	13.1	0.0
LnGrp LOS	B	A	D				A	B	F	C	B	A
Approach Vol, veh/h		600						1210			747	
Approach Delay, s/veh		36.7						50.8			14.7	
Approach LOS		D						D			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		38.9			6.4	32.5		26.8				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.2				
Max Green Setting (Gmax), s		38.9			7.3	27.9		25.8				
Max Q Clear Time (g_c+I1), s		20.1			3.2	29.9		22.5				
Green Ext Time (p_c), s		0.6			0.0	0.0		0.1				

Intersection Summary			
HCM 6th Ctrl Delay			36.9
HCM 6th LOS			D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	235	1005	650	505	125	425	215	140	10	350	70
Future Volume (veh/h)	80	235	1005	650	505	125	425	215	140	10	350	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	242	1036	440	843	129	438	222	144	10	361	72
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	344	1065	581	1033	158	526	1022	456	21	437	86
Arrive On Green	0.18	0.18	0.18	0.33	0.33	0.33	0.15	0.29	0.29	0.01	0.15	0.15
Sat Flow, veh/h	1781	1870	3170	1781	3169	485	3456	3554	1585	1781	2958	584
Grp Volume(v), veh/h	82	242	1036	440	498	474	438	222	144	10	215	218
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1783	1728	1777	1585	1781	1777	1765
Q Serve(g_s), s	4.3	13.1	19.9	23.9	26.4	26.4	13.3	5.1	7.7	0.6	12.7	13.0
Cycle Q Clear(g_c), s	4.3	13.1	19.9	23.9	26.4	26.4	13.3	5.1	7.7	0.6	12.7	13.0
Prop In Lane	1.00		1.00	1.00		0.27	1.00		1.00	1.00		0.33
Lane Grp Cap(c), veh/h	328	344	1065	581	610	581	526	1022	456	21	262	260
V/C Ratio(X)	0.25	0.70	0.97	0.76	0.82	0.82	0.83	0.22	0.32	0.47	0.82	0.84
Avail Cap(c_a), veh/h	328	344	1065	734	771	735	808	1311	585	82	322	320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.8	41.4	35.4	32.6	33.5	33.5	44.5	29.3	30.2	53.1	44.7	44.8
Incr Delay (d2), s/veh	0.4	6.3	21.1	3.5	5.5	5.7	4.5	0.1	0.4	15.1	13.0	14.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	6.6	15.9	10.5	12.4	11.9	5.9	2.2	2.9	0.4	6.4	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	47.7	56.5	36.1	38.9	39.2	49.1	29.4	30.6	68.2	57.8	59.5
LnGrp LOS	D	D	E	D	D	D	D	C	C	E	E	E
Approach Vol, veh/h		1360			1412			804			443	
Approach Delay, s/veh		53.8			38.2			40.3			58.8	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.0	36.5		25.0	21.2	21.4		40.7
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.4
Max Green Setting (Gmax), s	* 5	39.9		19.9	* 25	19.6		44.6
Max Q Clear Time (g_c+I1), s	2.6	9.7		21.9	15.3	15.0		28.4
Green Ext Time (p_c), s	0.0	1.8		0.0	1.1	1.0		6.8

Intersection Summary		
HCM 6th Ctrl Delay		46.2
HCM 6th LOS		D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	25	800	1125	860
Future Volume (veh/h)	0	0	25	800	1125	860
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			26	833	1172	896
Peak Hour Factor			0.96	0.96	0.96	0.96
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			125	1663	1428	1210
Arrive On Green			0.04	0.89	0.76	0.76
Sat Flow, veh/h			3456	1870	1870	1585
Grp Volume(v), veh/h			26	833	1172	896
Grp Sat Flow(s),veh/h/ln			1728	1870	1870	1585
Q Serve(g_s), s			0.4	4.7	20.8	16.1
Cycle Q Clear(g_c), s			0.4	4.7	20.8	16.1
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			125	1663	1428	1210
V/C Ratio(X)			0.21	0.50	0.82	0.74
Avail Cap(c_a), veh/h			1321	2644	1751	1484
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			24.5	0.6	3.9	3.4
Incr Delay (d2), s/veh			0.8	0.2	2.7	1.6
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.2	0.1	2.1	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			25.3	0.8	6.6	5.0
LnGrp LOS			C	A	A	A
Approach Vol, veh/h				859	2068	
Approach Delay, s/veh				1.6	5.9	
Approach LOS				A	A	

Timer - Assigned Phs	2		5	6
Phs Duration (G+Y+Rc), s	52.3		6.6	45.7
Change Period (Y+Rc), s	5.8		* 4.7	5.8
Max Green Setting (Gmax), s	74.0		* 20	49.0
Max Q Clear Time (g_c+I1), s	6.7		2.4	22.8
Green Ext Time (p_c), s	7.6		0.0	17.2

Intersection Summary	
HCM 6th Ctrl Delay	4.6
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	385	5	5	415
Future Vol, veh/h	5	5	385	5	5	415
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	5	418	5	5	451

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	882	421	0	0	423	0
Stage 1	421	-	-	-	-	-
Stage 2	461	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	317	632	-	-	1136	-
Stage 1	662	-	-	-	-	-
Stage 2	635	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	315	632	-	-	1136	-
Mov Cap-2 Maneuver	315	-	-	-	-	-
Stage 1	662	-	-	-	-	-
Stage 2	631	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	420	1136	-
HCM Lane V/C Ratio	-	-	0.026	0.005	-
HCM Control Delay (s)	-	-	13.8	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

MOVEMENT SUMMARY

Site: 2 [Cum Sat Rockville Rd / Abernathy Rd (Site Folder: General)]

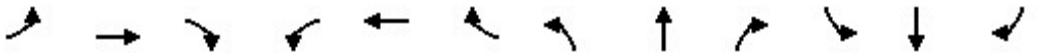
Cumulative Saturday
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Abernathy Rd														
3	L2	170	2.0	189	2.0	0.583	11.7	LOS B	5.7	144.1	0.71	0.75	0.99	31.1
8	T1	215	2.0	239	2.0	0.583	11.7	LOS B	5.7	144.1	0.71	0.75	0.99	31.1
18	R2	120	2.0	133	2.0	0.583	11.7	LOS B	5.7	144.1	0.71	0.75	0.99	30.3
Approach		505	2.0	561	2.0	0.583	11.7	LOS B	5.7	144.1	0.71	0.75	0.99	30.9
East: Rockville Rd														
1	L2	45	2.0	50	2.0	0.307	7.9	LOS A	1.4	36.3	0.61	0.58	0.61	33.2
6	T1	150	2.0	167	2.0	0.307	7.9	LOS A	1.4	36.3	0.61	0.58	0.61	33.2
16	R2	30	2.0	33	2.0	0.307	7.9	LOS A	1.4	36.3	0.61	0.58	0.61	32.3
Approach		225	2.0	250	2.0	0.307	7.9	LOS A	1.4	36.3	0.61	0.58	0.61	33.1
North: Abernathy Rd														
7	L2	25	2.0	28	2.0	0.244	6.6	LOS A	1.1	28.4	0.55	0.48	0.55	34.1
4	T1	115	2.0	128	2.0	0.244	6.6	LOS A	1.1	28.4	0.55	0.48	0.55	34.0
14	R2	55	2.0	61	2.0	0.244	6.6	LOS A	1.1	28.4	0.55	0.48	0.55	33.0
Approach		195	2.0	217	2.0	0.244	6.6	LOS A	1.1	28.4	0.55	0.48	0.55	33.7
West: Rockville Rd														
5	L2	55	2.0	61	2.0	0.404	7.5	LOS A	2.3	59.3	0.47	0.34	0.47	33.5
2	T1	215	7.0	239	7.0	0.404	7.6	LOS A	2.3	59.3	0.47	0.34	0.47	33.4
12	R2	125	2.0	139	2.0	0.404	7.5	LOS A	2.3	59.3	0.47	0.34	0.47	32.5
Approach		395	4.7	439	4.7	0.404	7.6	LOS A	2.3	59.3	0.47	0.34	0.47	33.1
All Vehicles		1320	2.8	1467	2.8	0.583	9.1	LOS A	5.7	144.1	0.60	0.56	0.71	32.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	142	36	135	161	41	63	229	283	80	212	30
Future Volume (veh/h)	20	142	36	135	161	41	63	229	283	80	212	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	163	41	155	185	0	72	263	325	92	244	34
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	46	226	192	203	402		98	360	573	113	300	42
Arrive On Green	0.03	0.12	0.12	0.11	0.21	0.00	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	398	1453	1585	452	1199	167
Grp Volume(v), veh/h	23	163	41	155	185	0	335	0	325	370	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1850	0	1585	1818	0	0
Q Serve(g_s), s	0.9	5.8	1.6	5.8	5.9	0.0	11.5	0.0	11.3	13.2	0.0	0.0
Cycle Q Clear(g_c), s	0.9	5.8	1.6	5.8	5.9	0.0	11.5	0.0	11.3	13.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.21		1.00	0.25		0.09
Lane Grp Cap(c), veh/h	46	226	192	203	402		458	0	573	455	0	0
V/C Ratio(X)	0.50	0.72	0.21	0.76	0.46		0.73	0.00	0.57	0.81	0.00	0.00
Avail Cap(c_a), veh/h	388	1222	1036	1164	1222		1209	0	1216	792	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	33.1	29.1	27.3	29.6	23.6	0.0	23.8	0.0	17.7	24.3	0.0	0.0
Incr Delay (d2), s/veh	3.1	1.6	0.2	5.9	1.8	0.0	2.3	0.0	0.9	3.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.6	0.6	2.8	2.7	0.0	5.1	0.0	4.0	5.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.2	30.8	27.5	35.5	25.3	0.0	26.1	0.0	18.5	27.9	0.0	0.0
LnGrp LOS	D	C	C	D	C		C	A	B	C	A	A
Approach Vol, veh/h		227			340			660			370	
Approach Delay, s/veh		30.7			29.9			22.4			27.9	
Approach LOS		C			C			C			C	

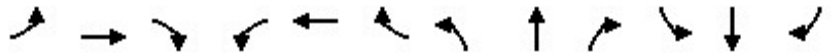
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.4	12.9		21.8	6.0	19.4		21.6				
Change Period (Y+Rc), s	4.6	4.6		4.6	* 4.2	4.6		4.6				
Max Green Setting (Gmax), s	45.0	45.0		30.0	* 15	45.0		45.0				
Max Q Clear Time (g_c+I1), s	7.8	7.8		15.2	2.9	7.9		13.5				
Green Ext Time (p_c), s	0.5	0.7		2.1	0.0	2.3		3.6				

Intersection Summary		
HCM 6th Ctrl Delay	26.4	
HCM 6th LOS	C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	5	80	55	5	5	100	596	20	15	379	7
Future Volume (veh/h)	14	5	80	55	5	5	100	596	20	15	379	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	8	85	98	0	0	106	634	0	25	403	7
Peak Hour Factor	0.94	0.60	0.94	0.60	0.60	0.60	0.94	0.94	0.60	0.60	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	57	144	305	0		160	1169		55	965	17
Arrive On Green	0.09	0.09	0.09	0.09	0.00	0.00	0.09	0.33	0.00	0.03	0.27	0.27
Sat Flow, veh/h	1181	630	1585	3563	0	1585	1781	3554	1585	1781	3574	62
Grp Volume(v), veh/h	23	0	85	98	0	0	106	634	0	25	200	210
Grp Sat Flow(s),veh/h/ln	1811	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1859
Q Serve(g_s), s	0.4	0.0	1.9	1.0	0.0	0.0	2.1	5.4	0.0	0.5	3.4	3.4
Cycle Q Clear(g_c), s	0.4	0.0	1.9	1.0	0.0	0.0	2.1	5.4	0.0	0.5	3.4	3.4
Prop In Lane	0.65		1.00	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	164	0	144	305	0		160	1169		55	480	502
V/C Ratio(X)	0.14	0.00	0.59	0.32	0.00		0.66	0.54		0.46	0.42	0.42
Avail Cap(c_a), veh/h	978	0	856	3846	0		962	3836		1442	1918	2007
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.5	0.0	16.2	15.9	0.0	0.0	16.3	10.2	0.0	17.7	11.1	11.1
Incr Delay (d2), s/veh	0.1	0.0	1.5	0.6	0.0	0.0	1.8	0.4	0.0	2.2	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.7	0.4	0.0	0.0	0.8	1.5	0.0	0.2	1.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	0.0	17.6	16.5	0.0	0.0	18.1	10.5	0.0	19.9	11.7	11.7
LnGrp LOS	B	A	B	B	A		B	B		B	B	B
Approach Vol, veh/h		108			98			740			435	
Approach Delay, s/veh		17.2			16.5			11.6			12.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.5	14.6		7.4	5.3	16.8		7.6
Change Period (Y+Rc), s	* 4.2	4.6		* 4.2	* 4.2	4.6		4.2
Max Green Setting (Gmax), s	* 3	40.0		* 40	* 30	40.0		20.0
Max Q Clear Time (g_c+I1), s	4.1	5.4		3.0	2.5	7.4		3.9
Green Ext Time (p_c), s	0.1	2.5		0.3	0.0	4.6		0.2

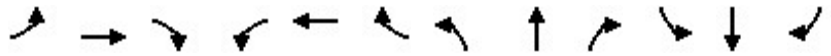
Intersection Summary	
HCM 6th Ctrl Delay	12.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	100	35	55	35	39	45	510	35	237	419	98
Future Volume (veh/h)	191	100	35	55	35	39	45	510	35	237	419	98
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	215	112	39	62	39	44	51	573	39	266	471	110
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	277	256	89	101	168	150	89	1129	76	326	1294	577
Arrive On Green	0.16	0.19	0.19	0.06	0.09	0.09	0.05	0.23	0.23	0.18	0.36	0.36
Sat Flow, veh/h	1781	1326	462	1781	1777	1585	1781	4885	330	1781	3554	1585
Grp Volume(v), veh/h	215	0	151	62	39	44	51	398	214	266	471	110
Grp Sat Flow(s),veh/h/ln	1781	0	1787	1781	1777	1585	1781	1702	1811	1781	1777	1585
Q Serve(g_s), s	6.0	0.0	3.9	1.8	1.1	1.3	1.5	5.3	5.4	7.5	5.1	2.5
Cycle Q Clear(g_c), s	6.0	0.0	3.9	1.8	1.1	1.3	1.5	5.3	5.4	7.5	5.1	2.5
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	277	0	346	101	168	150	89	787	418	326	1294	577
V/C Ratio(X)	0.78	0.00	0.44	0.61	0.23	0.29	0.57	0.51	0.51	0.82	0.36	0.19
Avail Cap(c_a), veh/h	683	0	514	854	511	456	683	2285	1215	683	2385	1064
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	0.0	18.5	24.0	21.9	22.0	24.2	17.5	17.5	20.5	12.2	11.3
Incr Delay (d2), s/veh	4.6	0.0	0.9	5.9	0.7	1.1	5.7	0.6	1.2	1.9	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	1.5	0.8	0.4	0.5	0.7	1.8	2.0	2.8	1.6	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.8	0.0	19.4	29.9	22.6	23.1	29.9	18.1	18.6	22.4	12.4	11.5
LnGrp LOS	C	A	B	C	C	C	C	B	B	C	B	B
Approach Vol, veh/h		366			145			663			847	
Approach Delay, s/veh		23.1			25.9			19.2			15.4	
Approach LOS		C			C			B			B	

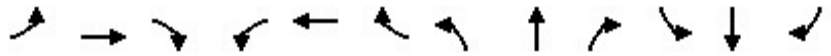
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	16.7	7.2	14.6	6.8	23.6	12.3	9.4
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.5	* 4.2	4.6	* 4.2	4.5
Max Green Setting (Gmax), s	* 20	35.0	* 25	15.0	* 20	35.0	* 20	15.0
Max Q Clear Time (g_c+I1), s	9.5	7.4	3.8	5.9	3.5	7.1	8.0	3.3
Green Ext Time (p_c), s	0.3	4.7	0.1	0.4	0.1	4.2	0.5	0.2

Intersection Summary	
HCM 6th Ctrl Delay	18.8
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	187	495	435	25	140	10	560	393	125	10	148	247
Future Volume (veh/h)	187	495	435	25	140	10	560	393	125	10	148	247
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	212	562	494	28	159	11	636	447	142	11	168	281
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	302	1078	502	133	1308	89	706	1056	333	46	733	327
Arrive On Green	0.09	0.32	0.32	0.04	0.27	0.27	0.20	0.40	0.40	0.01	0.21	0.21
Sat Flow, veh/h	3456	3404	1585	3456	4883	332	3456	2659	838	3456	3554	1585
Grp Volume(v), veh/h	212	562	494	28	110	60	636	297	292	11	168	281
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1811	1728	1777	1720	1728	1777	1585
Q Serve(g_s), s	5.7	12.8	29.3	0.7	2.3	2.4	17.0	11.5	11.7	0.3	3.7	16.2
Cycle Q Clear(g_c), s	5.7	12.8	29.3	0.7	2.3	2.4	17.0	11.5	11.7	0.3	3.7	16.2
Prop In Lane	1.00		1.00	1.00		0.18	1.00		0.49	1.00		1.00
Lane Grp Cap(c), veh/h	302	1078	502	133	912	485	706	706	683	46	733	327
V/C Ratio(X)	0.70	0.52	0.98	0.21	0.12	0.12	0.90	0.42	0.43	0.24	0.23	0.86
Avail Cap(c_a), veh/h	730	1078	502	730	1078	573	730	706	683	730	938	418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.0	26.5	32.1	44.1	26.2	26.3	36.8	20.7	20.7	46.3	31.3	36.3
Incr Delay (d2), s/veh	3.6	0.5	36.0	0.9	0.1	0.1	14.3	0.5	0.5	3.2	0.2	14.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	5.0	15.5	0.3	0.9	1.0	8.3	4.6	4.5	0.1	1.6	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.6	27.0	68.1	45.1	26.3	26.4	51.0	21.2	21.2	49.5	31.5	50.5
LnGrp LOS	D	C	E	D	C	C	D	C	C	D	C	D
Approach Vol, veh/h		1268			198			1225			460	
Approach Delay, s/veh		46.1			29.0			36.7			43.5	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.5	43.5	8.8	35.9	24.6	25.4	13.5	31.3
Change Period (Y+Rc), s	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9
Max Green Setting (Gmax), s	* 2.8	25.0	* 20	30.0	* 20	25.0	* 20	30.0
Max Q Clear Time (g_c+I1), s	2.3	13.7	2.7	31.3	19.0	18.2	7.7	4.4
Green Ext Time (p_c), s	0.0	3.0	0.0	0.0	0.3	1.3	0.7	1.1

Intersection Summary	
HCM 6th Ctrl Delay	41.0
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

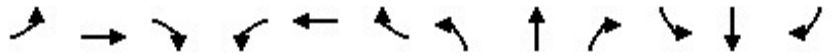
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	32.4
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	170	0	355	0	0	0	0	185	678	0	0	450	38
Future Vol, veh/h	170	0	355	0	0	0	0	185	678	0	0	450	38
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	198	0	413	0	0	0	0	215	788	0	0	523	44
Number of Lanes	2	0	1	0	0	0	0	1	2	0	0	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	2	3	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	3
HCM Control Delay	18.8	36	40.5
HCM LOS	C	E	E

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	100%	0%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%	100%	80%
Vol Right, %	0%	0%	0%	0%	0%	100%	0%	20%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	185	339	339	85	85	355	300	188
LT Vol	185	0	0	85	85	0	0	0
Through Vol	0	339	339	0	0	0	300	150
RT Vol	0	0	0	0	0	355	0	38
Lane Flow Rate	215	394	394	99	99	413	349	219
Geometry Grp	8	8	8	7	7	7	8	8
Degree of Util (X)	0.533	0.921	0.726	0.246	0.246	0.682	0.887	0.547
Departure Headway (Hd)	8.928	8.413	6.63	9.073	9.073	6.061	9.152	9.006
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	407	434	548	398	398	599	398	402
Service Time	6.628	6.113	4.33	6.773	6.773	3.761	6.888	6.742
HCM Lane V/C Ratio	0.528	0.908	0.719	0.249	0.249	0.689	0.877	0.545
HCM Control Delay	21.4	55	24.9	14.7	14.7	20.8	52.1	22.1
HCM Lane LOS	C	F	C	B	B	C	F	C
HCM 95th-tile Q	3	10.2	6	1	1	5.3	9	3.2



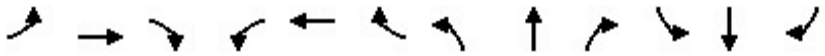
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	5	475	0	0	0	0	580	600	135	650	0
Future Volume (veh/h)	273	5	475	0	0	0	0	580	600	135	650	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	297	5	516				0	630	652	147	707	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	608	10	549				0	738	625	232	970	0
Arrive On Green	0.35	0.35	0.35				0.00	0.39	0.39	0.07	0.52	0.00
Sat Flow, veh/h	1753	30	1585				0	1870	1585	3456	1870	0
Grp Volume(v), veh/h	302	0	516				0	630	652	147	707	0
Grp Sat Flow(s),veh/h/ln	1783	0	1585				0	1870	1585	1728	1870	0
Q Serve(g_s), s	8.7	0.0	20.6				0.0	20.1	25.7	2.7	19.1	0.0
Cycle Q Clear(g_c), s	8.7	0.0	20.6				0.0	20.1	25.7	2.7	19.1	0.0
Prop In Lane	0.98		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	618	0	549				0	738	625	232	970	0
V/C Ratio(X)	0.49	0.00	0.94				0.00	0.85	1.04	0.63	0.73	0.00
Avail Cap(c_a), veh/h	629	0	559				0	738	625	652	1197	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.7	0.0	20.6				0.0	18.0	19.7	29.6	12.2	0.0
Incr Delay (d2), s/veh	0.2	0.0	23.4				0.0	9.2	47.7	1.1	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	10.2				0.0	9.1	16.2	1.1	6.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.0	0.0	44.0				0.0	27.2	67.5	30.7	13.4	0.0
LnGrp LOS	B	A	D				A	C	F	C	B	A
Approach Vol, veh/h		818						1282			854	
Approach Delay, s/veh		34.0						47.7			16.4	
Approach LOS		C						D			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		38.4			8.1	30.3		26.8				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.2				
Max Green Setting (Gmax), s		41.7			12.3	25.7		23.0				
Max Q Clear Time (g_c+I1), s		21.1			4.7	27.7		22.6				
Green Ext Time (p_c), s		0.6			0.0	0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			34.8
HCM 6th LOS			C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	230	900	786	460	133	395	300	165	12	380	80
Future Volume (veh/h)	100	230	900	786	460	133	395	300	165	12	380	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	104	240	938	479	955	139	411	312	172	12	396	83
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	294	309	971	637	1141	166	487	1007	449	25	458	95
Arrive On Green	0.17	0.17	0.17	0.36	0.36	0.36	0.14	0.28	0.28	0.01	0.16	0.16
Sat Flow, veh/h	1781	1870	3170	1781	3193	464	3456	3554	1585	1781	2929	608
Grp Volume(v), veh/h	104	240	938	479	559	535	411	312	172	12	239	240
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1787	1728	1777	1585	1781	1777	1761
Q Serve(g_s), s	5.9	14.1	18.9	27.0	31.4	31.4	13.3	7.9	10.0	0.8	15.0	15.3
Cycle Q Clear(g_c), s	5.9	14.1	18.9	27.0	31.4	31.4	13.3	7.9	10.0	0.8	15.0	15.3
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	294	309	971	637	669	639	487	1007	449	25	278	275
V/C Ratio(X)	0.35	0.78	0.97	0.75	0.84	0.84	0.84	0.31	0.38	0.49	0.86	0.87
Avail Cap(c_a), veh/h	294	309	971	757	794	759	673	1146	511	78	304	302
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.3	45.7	39.1	32.3	33.7	33.7	47.9	32.2	33.0	56.0	47.0	47.2
Incr Delay (d2), s/veh	0.7	11.8	21.1	3.5	6.8	7.1	7.0	0.2	0.5	14.1	20.0	22.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	7.5	15.3	11.8	14.9	14.3	6.1	3.3	3.8	0.4	8.0	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.1	57.6	60.2	35.8	40.5	40.8	55.0	32.4	33.5	70.1	67.0	69.2
LnGrp LOS	D	E	E	D	D	D	D	C	C	E	E	E
Approach Vol, veh/h		1282			1573			895			491	
Approach Delay, s/veh		58.3			39.2			43.0			68.2	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.3	37.8		24.0	20.8	23.3		46.3
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.4
Max Green Setting (Gmax), s	* 5	36.9		18.9	* 22	19.6		48.6
Max Q Clear Time (g_c+I1), s	2.8	12.0		20.9	15.3	17.3		33.4
Green Ext Time (p_c), s	0.0	2.5		0.0	0.9	0.6		7.5

Intersection Summary	
HCM 6th Ctrl Delay	49.1
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
User approved ignoring U-Turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	60	875	1163	873
Future Volume (veh/h)	0	0	60	875	1163	873
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			65	941	1251	939
Peak Hour Factor			0.93	0.93	0.93	0.93
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			229	1688	1416	1200
Arrive On Green			0.07	0.90	0.76	0.76
Sat Flow, veh/h			3456	1870	1870	1585
Grp Volume(v), veh/h			65	941	1251	939
Grp Sat Flow(s),veh/h/ln			1728	1870	1870	1585
Q Serve(g_s), s			1.1	5.9	29.2	21.0
Cycle Q Clear(g_c), s			1.1	5.9	29.2	21.0
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			229	1688	1416	1200
V/C Ratio(X)			0.28	0.56	0.88	0.78
Avail Cap(c_a), veh/h			1161	2325	1539	1305
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			26.4	0.6	5.3	4.3
Incr Delay (d2), s/veh			0.7	0.3	6.1	2.9
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.4	0.1	5.8	3.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			27.1	0.9	11.4	7.2
LnGrp LOS			C	A	B	A
Approach Vol, veh/h				1006	2190	
Approach Delay, s/veh				2.6	9.6	
Approach LOS				A	A	

Timer - Assigned Phs	2		5	6
Phs Duration (G+Y+Rc), s	59.5		8.7	50.9
Change Period (Y+Rc), s	5.8		* 4.7	5.8
Max Green Setting (Gmax), s	74.0		* 20	49.0
Max Q Clear Time (g_c+I1), s	7.9		3.1	31.2
Green Ext Time (p_c), s	9.7		0.1	13.9

Intersection Summary	
HCM 6th Ctrl Delay	7.4
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	46	20	554	106	28	360
Future Vol, veh/h	46	20	554	106	28	360
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	22	602	115	30	391

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1111	660	0	0	717	0
Stage 1	660	-	-	-	-	-
Stage 2	451	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	231	463	-	-	884	-
Stage 1	514	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	221	463	-	-	884	-
Mov Cap-2 Maneuver	221	-	-	-	-	-
Stage 1	514	-	-	-	-	-
Stage 2	614	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.7	0	0.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	263	884	-
HCM Lane V/C Ratio	-	-	0.273	0.034	-
HCM Control Delay (s)	-	-	23.7	9.2	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	498	7	24	338	4	13
Future Vol, veh/h	498	7	24	338	4	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	541	8	26	367	4	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	549	0	964	545
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	419	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1021	-	283	538
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	664	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1021	-	274	538
Mov Cap-2 Maneuver	-	-	-	-	274	-
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	643	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	13.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	439	-	-	1021	-
HCM Lane V/C Ratio	0.042	-	-	0.026	-
HCM Control Delay (s)	13.6	-	-	8.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

MOVEMENT SUMMARY

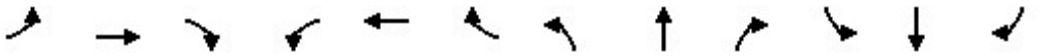
Site: 2 [CPP PM Rd / Abernathy Rd (Site Folder: General)]

Cumulative plus Project PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Abernathy Rd														
3	L2	150	2.0	167	2.0	0.868	30.5	LOS C	17.5	445.0	1.00	1.60	2.62	24.9
8	T1	310	2.0	344	2.0	0.868	30.5	LOS C	17.5	445.0	1.00	1.60	2.62	24.9
18	R2	165	2.0	183	2.0	0.868	30.5	LOS C	17.5	445.0	1.00	1.60	2.62	24.4
Approach		625	2.0	694	2.0	0.868	30.5	LOS C	17.5	445.0	1.00	1.60	2.62	24.7
East: Rockville Rd														
1	L2	35	2.0	39	2.0	0.385	10.4	LOS B	2.0	50.2	0.69	0.74	0.83	32.2
6	T1	172	2.0	191	2.0	0.385	10.4	LOS B	2.0	50.2	0.69	0.74	0.83	32.1
16	R2	30	2.0	33	2.0	0.385	10.4	LOS B	2.0	50.2	0.69	0.74	0.83	31.3
Approach		237	2.0	263	2.0	0.385	10.4	LOS B	2.0	50.2	0.69	0.74	0.83	32.0
North: Abernathy Rd														
7	L2	70	2.0	78	2.0	0.360	8.1	LOS A	1.8	46.1	0.59	0.53	0.59	33.1
4	T1	175	2.0	194	2.0	0.360	8.1	LOS A	1.8	46.1	0.59	0.53	0.59	33.0
14	R2	45	2.0	50	2.0	0.360	8.1	LOS A	1.8	46.1	0.59	0.53	0.59	32.1
Approach		290	2.0	322	2.0	0.360	8.1	LOS A	1.8	46.1	0.59	0.53	0.59	32.9
West: Rockville Rd														
5	L2	130	2.0	144	2.0	0.600	12.0	LOS B	6.1	157.0	0.69	0.73	0.98	31.2
2	T1	248	7.0	276	7.0	0.600	12.2	LOS B	6.1	157.0	0.69	0.73	0.98	31.1
12	R2	148	2.0	164	2.0	0.600	12.0	LOS B	6.1	157.0	0.69	0.73	0.98	30.3
Approach		526	4.4	584	4.4	0.600	12.1	LOS B	6.1	157.0	0.69	0.73	0.98	30.9
All Vehicles		1678	2.7	1864	2.7	0.868	18.0	LOS B	17.5	445.0	0.79	1.02	1.50	28.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	138	36	175	137	77	39	215	149	85	232	30
Future Volume (veh/h)	30	138	36	175	137	77	39	215	149	85	232	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	34	157	41	199	156	0	44	244	169	97	264	34
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	62	219	186	253	431		60	331	559	118	321	41
Arrive On Green	0.03	0.12	0.12	0.14	0.23	0.00	0.21	0.21	0.21	0.26	0.26	0.26
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	284	1573	1585	447	1216	157
Grp Volume(v), veh/h	34	157	41	199	156	0	288	0	169	395	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1856	0	1585	1820	0	0
Q Serve(g_s), s	1.3	5.6	1.6	7.5	4.8	0.0	10.0	0.0	5.3	14.1	0.0	0.0
Cycle Q Clear(g_c), s	1.3	5.6	1.6	7.5	4.8	0.0	10.0	0.0	5.3	14.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.15		1.00	0.25		0.09
Lane Grp Cap(c), veh/h	62	219	186	253	431		391	0	559	481	0	0
V/C Ratio(X)	0.55	0.72	0.22	0.79	0.36		0.74	0.00	0.30	0.82	0.00	0.00
Avail Cap(c_a), veh/h	386	1216	1031	1158	1216		1207	0	1256	789	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.9	29.4	27.7	28.7	22.4	0.0	25.5	0.0	16.2	23.9	0.0	0.0
Incr Delay (d2), s/veh	2.8	1.6	0.2	5.3	1.1	0.0	2.7	0.0	0.3	3.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.6	0.6	3.5	2.2	0.0	4.6	0.0	1.9	6.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.7	31.1	27.9	34.0	23.4	0.0	28.2	0.0	16.5	27.5	0.0	0.0
LnGrp LOS	D	C	C	C	C		C	A	B	C	A	A
Approach Vol, veh/h		232			355			457			395	
Approach Delay, s/veh		31.2			29.3			23.9			27.5	
Approach LOS		C			C			C			C	

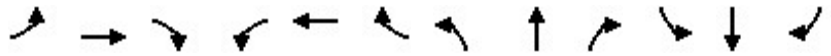
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.4	12.7		22.9	6.6	20.6		19.2				
Change Period (Y+Rc), s	4.6	4.6		4.6	* 4.2	4.6		4.6				
Max Green Setting (Gmax), s	45.0	45.0		30.0	* 15	45.0		45.0				
Max Q Clear Time (g_c+I1), s	9.5	7.6		16.1	3.3	6.8		12.0				
Green Ext Time (p_c), s	0.6	0.7		2.2	0.0	1.9		2.5				

Intersection Summary		
HCM 6th Ctrl Delay		27.4
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	5	65	30	5	25	75	411	25	5	443	18
Future Volume (veh/h)	20	5	65	30	5	25	75	411	25	5	443	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	21	7	69	45	0	0	80	437	0	7	471	19
Peak Hour Factor	0.94	0.75	0.94	0.75	0.75	0.75	0.94	0.94	0.75	0.75	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	118	39	139	181	0		138	1266		17	1004	40
Arrive On Green	0.09	0.09	0.09	0.05	0.00	0.00	0.08	0.36	0.00	0.01	0.29	0.29
Sat Flow, veh/h	1352	451	1585	3563	0	1585	1781	3554	1585	1781	3482	140
Grp Volume(v), veh/h	28	0	69	45	0	0	80	437	0	7	240	250
Grp Sat Flow(s),veh/h/ln	1803	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1845
Q Serve(g_s), s	0.5	0.0	1.4	0.4	0.0	0.0	1.5	3.1	0.0	0.1	3.9	3.9
Cycle Q Clear(g_c), s	0.5	0.0	1.4	0.4	0.0	0.0	1.5	3.1	0.0	0.1	3.9	3.9
Prop In Lane	0.75		1.00	1.00		1.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	158	0	139	181	0		138	1266		17	512	532
V/C Ratio(X)	0.18	0.00	0.50	0.25	0.00		0.58	0.35		0.42	0.47	0.47
Avail Cap(c_a), veh/h	1040	0	914	4109	0		1027	4099		1541	2049	2128
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.7	0.0	15.1	15.8	0.0	0.0	15.5	8.2	0.0	17.1	10.2	10.2
Incr Delay (d2), s/veh	0.2	0.0	1.0	0.7	0.0	0.0	1.4	0.2	0.0	6.1	0.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.5	0.2	0.0	0.0	0.5	0.8	0.0	0.1	1.1	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	0.0	16.1	16.5	0.0	0.0	16.9	8.4	0.0	23.1	10.8	10.8
LnGrp LOS	B	A	B	B	A		B	A		C	B	B
Approach Vol, veh/h		97			45			517			497	
Approach Delay, s/veh		15.8			16.5			9.7			11.0	
Approach LOS		B			B			A			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	14.6		6.0	4.5	17.0		7.2
Change Period (Y+Rc), s	* 4.2	4.6		* 4.2	* 4.2	4.6		4.2
Max Green Setting (Gmax), s	* 2.8	40.0		* 40	* 30	40.0		20.0
Max Q Clear Time (g_c+I1), s	3.5	5.9		2.4	2.1	5.1		3.4
Green Ext Time (p_c), s	0.1	3.0		0.1	0.0	3.0		0.2

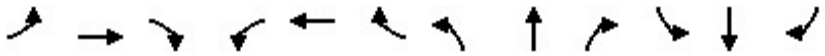
Intersection Summary	
HCM 6th Ctrl Delay	11.0
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	25	65	35	60	25	45	433	15	18	440	60
Future Volume (veh/h)	67	25	65	35	60	25	45	433	15	18	440	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	73	27	71	38	65	27	49	471	16	20	478	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	127	69	180	78	306	120	95	1549	52	45	985	439
Arrive On Green	0.07	0.15	0.15	0.04	0.12	0.12	0.05	0.31	0.31	0.03	0.28	0.28
Sat Flow, veh/h	1781	456	1199	1781	2493	978	1781	5072	171	1781	3554	1585
Grp Volume(v), veh/h	73	0	98	38	45	47	49	315	172	20	478	65
Grp Sat Flow(s),veh/h/ln	1781	0	1655	1781	1777	1694	1781	1702	1839	1781	1777	1585
Q Serve(g_s), s	1.5	0.0	2.0	0.8	0.8	0.9	1.0	2.6	2.6	0.4	4.1	1.1
Cycle Q Clear(g_c), s	1.5	0.0	2.0	0.8	0.8	0.9	1.0	2.6	2.6	0.4	4.1	1.1
Prop In Lane	1.00		0.72	1.00		0.58	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	127	0	249	78	218	208	95	1040	562	45	985	439
V/C Ratio(X)	0.57	0.00	0.39	0.49	0.21	0.23	0.51	0.30	0.31	0.45	0.49	0.15
Avail Cap(c_a), veh/h	968	0	674	1210	724	690	968	3236	1749	968	3378	1507
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	0.0	14.1	17.2	14.5	14.6	17.0	9.8	9.8	17.7	11.1	10.0
Incr Delay (d2), s/veh	4.0	0.0	1.0	4.7	0.5	0.5	4.2	0.2	0.4	2.6	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.6	0.4	0.3	0.3	0.4	0.7	0.8	0.2	1.2	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.6	0.0	15.1	21.9	15.0	15.1	21.2	10.0	10.2	20.3	11.6	10.2
LnGrp LOS	C	A	B	C	B	B	C	A	B	C	B	B
Approach Vol, veh/h		171			130			536			563	
Approach Delay, s/veh		17.5			17.0			11.1			11.7	
Approach LOS		B			B			B			B	

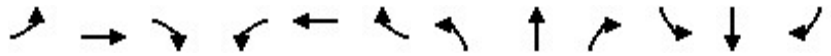
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	15.8	5.8	10.0	6.2	14.8	6.8	9.0
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.5	* 4.2	4.6	* 4.2	4.5
Max Green Setting (Gmax), s	* 2.8	35.0	* 25	15.0	* 20	35.0	* 20	15.0
Max Q Clear Time (g_c+I1), s	2.4	4.6	2.8	4.0	3.0	6.1	3.5	2.9
Green Ext Time (p_c), s	0.0	3.7	0.1	0.3	0.1	4.1	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	12.7
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	595	120	20	140	10	200	340	105	25	174	307
Future Volume (veh/h)	144	595	120	20	140	10	200	340	105	25	174	307
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	157	647	130	22	152	11	217	370	114	27	189	334
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	353	1080	214	122	905	64	368	905	275	103	925	413
Arrive On Green	0.10	0.25	0.25	0.04	0.19	0.19	0.11	0.34	0.34	0.03	0.26	0.26
Sat Flow, veh/h	3456	4275	847	3456	4866	346	3456	2684	816	3456	3554	1585
Grp Volume(v), veh/h	157	513	264	22	105	58	217	243	241	27	189	334
Grp Sat Flow(s),veh/h/ln	1728	1702	1718	1728	1702	1808	1728	1777	1723	1728	1777	1585
Q Serve(g_s), s	2.7	8.5	8.7	0.4	1.7	1.7	3.9	6.8	6.9	0.5	2.7	12.7
Cycle Q Clear(g_c), s	2.7	8.5	8.7	0.4	1.7	1.7	3.9	6.8	6.9	0.5	2.7	12.7
Prop In Lane	1.00		0.49	1.00		0.19	1.00		0.47	1.00		1.00
Lane Grp Cap(c), veh/h	353	860	434	122	633	336	368	599	581	103	925	413
V/C Ratio(X)	0.44	0.60	0.61	0.18	0.17	0.17	0.59	0.41	0.41	0.26	0.20	0.81
Avail Cap(c_a), veh/h	1074	1587	801	1074	1587	843	1074	690	670	1074	1381	616
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	21.2	21.2	30.1	22.0	22.0	27.4	16.4	16.4	30.5	18.6	22.3
Incr Delay (d2), s/veh	1.1	0.8	1.7	0.8	0.1	0.3	1.8	0.5	0.6	1.6	0.1	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	3.1	3.3	0.2	0.6	0.7	1.6	2.5	2.5	0.2	1.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.2	22.0	22.9	31.0	22.2	22.3	29.2	16.9	17.0	32.1	18.7	27.9
LnGrp LOS	C	C	C	C	C	C	C	B	B	C	B	C
Approach Vol, veh/h		934			185			701			550	
Approach Delay, s/veh		23.3			23.3			20.8			25.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	27.6	7.5	22.2	12.1	22.7	11.8	17.9
Change Period (Y+Rc), s	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9
Max Green Setting (Gmax), s	* 20	25.0	* 20	30.0	* 20	25.0	* 20	30.0
Max Q Clear Time (g_c+I1), s	2.5	8.9	2.4	10.7	5.9	14.7	4.7	3.7
Green Ext Time (p_c), s	0.0	2.9	0.0	5.5	0.7	2.1	0.5	1.0

Intersection Summary	
HCM 6th Ctrl Delay	22.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

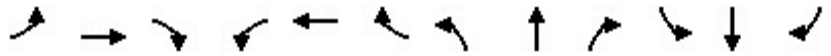
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	14.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	93	0	375	0	0	0	160	492	0	0	309	35
Future Vol, veh/h	93	0	375	0	0	0	160	492	0	0	309	35
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	104	0	421	0	0	0	180	553	0	0	347	39
Number of Lanes	2	0	1	0	0	0	1	2	0	1	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	3	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	3	3	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	3
HCM Control Delay	13.4	15.1	16.1
HCM LOS	B	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	100%	0%	0%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%	100%	100%	75%
Vol Right, %	0%	0%	0%	0%	0%	100%	0%	0%	25%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	160	246	246	47	47	375	0	206	138
LT Vol	160	0	0	47	47	0	0	0	0
Through Vol	0	246	246	0	0	0	0	206	103
RT Vol	0	0	0	0	0	375	0	0	35
Lane Flow Rate	180	276	276	52	52	421	0	231	155
Geometry Grp	8	8	8	7	7	7	8	8	8
Degree of Util (X)	0.382	0.548	0.412	0.114	0.114	0.569	0	0.493	0.322
Departure Headway (Hd)	7.646	7.137	5.371	7.838	7.838	4.86	7.663	7.663	7.482
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	471	506	669	458	458	742	0	470	481
Service Time	5.389	4.88	3.114	5.57	5.57	2.591	5.414	5.414	5.233
HCM Lane V/C Ratio	0.382	0.545	0.413	0.114	0.114	0.567	0	0.491	0.322
HCM Control Delay	15.1	18.2	11.9	11.6	11.6	13.8	10.4	17.7	13.8
HCM Lane LOS	C	C	B	B	B	B	N	C	B
HCM 95th-tile Q	1.8	3.3	2	0.4	0.4	3.6	0	2.7	1.4



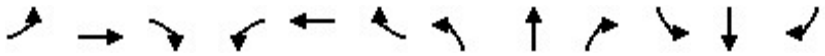
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	152	5	485	0	0	0	0	465	685	69	650	0
Future Volume (veh/h)	152	5	485	0	0	0	0	465	685	69	650	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	160	5	511				0	489	721	73	684	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	595	19	545				0	790	669	154	978	0
Arrive On Green	0.34	0.34	0.34				0.00	0.42	0.42	0.04	0.52	0.00
Sat Flow, veh/h	1730	54	1585				0	1870	1585	3456	1870	0
Grp Volume(v), veh/h	165	0	511				0	489	721	73	684	0
Grp Sat Flow(s),veh/h/ln	1784	0	1585				0	1870	1585	1728	1870	0
Q Serve(g_s), s	4.4	0.0	20.6				0.0	13.5	27.9	1.4	18.2	0.0
Cycle Q Clear(g_c), s	4.4	0.0	20.6				0.0	13.5	27.9	1.4	18.2	0.0
Prop In Lane	0.97		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	614	0	545				0	790	669	154	978	0
V/C Ratio(X)	0.27	0.00	0.94				0.00	0.62	1.08	0.47	0.70	0.00
Avail Cap(c_a), veh/h	696	0	619				0	790	669	382	1101	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.7	0.0	21.0				0.0	14.9	19.1	30.8	11.9	0.0
Incr Delay (d2), s/veh	0.1	0.0	19.7				0.0	1.1	57.5	0.8	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	9.7				0.0	5.0	19.1	0.5	6.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.8	0.0	40.7				0.0	16.0	76.6	31.6	13.1	0.0
LnGrp LOS	B	A	D				A	B	F	C	B	A
Approach Vol, veh/h		676						1210			757	
Approach Delay, s/veh		34.6						52.1			14.9	
Approach LOS		C						D			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		39.2			6.7	32.5		26.9				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.2				
Max Green Setting (Gmax), s		38.9			7.3	27.9		25.8				
Max Q Clear Time (g_c+I1), s		20.2			3.4	29.9		22.6				
Green Ext Time (p_c), s		0.6			0.0	0.0		0.1				

Intersection Summary												
HCM 6th Ctrl Delay			37.0									
HCM 6th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	235	1005	696	505	131	425	215	140	19	350	70
Future Volume (veh/h)	80	235	1005	696	505	131	425	215	140	19	350	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	242	1036	458	885	135	438	222	144	20	361	72
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	336	1050	598	1065	162	523	985	439	37	434	86
Arrive On Green	0.18	0.18	0.18	0.34	0.34	0.34	0.15	0.28	0.28	0.02	0.15	0.15
Sat Flow, veh/h	1781	1870	3170	1781	3170	484	3456	3554	1585	1781	2958	584
Grp Volume(v), veh/h	82	242	1036	458	522	498	438	222	144	20	215	218
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1783	1728	1777	1585	1781	1777	1765
Q Serve(g_s), s	4.4	13.5	19.9	25.4	28.5	28.5	13.6	5.3	8.0	1.2	13.0	13.3
Cycle Q Clear(g_c), s	4.4	13.5	19.9	25.4	28.5	28.5	13.6	5.3	8.0	1.2	13.0	13.3
Prop In Lane	1.00		1.00	1.00		0.27	1.00		1.00	1.00		0.33
Lane Grp Cap(c), veh/h	320	336	1050	598	628	599	523	985	439	37	260	259
V/C Ratio(X)	0.26	0.72	0.99	0.77	0.83	0.83	0.84	0.23	0.33	0.54	0.83	0.84
Avail Cap(c_a), veh/h	320	336	1050	718	754	719	790	1282	572	81	315	313
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.0	42.7	36.7	32.8	33.8	33.8	45.6	30.8	31.8	53.6	45.8	46.0
Incr Delay (d2), s/veh	0.4	7.3	24.4	4.1	6.7	7.0	5.0	0.1	0.4	11.7	14.1	15.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	6.8	16.8	11.2	13.5	13.0	6.1	2.2	3.0	0.7	6.6	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.4	50.0	61.2	36.9	40.5	40.9	50.6	30.9	32.2	65.4	59.9	61.7
LnGrp LOS	D	D	E	D	D	D	D	C	C	E	E	E
Approach Vol, veh/h		1360			1478			804			453	
Approach Delay, s/veh		57.9			39.5			41.9			61.0	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.0	36.1		25.0	21.4	21.6		42.6
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.4
Max Green Setting (Gmax), s	* 5	39.9		19.9	* 25	19.6		44.6
Max Q Clear Time (g_c+I1), s	3.2	10.0		21.9	15.6	15.3		30.5
Green Ext Time (p_c), s	0.0	1.8		0.0	1.1	0.9		6.7

Intersection Summary		
HCM 6th Ctrl Delay		48.5
HCM 6th LOS		D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	25	800	1148	883
Future Volume (veh/h)	0	0	25	800	1148	883
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			26	833	1196	920
Peak Hour Factor			0.96	0.96	0.96	0.96
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			124	1668	1437	1218
Arrive On Green			0.04	0.89	0.77	0.77
Sat Flow, veh/h			3456	1870	1870	1585
Grp Volume(v), veh/h			26	833	1196	920
Grp Sat Flow(s),veh/h/ln			1728	1870	1870	1585
Q Serve(g_s), s			0.4	4.7	22.0	17.2
Cycle Q Clear(g_c), s			0.4	4.7	22.0	17.2
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			124	1668	1437	1218
V/C Ratio(X)			0.21	0.50	0.83	0.76
Avail Cap(c_a), veh/h			1290	2582	1710	1449
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			25.1	0.6	4.0	3.4
Incr Delay (d2), s/veh			0.8	0.2	3.2	1.9
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.2	0.1	2.5	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			25.9	0.8	7.2	5.4
LnGrp LOS			C	A	A	A
Approach Vol, veh/h				859	2116	
Approach Delay, s/veh				1.6	6.4	
Approach LOS				A	A	

Timer - Assigned Phs	2		5	6
Phs Duration (G+Y+Rc), s	53.6		6.6	47.0
Change Period (Y+Rc), s	5.8		* 4.7	5.8
Max Green Setting (Gmax), s	74.0		* 20	49.0
Max Q Clear Time (g_c+I1), s	6.7		2.4	24.0
Green Ext Time (p_c), s	7.6		0.0	17.1

Intersection Summary	
HCM 6th Ctrl Delay	5.0
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	79	29	379	127	33	415
Future Vol, veh/h	79	29	379	127	33	415
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	32	412	138	36	451

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1004	481	0	0	550	0
Stage 1	481	-	-	-	-	-
Stage 2	523	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	268	585	-	-	1020	-
Stage 1	622	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	255	585	-	-	1020	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	622	-	-	-	-	-
Stage 2	567	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.4	0	0.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	301	1020	-
HCM Lane V/C Ratio	-	-	0.39	0.035	-
HCM Control Delay (s)	-	-	24.4	8.7	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.8	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	358	9	29	383	6	21
Future Vol, veh/h	358	9	29	383	6	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	389	10	32	416	7	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	399	0	874	394
Stage 1	-	-	-	-	394	-
Stage 2	-	-	-	-	480	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1160	-	320	655
Stage 1	-	-	-	-	681	-
Stage 2	-	-	-	-	622	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1160	-	308	655
Mov Cap-2 Maneuver	-	-	-	-	308	-
Stage 1	-	-	-	-	681	-
Stage 2	-	-	-	-	600	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	524	-	-	1160	-
HCM Lane V/C Ratio	0.056	-	-	0.027	-
HCM Control Delay (s)	12.3	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

MOVEMENT SUMMARY

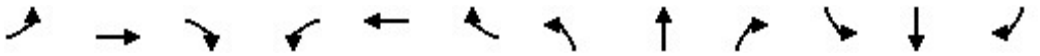
Site: 2 [CPP Sat In Rockville Rd / Abernathy Rd (Site Folder: General)]

Cumulative plus Project Saturday
Special Event Inbound
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Abernathy Rd														
3	L2	188	2.0	209	2.0	0.608	12.5	LOS B	6.4	163.3	0.73	0.81	1.08	30.8
8	T1	215	2.0	239	2.0	0.608	12.5	LOS B	6.4	163.3	0.73	0.81	1.08	30.7
18	R2	120	2.0	133	2.0	0.608	12.5	LOS B	6.4	163.3	0.73	0.81	1.08	29.9
Approach		523	2.0	581	2.0	0.608	12.5	LOS B	6.4	163.3	0.73	0.81	1.08	30.6
East: Rockville Rd														
1	L2	45	2.0	50	2.0	0.326	8.3	LOS A	1.5	38.8	0.63	0.61	0.63	33.1
6	T1	159	2.0	177	2.0	0.326	8.3	LOS A	1.5	38.8	0.63	0.61	0.63	33.0
16	R2	30	2.0	33	2.0	0.326	8.3	LOS A	1.5	38.8	0.63	0.61	0.63	32.1
Approach		234	2.0	260	2.0	0.326	8.3	LOS A	1.5	38.8	0.63	0.61	0.63	32.9
North: Abernathy Rd														
7	L2	25	2.0	28	2.0	0.252	6.9	LOS A	1.1	29.2	0.56	0.51	0.56	34.0
4	T1	115	2.0	128	2.0	0.252	6.9	LOS A	1.1	29.2	0.56	0.51	0.56	33.9
14	R2	55	2.0	61	2.0	0.252	6.9	LOS A	1.1	29.2	0.56	0.51	0.56	32.9
Approach		195	2.0	217	2.0	0.252	6.9	LOS A	1.1	29.2	0.56	0.51	0.56	33.6
West: Rockville Rd														
5	L2	55	2.0	61	2.0	0.424	7.7	LOS A	2.5	63.6	0.48	0.35	0.48	33.4
2	T1	221	7.0	246	7.0	0.424	7.9	LOS A	2.5	63.6	0.48	0.35	0.48	33.3
12	R2	139	2.0	154	2.0	0.424	7.7	LOS A	2.5	63.6	0.48	0.35	0.48	32.4
Approach		415	4.7	461	4.7	0.424	7.8	LOS A	2.5	63.6	0.48	0.35	0.48	33.0
All Vehicles		1367	2.8	1519	2.8	0.608	9.5	LOS A	6.4	163.3	0.61	0.59	0.75	32.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	135	36	175	138	79	40	221	149	85	223	30
Future Volume (veh/h)	30	135	36	175	138	79	40	221	149	85	223	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	34	153	41	199	157	0	45	251	169	97	253	34
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	62	215	182	254	427		61	340	568	119	310	42
Arrive On Green	0.03	0.11	0.11	0.14	0.23	0.00	0.22	0.22	0.22	0.26	0.26	0.26
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	282	1574	1585	459	1198	161
Grp Volume(v), veh/h	34	153	41	199	157	0	296	0	169	384	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1856	0	1585	1818	0	0
Q Serve(g_s), s	1.3	5.4	1.6	7.4	4.9	0.0	10.2	0.0	5.3	13.6	0.0	0.0
Cycle Q Clear(g_c), s	1.3	5.4	1.6	7.4	4.9	0.0	10.2	0.0	5.3	13.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.15		1.00	0.25		0.09
Lane Grp Cap(c), veh/h	62	215	182	254	427		401	0	568	470	0	0
V/C Ratio(X)	0.55	0.71	0.23	0.78	0.37		0.74	0.00	0.30	0.82	0.00	0.00
Avail Cap(c_a), veh/h	389	1227	1040	1168	1227		1218	0	1266	795	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.6	29.3	27.6	28.4	22.3	0.0	25.1	0.0	15.8	23.9	0.0	0.0
Incr Delay (d2), s/veh	2.8	1.6	0.2	5.3	1.1	0.0	2.7	0.0	0.3	3.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.5	0.6	3.4	2.2	0.0	4.6	0.0	1.9	6.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.4	30.9	27.8	33.7	23.4	0.0	27.8	0.0	16.1	27.4	0.0	0.0
LnGrp LOS	D	C	C	C	C		C	A	B	C	A	A
Approach Vol, veh/h		228			356			465			384	
Approach Delay, s/veh		31.0			29.2			23.5			27.4	
Approach LOS		C			C			C			C	

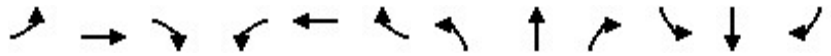
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.4	12.5		22.3	6.6	20.3		19.4				
Change Period (Y+Rc), s	4.6	4.6		4.6	* 4.2	4.6		4.6				
Max Green Setting (Gmax), s	45.0	45.0		30.0	* 15	45.0		45.0				
Max Q Clear Time (g_c+I1), s	9.4	7.4		15.6	3.3	6.9		12.2				
Green Ext Time (p_c), s	0.6	0.7		2.1	0.0	1.9		2.6				

Intersection Summary			
HCM 6th Ctrl Delay		27.2	
HCM 6th LOS		C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	5	65	30	5	25	75	375	25	5	476	20
Future Volume (veh/h)	19	5	65	30	5	25	75	375	25	5	476	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	20	7	69	45	0	0	80	399	0	7	506	21
Peak Hour Factor	0.94	0.75	0.94	0.75	0.75	0.75	0.94	0.94	0.75	0.75	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	41	138	181	0		138	1267		17	1003	42
Arrive On Green	0.09	0.09	0.09	0.05	0.00	0.00	0.08	0.36	0.00	0.01	0.29	0.29
Sat Flow, veh/h	1336	468	1585	3563	0	1585	1781	3554	1585	1781	3477	144
Grp Volume(v), veh/h	27	0	69	45	0	0	80	399	0	7	258	269
Grp Sat Flow(s),veh/h/ln	1804	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1844
Q Serve(g_s), s	0.5	0.0	1.4	0.4	0.0	0.0	1.5	2.8	0.0	0.1	4.2	4.2
Cycle Q Clear(g_c), s	0.5	0.0	1.4	0.4	0.0	0.0	1.5	2.8	0.0	0.1	4.2	4.2
Prop In Lane	0.74		1.00	1.00		1.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	157	0	138	181	0		138	1267		17	513	532
V/C Ratio(X)	0.17	0.00	0.50	0.25	0.00		0.58	0.31		0.42	0.50	0.51
Avail Cap(c_a), veh/h	1041	0	915	4112	0		1028	4101		1542	2051	2129
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.7	0.0	15.1	15.8	0.0	0.0	15.4	8.1	0.0	17.1	10.3	10.3
Incr Delay (d2), s/veh	0.2	0.0	1.0	0.7	0.0	0.0	1.4	0.1	0.0	6.1	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.5	0.2	0.0	0.0	0.5	0.7	0.0	0.1	1.2	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	0.0	16.1	16.5	0.0	0.0	16.9	8.2	0.0	23.1	11.0	11.0
LnGrp LOS	B	A	B	B	A		B	A		C	B	B
Approach Vol, veh/h		96			45			479			534	
Approach Delay, s/veh		15.8			16.5			9.7			11.2	
Approach LOS		B			B			A			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	14.6		6.0	4.5	17.0		7.2
Change Period (Y+Rc), s	* 4.2	4.6		* 4.2	* 4.2	4.6		4.2
Max Green Setting (Gmax), s	* 2.8	40.0		* 40	* 30	40.0		20.0
Max Q Clear Time (g_c+I1), s	3.5	6.2		2.4	2.1	4.8		3.4
Green Ext Time (p_c), s	0.1	3.3		0.1	0.0	2.7		0.2

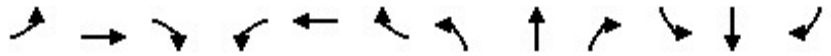
Intersection Summary		
HCM 6th Ctrl Delay		11.1
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	25	65	35	60	24	45	402	15	20	469	62
Future Volume (veh/h)	65	25	65	35	60	24	45	402	15	20	469	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	71	27	71	38	65	26	49	437	16	22	510	67
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	67	176	78	305	115	95	1593	58	49	1027	458
Arrive On Green	0.07	0.15	0.15	0.04	0.12	0.12	0.05	0.31	0.31	0.03	0.29	0.29
Sat Flow, veh/h	1781	456	1199	1781	2521	955	1781	5057	184	1781	3554	1585
Grp Volume(v), veh/h	71	0	98	38	45	46	49	293	160	22	510	67
Grp Sat Flow(s),veh/h/ln	1781	0	1655	1781	1777	1699	1781	1702	1837	1781	1777	1585
Q Serve(g_s), s	1.4	0.0	2.0	0.8	0.9	0.9	1.0	2.4	2.4	0.5	4.5	1.2
Cycle Q Clear(g_c), s	1.4	0.0	2.0	0.8	0.9	0.9	1.0	2.4	2.4	0.5	4.5	1.2
Prop In Lane	1.00		0.72	1.00		0.56	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	124	0	243	78	215	205	95	1072	579	49	1027	458
V/C Ratio(X)	0.57	0.00	0.40	0.49	0.21	0.23	0.52	0.27	0.28	0.45	0.50	0.15
Avail Cap(c_a), veh/h	951	0	663	1189	711	680	951	3181	1717	951	3320	1481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.9	0.0	14.5	17.5	14.8	14.9	17.3	9.6	9.6	17.9	11.1	9.9
Incr Delay (d2), s/veh	4.1	0.0	1.1	4.7	0.5	0.5	4.3	0.2	0.3	2.4	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.7	0.4	0.3	0.3	0.4	0.6	0.7	0.2	1.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.0	0.0	15.6	22.2	15.3	15.4	21.5	9.8	9.9	20.4	11.5	10.1
LnGrp LOS	C	A	B	C	B	B	C	A	A	C	B	B
Approach Vol, veh/h		169			129			502			599	
Approach Delay, s/veh		17.8			17.4			11.0			11.7	
Approach LOS		B			B			B			B	

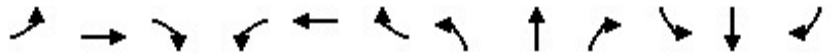
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.2	16.4	5.8	10.0	6.2	15.4	6.8	9.0
Change Period (Y+Rc), s	* 4.2	4.6	* 4.2	4.5	* 4.2	4.6	* 4.2	4.5
Max Green Setting (Gmax), s	* 2.8	35.0	* 25	15.0	* 20	35.0	* 20	15.0
Max Q Clear Time (g_c+I1), s	2.5	4.4	2.8	4.0	3.0	6.5	3.4	2.9
Green Ext Time (p_c), s	0.0	3.4	0.1	0.3	0.1	4.4	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	12.7
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	595	120	20	140	10	200	311	105	25	180	329
Future Volume (veh/h)	141	595	120	20	140	10	200	311	105	25	180	329
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	153	647	130	22	152	11	217	338	114	27	196	358
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	345	1069	212	122	903	64	360	912	303	102	971	433
Arrive On Green	0.10	0.25	0.25	0.04	0.19	0.19	0.10	0.35	0.35	0.03	0.27	0.27
Sat Flow, veh/h	3456	4275	847	3456	4866	346	3456	2621	870	3456	3554	1585
Grp Volume(v), veh/h	153	513	264	22	105	58	217	227	225	27	196	358
Grp Sat Flow(s),veh/h/ln	1728	1702	1718	1728	1702	1808	1728	1777	1714	1728	1777	1585
Q Serve(g_s), s	2.7	8.8	9.0	0.4	1.7	1.8	4.0	6.3	6.5	0.5	2.8	14.0
Cycle Q Clear(g_c), s	2.7	8.8	9.0	0.4	1.7	1.8	4.0	6.3	6.5	0.5	2.8	14.0
Prop In Lane	1.00		0.49	1.00		0.19	1.00		0.51	1.00		1.00
Lane Grp Cap(c), veh/h	345	851	430	122	631	335	360	618	596	102	971	433
V/C Ratio(X)	0.44	0.60	0.61	0.18	0.17	0.17	0.60	0.37	0.38	0.26	0.20	0.83
Avail Cap(c_a), veh/h	1050	1551	783	1050	1551	824	1050	675	651	1050	1349	602
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.9	21.8	21.9	30.8	22.5	22.6	28.2	16.1	16.1	31.2	18.4	22.5
Incr Delay (d2), s/veh	1.1	0.8	1.7	0.8	0.1	0.3	1.9	0.4	0.5	1.6	0.1	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	3.2	3.4	0.2	0.6	0.7	1.6	2.3	2.3	0.2	1.0	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.0	22.6	23.6	31.7	22.7	22.9	30.1	16.5	16.6	32.9	18.5	29.7
LnGrp LOS	C	C	C	C	C	C	C	B	B	C	B	C
Approach Vol, veh/h		930			185			669			581	
Approach Delay, s/veh		24.0			23.8			20.9			26.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	28.8	7.5	22.4	12.1	23.9	11.8	18.1
Change Period (Y+Rc), s	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9	* 5.2	5.9
Max Green Setting (Gmax), s	* 20	25.0	* 20	30.0	* 20	25.0	* 20	30.0
Max Q Clear Time (g_c+I1), s	2.5	8.5	2.4	11.0	6.0	16.0	4.7	3.8
Green Ext Time (p_c), s	0.0	2.7	0.0	5.5	0.7	2.0	0.5	1.0

Intersection Summary	
HCM 6th Ctrl Delay	23.6
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

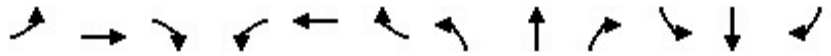
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	14.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	87	0	375	0	0	0	160	468	0	0	313	37
Future Vol, veh/h	87	0	375	0	0	0	160	468	0	0	313	37
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	98	0	421	0	0	0	180	526	0	0	352	42
Number of Lanes	2	0	1	0	0	0	1	2	0	1	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	3	3
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	3	3	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	3	0	3
HCM Control Delay	13.3	14.6	16
HCM LOS	B	B	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	100%	0%	0%	0%	0%
Vol Thru, %	0%	100%	100%	0%	0%	0%	100%	100%	74%
Vol Right, %	0%	0%	0%	0%	0%	100%	0%	0%	26%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	160	234	234	44	44	375	0	209	141
LT Vol	160	0	0	44	44	0	0	0	0
Through Vol	0	234	234	0	0	0	0	209	104
RT Vol	0	0	0	0	0	375	0	0	37
Lane Flow Rate	180	263	263	49	49	421	0	234	159
Geometry Grp	8	8	8	7	7	7	8	8	8
Degree of Util (X)	0.381	0.52	0.391	0.106	0.106	0.568	0	0.494	0.326
Departure Headway (Hd)	7.626	7.117	5.352	7.799	7.799	4.854	7.584	7.584	7.397
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	471	507	670	460	460	750	0	476	486
Service Time	5.373	4.864	3.098	5.532	5.532	2.554	5.338	5.338	5.151
HCM Lane V/C Ratio	0.382	0.519	0.393	0.107	0.107	0.561	0	0.492	0.327
HCM Control Delay	15	17.4	11.5	11.5	11.5	13.7	10.3	17.6	13.7
HCM Lane LOS	B	C	B	B	B	B	N	C	B
HCM 95th-tile Q	1.8	3	1.9	0.4	0.4	3.6	0	2.7	1.4



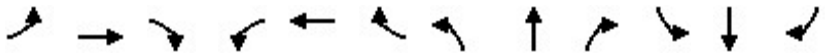
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	128	5	485	0	0	0	0	465	685	73	650	0
Future Volume (veh/h)	128	5	485	0	0	0	0	465	685	73	650	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	135	5	511				0	489	721	77	684	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	592	22	545				0	788	668	158	979	0
Arrive On Green	0.34	0.34	0.34				0.00	0.42	0.42	0.05	0.52	0.00
Sat Flow, veh/h	1721	64	1585				0	1870	1585	3456	1870	0
Grp Volume(v), veh/h	140	0	511				0	489	721	77	684	0
Grp Sat Flow(s),veh/h/ln	1784	0	1585				0	1870	1585	1728	1870	0
Q Serve(g_s), s	3.7	0.0	20.7				0.0	13.6	27.9	1.4	18.2	0.0
Cycle Q Clear(g_c), s	3.7	0.0	20.7				0.0	13.6	27.9	1.4	18.2	0.0
Prop In Lane	0.96		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	614	0	545				0	788	668	158	979	0
V/C Ratio(X)	0.23	0.00	0.94				0.00	0.62	1.08	0.49	0.70	0.00
Avail Cap(c_a), veh/h	696	0	618				0	788	668	381	1099	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.5	0.0	21.0				0.0	15.0	19.1	30.8	11.9	0.0
Incr Delay (d2), s/veh	0.1	0.0	19.8				0.0	1.1	58.1	0.9	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	9.8				0.0	5.1	19.2	0.6	6.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.5	0.0	40.9				0.0	16.1	77.3	31.7	13.2	0.0
LnGrp LOS	B	A	D				A	B	F	C	B	A
Approach Vol, veh/h		651						1210			761	
Approach Delay, s/veh		35.4						52.5			15.0	
Approach LOS		D						D			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		39.2			6.7	32.5		27.0				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.2				
Max Green Setting (Gmax), s		38.9			7.3	27.9		25.8				
Max Q Clear Time (g_c+I1), s		20.2			3.4	29.9		22.7				
Green Ext Time (p_c), s		0.6			0.0	0.0		0.1				

Intersection Summary												
HCM 6th Ctrl Delay			37.4									
HCM 6th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	235	1005	717	505	133	425	215	140	16	350	70
Future Volume (veh/h)	80	235	1005	717	505	133	425	215	140	16	350	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	242	1036	466	904	137	438	222	144	16	361	72
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	317	333	1044	606	1079	163	522	994	444	31	433	85
Arrive On Green	0.18	0.18	0.18	0.34	0.34	0.34	0.15	0.28	0.28	0.02	0.15	0.15
Sat Flow, veh/h	1781	1870	3170	1781	3173	481	3456	3554	1585	1781	2958	584
Grp Volume(v), veh/h	82	242	1036	466	533	508	438	222	144	16	215	218
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1784	1728	1777	1585	1781	1777	1765
Q Serve(g_s), s	4.4	13.6	19.9	26.1	29.4	29.4	13.8	5.4	8.0	1.0	13.1	13.4
Cycle Q Clear(g_c), s	4.4	13.6	19.9	26.1	29.4	29.4	13.8	5.4	8.0	1.0	13.1	13.4
Prop In Lane	1.00		1.00	1.00		0.27	1.00		1.00	1.00		0.33
Lane Grp Cap(c), veh/h	317	333	1044	606	636	606	522	994	444	31	260	258
V/C Ratio(X)	0.26	0.73	0.99	0.77	0.84	0.84	0.84	0.22	0.32	0.51	0.83	0.84
Avail Cap(c_a), veh/h	317	333	1044	712	747	713	783	1270	566	80	312	310
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.5	43.3	37.3	32.9	34.0	34.0	46.1	30.9	31.8	54.4	46.3	46.4
Incr Delay (d2), s/veh	0.4	7.7	25.9	4.4	7.3	7.7	5.2	0.1	0.4	12.4	14.5	16.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	6.9	17.2	11.5	14.0	13.4	6.1	2.3	3.1	0.5	6.7	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.9	51.0	63.2	37.3	41.3	41.7	51.2	31.0	32.3	66.8	60.8	62.7
LnGrp LOS	D	D	E	D	D	D	D	C	C	E	E	E
Approach Vol, veh/h		1360			1507			804			449	
Approach Delay, s/veh		59.6			40.2			42.3			61.9	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.7	36.6		25.0	21.6	21.7		43.4
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.4
Max Green Setting (Gmax), s	* 5	39.9		19.9	* 25	19.6		44.6
Max Q Clear Time (g_c+I1), s	3.0	10.0		21.9	15.8	15.4		31.4
Green Ext Time (p_c), s	0.0	1.8		0.0	1.1	0.9		6.6

Intersection Summary	
HCM 6th Ctrl Delay	49.4
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	25	800	1159	894
Future Volume (veh/h)	0	0	25	800	1159	894
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Work Zone On Approach				No	No	
Adj Sat Flow, veh/h/ln			1870	1870	1870	1870
Adj Flow Rate, veh/h			26	833	1207	931
Peak Hour Factor			0.96	0.96	0.96	0.96
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			124	1670	1441	1221
Arrive On Green			0.04	0.89	0.77	0.77
Sat Flow, veh/h			3456	1870	1870	1585
Grp Volume(v), veh/h			26	833	1207	931
Grp Sat Flow(s),veh/h/ln			1728	1870	1870	1585
Q Serve(g_s), s			0.4	4.7	22.6	17.7
Cycle Q Clear(g_c), s			0.4	4.7	22.6	17.7
Prop In Lane			1.00			1.00
Lane Grp Cap(c), veh/h			124	1670	1441	1221
V/C Ratio(X)			0.21	0.50	0.84	0.76
Avail Cap(c_a), veh/h			1276	2556	1692	1434
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh			25.4	0.6	4.0	3.5
Incr Delay (d2), s/veh			0.8	0.2	3.4	2.1
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.2	0.1	2.6	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			26.2	0.8	7.4	5.6
LnGrp LOS			C	A	A	A
Approach Vol, veh/h				859	2138	
Approach Delay, s/veh				1.6	6.6	
Approach LOS				A	A	

Timer - Assigned Phs	2		5	6
Phs Duration (G+Y+Rc), s	54.2		6.6	47.5
Change Period (Y+Rc), s	5.8		* 4.7	5.8
Max Green Setting (Gmax), s	74.0		* 20	49.0
Max Q Clear Time (g_c+I1), s	6.7		2.4	24.6
Green Ext Time (p_c), s	7.6		0.0	17.1

Intersection Summary	
HCM 6th Ctrl Delay	5.2
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	113	36	379	90	24	415
Future Vol, veh/h	113	36	379	90	24	415
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	123	39	412	98	26	451

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	964	461	0	0	510	0
Stage 1	461	-	-	-	-	-
Stage 2	503	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	283	600	-	-	1055	-
Stage 1	635	-	-	-	-	-
Stage 2	607	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	274	600	-	-	1055	-
Mov Cap-2 Maneuver	274	-	-	-	-	-
Stage 1	635	-	-	-	-	-
Stage 2	587	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.9	0	0.5
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	315	1055	-
HCM Lane V/C Ratio	-	-	0.514	0.025	-
HCM Control Delay (s)	-	-	27.9	8.5	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	2.8	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	358	6	20	383	9	31
Future Vol, veh/h	358	6	20	383	9	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	389	7	22	416	10	34

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	396	0	853	393
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	460	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1163	-	330	656
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	636	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1163	-	322	656
Mov Cap-2 Maneuver	-	-	-	-	322	-
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	620	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	532	-	-	1163	-
HCM Lane V/C Ratio	0.082	-	-	0.019	-
HCM Control Delay (s)	12.4	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

MOVEMENT SUMMARY

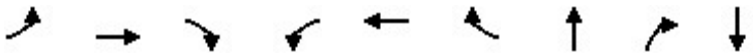
Site: 2 [CPP Sat Out Rockville Rd / Abernathy Rd (Site Folder: General)]

Cumulative plus Project Saturday
Special Event Outbound
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Abernathy Rd														
3	L2	182	2.0	202	2.0	0.603	12.3	LOS B	6.3	158.9	0.73	0.80	1.07	30.9
8	T1	215	2.0	239	2.0	0.603	12.3	LOS B	6.3	158.9	0.73	0.80	1.07	30.8
18	R2	120	2.0	133	2.0	0.603	12.3	LOS B	6.3	158.9	0.73	0.80	1.07	30.0
Approach		517	2.0	574	2.0	0.603	12.3	LOS B	6.3	158.9	0.73	0.80	1.07	30.6
East: Rockville Rd														
1	L2	45	2.0	50	2.0	0.320	8.2	LOS A	1.5	37.9	0.62	0.60	0.62	33.1
6	T1	156	2.0	173	2.0	0.320	8.2	LOS A	1.5	37.9	0.62	0.60	0.62	33.1
16	R2	30	2.0	33	2.0	0.320	8.2	LOS A	1.5	37.9	0.62	0.60	0.62	32.1
Approach		231	2.0	257	2.0	0.320	8.2	LOS A	1.5	37.9	0.62	0.60	0.62	33.0
North: Abernathy Rd														
7	L2	25	2.0	28	2.0	0.249	6.8	LOS A	1.1	28.9	0.56	0.50	0.56	34.0
4	T1	115	2.0	128	2.0	0.249	6.8	LOS A	1.1	28.9	0.56	0.50	0.56	33.9
14	R2	55	2.0	61	2.0	0.249	6.8	LOS A	1.1	28.9	0.56	0.50	0.56	33.0
Approach		195	2.0	217	2.0	0.249	6.8	LOS A	1.1	28.9	0.56	0.50	0.56	33.7
West: Rockville Rd														
5	L2	55	2.0	61	2.0	0.431	7.9	LOS A	2.5	65.3	0.49	0.35	0.49	33.4
2	T1	223	7.0	248	7.0	0.431	8.0	LOS A	2.5	65.3	0.49	0.35	0.49	33.2
12	R2	145	2.0	161	2.0	0.431	7.9	LOS A	2.5	65.3	0.49	0.35	0.49	32.4
Approach		423	4.6	470	4.6	0.431	7.9	LOS A	2.5	65.3	0.49	0.35	0.49	33.0
All Vehicles		1366	2.8	1518	2.8	0.603	9.5	LOS A	6.3	158.9	0.61	0.58	0.74	32.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	21	138	37	153	182	44	293	300	297
v/c Ratio	0.19	0.56	0.13	0.56	0.33	0.09	0.70	0.39	0.56
Control Delay	53.2	51.2	0.9	48.4	31.4	4.7	45.5	9.7	36.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.2	51.2	0.9	48.4	31.4	4.7	45.5	9.7	36.8
Queue Length 50th (ft)	12	79	0	87	80	0	164	49	150
Queue Length 95th (ft)	42	159	0	172	175	16	286	113	296
Internal Link Dist (ft)		1454			543		254		1444
Turn Bay Length (ft)	110		110	240		150		75	
Base Capacity (vph)	283	895	807	850	1491	1279	885	1238	582
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.15	0.05	0.18	0.12	0.03	0.33	0.24	0.51

Intersection Summary



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	11	72	40	40	86	511	17	12	354
v/c Ratio	0.04	0.22	0.10	0.10	0.25	0.25	0.02	0.04	0.25
Control Delay	30.0	5.8	18.5	18.5	26.6	12.1	0.0	29.9	18.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	5.8	18.5	18.5	26.6	12.1	0.0	29.9	18.5
Queue Length 50th (ft)	3	0	10	10	21	41	0	3	43
Queue Length 95th (ft)	15	22	24	24	90	171	0	16	130
Internal Link Dist (ft)	974			823		1085			2523
Turn Bay Length (ft)			180		160			180	
Base Capacity (vph)	946	887	1385	1394	936	2916	1322	1271	3226
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.08	0.03	0.03	0.09	0.18	0.01	0.01	0.11

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	192	157	63	80	55	490	30	397	99
v/c Ratio	0.42	0.26	0.19	0.11	0.17	0.21	0.11	0.28	0.14
Control Delay	33.4	21.1	36.5	16.3	37.0	18.4	40.4	23.3	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.4	21.1	36.5	16.3	37.0	18.4	40.4	23.3	2.8
Queue Length 50th (ft)	58	44	20	6	17	34	10	60	0
Queue Length 95th (ft)	#251	131	96	31	87	147	58	193	18
Internal Link Dist (ft)		828		952		920		1085	
Turn Bay Length (ft)	240		250		205		210		210
Base Capacity (vph)	824	863	941	1678	824	3370	824	2352	1098
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.18	0.07	0.05	0.07	0.15	0.04	0.17	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	177	849	36	183	607	453	8	177	210
v/c Ratio	0.41	0.53	0.12	0.19	0.71	0.29	0.03	0.31	0.48
Control Delay	42.0	17.1	45.7	29.1	38.4	16.2	48.9	33.0	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	17.1	45.7	29.1	38.4	16.2	48.9	33.0	8.6
Queue Length 50th (ft)	40	76	8	25	132	63	2	41	0
Queue Length 95th (ft)	114	170	34	65	#457	174	12	88	53
Internal Link Dist (ft)		1814		1587		624		920	
Turn Bay Length (ft)	300		300		240		245		
Base Capacity (vph)	850	2015	850	1918	850	1588	850	1197	674
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.42	0.04	0.10	0.71	0.29	0.01	0.15	0.31

Intersection Summary

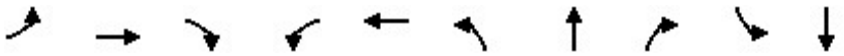
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	343	387	445	492	229	553
v/c Ratio	0.74	0.66	0.70	0.57	0.53	0.54
Control Delay	27.0	12.5	23.4	5.0	26.7	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.0	12.5	23.4	5.0	26.7	10.9
Queue Length 50th (ft)	81	32	97	0	28	78
Queue Length 95th (ft)	194	120	#312	62	82	256
Internal Link Dist (ft)	1288		1245			1196
Turn Bay Length (ft)					155	
Base Capacity (vph)	1141	1102	639	866	1177	1397
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.35	0.70	0.57	0.19	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	124	199	729	320	647	404	272	89	4	411
v/c Ratio	0.37	0.57	0.67	0.72	0.71	1.00	0.23	0.15	0.04	0.63
Control Delay	38.8	43.3	13.2	45.3	38.1	91.5	28.0	7.8	59.2	40.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	43.3	13.2	45.3	38.1	91.5	28.0	7.8	59.2	40.0
Queue Length 50th (ft)	68	113	64	180	176	123	58	0	2	107
Queue Length 95th (ft)	152	235	140	#469	387	#391	151	42	17	222
Internal Link Dist (ft)		1261			1089		822			911
Turn Bay Length (ft)	250		250			265		265	250	
Base Capacity (vph)	816	855	1093	642	1319	403	1485	717	95	1229
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.23	0.67	0.50	0.49	1.00	0.18	0.12	0.04	0.33

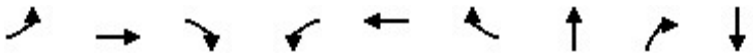
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	189	789	892	584
v/c Ratio	0.34	0.42	0.76	0.51
Control Delay	25.0	0.7	11.6	3.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	25.0	0.7	11.6	3.0
Queue Length 50th (ft)	28	0	158	18
Queue Length 95th (ft)	66	0	312	53
Internal Link Dist (ft)		932	822	
Turn Bay Length (ft)	280			315
Base Capacity (vph)	1331	1863	1624	1433
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.42	0.55	0.41

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	35	122	39	190	149	88	225	116	321
v/c Ratio	0.28	0.54	0.14	0.62	0.29	0.18	0.65	0.17	0.55
Control Delay	51.6	50.8	1.1	47.1	31.5	7.8	46.3	6.8	33.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.6	50.8	1.1	47.1	31.5	7.8	46.3	6.8	33.7
Queue Length 50th (ft)	20	69	0	105	74	0	125	11	154
Queue Length 95th (ft)	57	141	0	197	141	36	224	43	307
Internal Link Dist (ft)		1454			543		254		1444
Turn Bay Length (ft)	110		110	240		150		75	
Base Capacity (vph)	284	898	809	853	1504	1295	891	1161	585
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.14	0.05	0.22	0.10	0.07	0.25	0.10	0.55

Intersection Summary



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	10	46	11	11	16	48	279	24	4	405
v/c Ratio	0.02	0.10	0.02	0.02	0.03	0.10	0.12	0.02	0.01	0.20
Control Delay	27.3	0.4	16.1	16.1	0.1	23.8	10.6	0.1	28.7	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	0.4	16.1	16.1	0.1	23.8	10.6	0.1	28.7	13.6
Queue Length 50th (ft)	1	0	1	1	0	4	8	0	1	13
Queue Length 95th (ft)	17	0	12	12	0	59	94	0	10	142
Internal Link Dist (ft)	974			823			1085			2523
Turn Bay Length (ft)			180		200	160			180	
Base Capacity (vph)	1296	1134	1450	1462	1380	1232	3054	1380	1411	3222
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.04	0.01	0.01	0.01	0.04	0.09	0.02	0.00	0.13

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	36	81	42	77	55	325	14	384	49
v/c Ratio	0.08	0.11	0.09	0.05	0.11	0.09	0.04	0.19	0.05
Control Delay	32.8	10.0	31.9	16.5	30.8	11.4	36.7	17.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	10.0	31.9	16.5	30.8	11.4	36.7	17.4	0.1
Queue Length 50th (ft)	7	4	8	5	10	8	3	32	0
Queue Length 95th (ft)	62	44	69	33	83	89	32	172	0
Internal Link Dist (ft)		828		952		920		1085	
Turn Bay Length (ft)	240		250		205		210		210
Base Capacity (vph)	1084	1031	1177	2254	1084	3940	1084	2731	1252
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.08	0.04	0.03	0.05	0.08	0.01	0.14	0.04

Intersection Summary



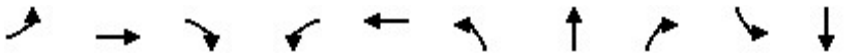
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	99	285	40	167	149	296	11	257	218
v/c Ratio	0.22	0.19	0.10	0.16	0.30	0.20	0.03	0.34	0.43
Control Delay	36.2	13.0	38.3	24.1	35.3	14.9	41.3	25.2	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.2	13.0	38.3	24.1	35.3	14.9	41.3	25.2	6.8
Queue Length 50th (ft)	16	12	6	16	24	32	2	43	0
Queue Length 95th (ft)	70	60	36	55	96	114	15	114	54
Internal Link Dist (ft)		1814		1587		624		920	
Turn Bay Length (ft)	300		300		240		245		
Base Capacity (vph)	1131	2477	1131	2532	1131	1602	1131	1567	822
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.12	0.04	0.07	0.13	0.18	0.01	0.16	0.27

Intersection Summary



Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	177	394	312	557	156	520
v/c Ratio	0.42	0.69	0.48	0.61	0.35	0.54
Control Delay	17.0	12.4	16.0	5.1	22.2	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	12.4	16.0	5.1	22.2	10.1
Queue Length 50th (ft)	30	22	46	0	13	48
Queue Length 95th (ft)	95	107	180	64	59	237
Internal Link Dist (ft)	1288		1245			1196
Turn Bay Length (ft)					155	
Base Capacity (vph)	1411	1312	821	1009	1532	1632
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.30	0.38	0.55	0.10	0.32

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	113	168	843	229	605	449	166	46	4	362
v/c Ratio	0.42	0.60	0.66	0.55	0.70	0.77	0.13	0.07	0.04	0.62
Control Delay	38.3	43.3	7.6	32.7	31.7	45.5	20.8	0.2	43.2	31.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	43.3	7.6	32.7	31.7	45.5	20.8	0.2	43.2	31.4
Queue Length 50th (ft)	54	84	38	109	147	114	28	0	2	72
Queue Length 95th (ft)	122	171	84	212	236	#243	69	0	14	133
Internal Link Dist (ft)		1261			1089		822			911
Turn Bay Length (ft)	250		250			265		265	250	
Base Capacity (vph)	379	398	1269	577	1199	581	1311	670	110	871
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.42	0.66	0.40	0.50	0.77	0.13	0.07	0.04	0.42

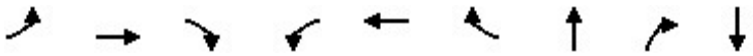
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	135	673	782	568
v/c Ratio	0.21	0.36	0.60	0.45
Control Delay	22.1	0.5	7.6	1.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	22.1	0.5	7.6	1.7
Queue Length 50th (ft)	15	0	113	2
Queue Length 95th (ft)	50	0	219	26
Internal Link Dist (ft)		932	822	
Turn Bay Length (ft)	280			315
Base Capacity (vph)	1762	1863	1721	1504
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.08	0.36	0.45	0.38

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	21	146	38	153	183	45	307	298	322
v/c Ratio	0.20	0.59	0.13	0.58	0.34	0.09	0.73	0.39	0.58
Control Delay	55.2	53.6	1.0	50.9	32.6	5.0	48.3	10.4	38.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	53.6	1.0	50.9	32.6	5.0	48.3	10.4	38.1
Queue Length 50th (ft)	13	88	0	91	85	0	181	55	170
Queue Length 95th (ft)	42	171	0	175	178	17	304	117	333
Internal Link Dist (ft)		1454			543		254		1444
Turn Bay Length (ft)	110		110	240		150		75	
Base Capacity (vph)	268	848	769	805	1420	1222	838	1196	553
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.17	0.05	0.19	0.13	0.04	0.37	0.25	0.58

Intersection Summary



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	15	72	40	40	76	607	17	12	398
v/c Ratio	0.05	0.22	0.10	0.10	0.23	0.30	0.02	0.04	0.28
Control Delay	29.8	5.8	18.8	18.7	26.8	12.6	0.0	30.1	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	5.8	18.8	18.7	26.8	12.6	0.0	30.1	18.6
Queue Length 50th (ft)	4	0	10	10	19	50	0	3	48
Queue Length 95th (ft)	18	22	24	24	82	208	0	16	146
Internal Link Dist (ft)	974			823		1085			2523
Turn Bay Length (ft)			180		160			180	
Base Capacity (vph)	941	885	1378	1387	934	2902	1316	1223	3219
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.08	0.03	0.03	0.08	0.21	0.01	0.01	0.12

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	199	157	60	85	55	580	27	435	102
v/c Ratio	0.43	0.25	0.19	0.12	0.17	0.25	0.11	0.30	0.14
Control Delay	33.5	21.2	37.0	15.8	37.4	18.6	41.3	23.4	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	21.2	37.0	15.8	37.4	18.6	41.3	23.4	3.1
Queue Length 50th (ft)	62	45	19	7	18	42	9	67	0
Queue Length 95th (ft)	#265	131	93	31	87	174	53	212	20
Internal Link Dist (ft)		828		952		920		1085	
Turn Bay Length (ft)	240		250		205		210		210
Base Capacity (vph)	815	859	930	1655	815	3333	815	2321	1085
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.18	0.06	0.05	0.07	0.17	0.03	0.19	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	185	849	36	183	607	536	8	186	241
v/c Ratio	0.43	0.53	0.12	0.19	0.72	0.34	0.03	0.31	0.52
Control Delay	42.2	17.2	46.1	29.5	38.9	17.1	49.3	33.0	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.2	17.2	46.1	29.5	38.9	17.1	49.3	33.0	8.6
Queue Length 50th (ft)	42	76	8	25	133	78	2	43	0
Queue Length 95th (ft)	119	170	35	65	#459	213	12	93	56
Internal Link Dist (ft)		1814		1587		624		920	
Turn Bay Length (ft)	300		300		240		245		
Base Capacity (vph)	845	2007	845	1906	845	1597	845	1190	692
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.42	0.04	0.10	0.72	0.34	0.01	0.16	0.35

Intersection Summary

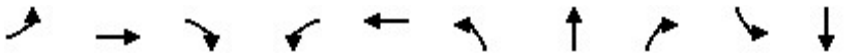
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	406	387	445	492	235	553
v/c Ratio	0.80	0.62	0.72	0.58	0.54	0.56
Control Delay	29.8	11.3	25.6	5.2	27.7	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	11.3	25.6	5.2	27.7	11.8
Queue Length 50th (ft)	101	32	107	0	31	90
Queue Length 95th (ft)	237	121	#314	63	84	255
Internal Link Dist (ft)	1288		1245			1196
Turn Bay Length (ft)					155	
Base Capacity (vph)	1092	1066	614	852	1128	1341
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.36	0.72	0.58	0.21	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	120	198	729	329	668	404	272	89	11	411
v/c Ratio	0.36	0.57	0.68	0.72	0.71	1.02	0.23	0.15	0.12	0.63
Control Delay	39.0	43.7	14.2	45.1	38.2	94.8	28.4	7.8	60.3	40.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	43.7	14.2	45.1	38.2	94.8	28.4	7.8	60.3	40.5
Queue Length 50th (ft)	66	114	70	186	185	~126	59	0	6	108
Queue Length 95th (ft)	147	234	150	#491	403	#391	151	42	33	222
Internal Link Dist (ft)		1261			1089		822			911
Turn Bay Length (ft)	250		250			265		265	250	
Base Capacity (vph)	805	845	1074	634	1301	398	1466	709	94	1214
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.23	0.68	0.52	0.51	1.02	0.19	0.13	0.12	0.34

Intersection Summary

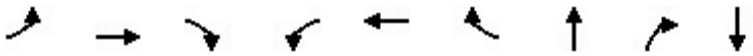
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	189	789	906	598
v/c Ratio	0.34	0.42	0.76	0.52
Control Delay	25.5	0.7	11.8	3.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	25.5	0.7	11.8	3.1
Queue Length 50th (ft)	29	0	166	20
Queue Length 95th (ft)	66	0	322	56
Internal Link Dist (ft)		932	822	
Turn Bay Length (ft)	280			315
Base Capacity (vph)	1308	1863	1605	1421
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.42	0.56	0.42

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	35	131	40	190	151	90	247	115	352
v/c Ratio	0.28	0.56	0.15	0.62	0.29	0.18	0.68	0.16	0.62
Control Delay	53.6	52.2	1.1	48.4	32.0	7.8	47.4	7.5	37.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	52.2	1.1	48.4	32.0	7.8	47.4	7.5	37.2
Queue Length 50th (ft)	21	77	0	109	77	0	141	14	181
Queue Length 95th (ft)	58	154	0	202	146	38	249	47	#354
Internal Link Dist (ft)		1454			543		254		1444
Turn Bay Length (ft)	110		110	240		150		75	
Base Capacity (vph)	276	874	790	831	1465	1264	868	1153	571
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.15	0.05	0.23	0.10	0.07	0.28	0.10	0.62

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	15	46	11	11	16	38	397	24	4	480
v/c Ratio	0.04	0.11	0.02	0.02	0.03	0.10	0.17	0.02	0.01	0.23
Control Delay	27.5	0.5	16.8	16.8	0.1	25.3	10.6	0.1	29.3	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.5	0.5	16.8	16.8	0.1	25.3	10.6	0.1	29.3	13.5
Queue Length 50th (ft)	2	0	1	1	0	4	12	0	1	15
Queue Length 95th (ft)	23	0	12	12	0	50	133	0	10	170
Internal Link Dist (ft)	974			823			1085			2523
Turn Bay Length (ft)			180		200	160			180	
Base Capacity (vph)	1274	1116	1434	1445	1366	1211	3020	1366	1398	3218
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.04	0.01	0.01	0.01	0.03	0.13	0.02	0.00	0.15

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	43	81	42	83	55	431	12	449	54
v/c Ratio	0.09	0.11	0.09	0.06	0.11	0.12	0.03	0.22	0.06
Control Delay	32.5	10.1	32.5	16.2	31.3	11.3	37.5	17.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	10.1	32.5	16.2	31.3	11.3	37.5	17.3	0.1
Queue Length 50th (ft)	8	4	8	6	11	11	2	39	0
Queue Length 95th (ft)	70	44	69	34	83	117	30	202	0
Internal Link Dist (ft)		828		952		920		1085	
Turn Bay Length (ft)	240		250		205		210		210
Base Capacity (vph)	1069	1022	1160	2205	1069	3879	1069	2681	1232
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.08	0.04	0.04	0.05	0.11	0.01	0.17	0.04

Intersection Summary



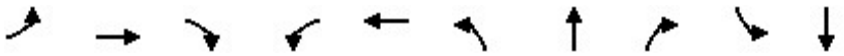
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	108	285	40	167	147	393	11	272	270
v/c Ratio	0.24	0.19	0.10	0.16	0.30	0.26	0.03	0.35	0.48
Control Delay	36.4	13.0	38.6	24.4	35.7	15.6	41.5	25.3	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.4	13.0	38.6	24.4	35.7	15.6	41.5	25.3	6.8
Queue Length 50th (ft)	18	13	6	17	25	45	2	45	0
Queue Length 95th (ft)	75	60	36	55	95	153	15	121	60
Internal Link Dist (ft)		1814		1587		624		920	
Turn Bay Length (ft)	300		300		240		245		
Base Capacity (vph)	1119	2455	1119	2506	1119	1598	1119	1551	845
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.12	0.04	0.07	0.13	0.25	0.01	0.18	0.32

Intersection Summary



Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	252	394	312	557	165	520
v/c Ratio	0.56	0.66	0.50	0.62	0.37	0.55
Control Delay	19.3	11.4	16.7	5.2	22.8	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	11.4	16.7	5.2	22.8	10.6
Queue Length 50th (ft)	45	23	51	0	15	57
Queue Length 95th (ft)	133	107	181	64	62	237
Internal Link Dist (ft)	1288		1245			1196
Turn Bay Length (ft)					155	
Base Capacity (vph)	1411	1312	798	997	1487	1598
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.30	0.39	0.56	0.11	0.33

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	110	167	843	270	616	449	166	46	13	362
v/c Ratio	0.42	0.60	0.69	0.64	0.69	0.78	0.13	0.07	0.12	0.62
Control Delay	38.4	43.6	9.4	35.3	31.5	46.3	21.0	0.2	45.0	31.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	43.6	9.4	35.3	31.5	46.3	21.0	0.2	45.0	31.7
Queue Length 50th (ft)	54	85	49	134	150	117	29	0	7	73
Queue Length 95th (ft)	118	171	101	252	241	#243	69	0	28	133
Internal Link Dist (ft)		1261			1089		822			911
Turn Bay Length (ft)	250		250			265		265	250	
Base Capacity (vph)	376	394	1217	572	1188	576	1300	665	109	863
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.42	0.69	0.47	0.52	0.78	0.13	0.07	0.12	0.42

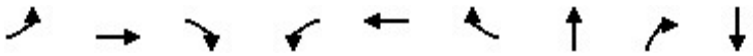
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	135	673	806	592
v/c Ratio	0.22	0.36	0.61	0.46
Control Delay	22.8	0.5	7.7	1.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	22.8	0.5	7.7	1.8
Queue Length 50th (ft)	17	0	120	4
Queue Length 95th (ft)	50	0	232	30
Internal Link Dist (ft)		932	822	
Turn Bay Length (ft)	280			315
Base Capacity (vph)	1724	1863	1708	1497
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.08	0.36	0.47	0.40

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	35	127	40	190	152	92	254	115	342
v/c Ratio	0.28	0.56	0.15	0.62	0.30	0.18	0.68	0.16	0.60
Control Delay	53.6	52.4	1.1	48.5	32.4	7.7	47.5	7.8	36.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	52.4	1.1	48.5	32.4	7.7	47.5	7.8	36.8
Queue Length 50th (ft)	21	74	0	109	78	0	145	15	175
Queue Length 95th (ft)	58	150	0	203	148	38	255	48	344
Internal Link Dist (ft)		1454			543		254		1444
Turn Bay Length (ft)	110		110	240		150		75	
Base Capacity (vph)	276	873	789	829	1462	1262	866	1156	569
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.15	0.05	0.23	0.10	0.07	0.29	0.10	0.60

Intersection Summary



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	14	46	11	11	16	38	359	24	4	517
v/c Ratio	0.04	0.11	0.02	0.02	0.03	0.10	0.15	0.02	0.01	0.24
Control Delay	27.8	0.5	17.0	17.0	0.1	25.4	10.5	0.1	29.3	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	0.5	17.0	17.0	0.1	25.4	10.5	0.1	29.3	13.5
Queue Length 50th (ft)	2	0	1	1	0	4	11	0	1	17
Queue Length 95th (ft)	21	0	12	12	0	50	120	0	10	183
Internal Link Dist (ft)	974			823			1085			2523
Turn Bay Length (ft)			180		200	160			180	
Base Capacity (vph)	1256	1101	1431	1442	1363	1193	3013	1363	1396	3216
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.04	0.01	0.01	0.01	0.03	0.12	0.02	0.00	0.16

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	41	81	42	82	55	397	14	480	57
v/c Ratio	0.09	0.11	0.09	0.06	0.11	0.11	0.04	0.23	0.06
Control Delay	32.8	10.2	32.6	16.3	31.4	11.3	37.3	17.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	10.2	32.6	16.3	31.4	11.3	37.3	17.3	0.1
Queue Length 50th (ft)	8	4	8	6	11	10	3	42	0
Queue Length 95th (ft)	67	44	69	34	83	108	32	216	0
Internal Link Dist (ft)		828		952		920		1085	
Turn Bay Length (ft)	240		250		205		210		210
Base Capacity (vph)	1066	1019	1155	2201	1066	3855	1066	2668	1227
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.08	0.04	0.04	0.05	0.10	0.01	0.18	0.05

Intersection Summary



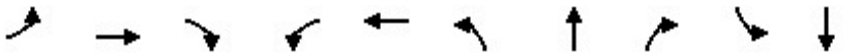
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	104	285	40	167	147	362	11	278	293
v/c Ratio	0.23	0.19	0.10	0.16	0.30	0.24	0.03	0.35	0.50
Control Delay	36.7	13.2	38.7	24.5	35.8	15.3	41.7	25.1	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	13.2	38.7	24.5	35.8	15.3	41.7	25.1	6.7
Queue Length 50th (ft)	18	13	6	17	25	41	2	46	0
Queue Length 95th (ft)	72	60	36	55	95	140	15	123	61
Internal Link Dist (ft)		1814		1587		624		920	
Turn Bay Length (ft)	300		300		240		245		
Base Capacity (vph)	1115	2445	1115	2497	1115	1606	1115	1545	856
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.12	0.04	0.07	0.13	0.23	0.01	0.18	0.34

Intersection Summary



Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	227	394	312	557	169	520
v/c Ratio	0.52	0.67	0.49	0.61	0.37	0.54
Control Delay	18.6	11.8	16.5	5.2	22.5	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	11.8	16.5	5.2	22.5	10.3
Queue Length 50th (ft)	40	23	50	0	15	54
Queue Length 95th (ft)	121	108	182	64	63	237
Internal Link Dist (ft)	1288		1245			1196
Turn Bay Length (ft)					155	
Base Capacity (vph)	1384	1292	807	1001	1505	1614
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.30	0.39	0.56	0.11	0.32

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	110	167	843	290	620	449	166	46	10	362
v/c Ratio	0.42	0.61	0.71	0.67	0.69	0.78	0.13	0.07	0.09	0.63
Control Delay	38.7	44.1	10.3	36.6	31.3	46.9	21.3	0.2	44.8	32.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	44.1	10.3	36.6	31.3	46.9	21.3	0.2	44.8	32.0
Queue Length 50th (ft)	54	86	53	146	152	117	29	0	5	73
Queue Length 95th (ft)	118	171	107	272	243	#243	69	0	23	133
Internal Link Dist (ft)		1261			1089		822			911
Turn Bay Length (ft)	250		250			265		265	250	
Base Capacity (vph)	374	392	1194	569	1179	573	1294	663	109	859
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.43	0.71	0.51	0.53	0.78	0.13	0.07	0.09	0.42

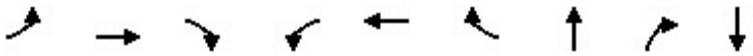
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	135	673	818	603
v/c Ratio	0.22	0.36	0.61	0.47
Control Delay	23.1	0.5	7.8	1.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.1	0.5	7.8	1.9
Queue Length 50th (ft)	17	0	123	5
Queue Length 95th (ft)	50	0	238	31
Internal Link Dist (ft)		932	822	
Turn Bay Length (ft)	280			315
Base Capacity (vph)	1712	1863	1699	1491
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.08	0.36	0.48	0.40

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	23	155	40	155	184	46	322	328	344
v/c Ratio	0.21	0.61	0.14	0.58	0.36	0.10	0.75	0.42	0.64
Control Delay	56.9	54.9	1.0	52.3	35.0	5.4	49.1	11.1	41.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.9	54.9	1.0	52.3	35.0	5.4	49.1	11.1	41.1
Queue Length 50th (ft)	15	96	0	95	102	0	195	66	192
Queue Length 95th (ft)	47	183	0	181	183	18	324	135	#390
Internal Link Dist (ft)		1454			543		254		1444
Turn Bay Length (ft)	110		110	240		150		75	
Base Capacity (vph)	262	829	754	788	1390	1196	820	1193	540
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.19	0.05	0.20	0.13	0.04	0.39	0.27	0.64

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	19	85	50	50	8	106	537	33	25	367
v/c Ratio	0.07	0.26	0.13	0.12	0.02	0.30	0.28	0.04	0.09	0.27
Control Delay	30.7	8.3	19.9	19.9	0.0	27.8	13.3	0.1	30.3	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.7	8.3	19.9	19.9	0.0	27.8	13.3	0.1	30.3	20.2
Queue Length 50th (ft)	5	0	13	13	0	27	44	0	7	46
Queue Length 95th (ft)	21	32	29	29	0	107	186	0	26	140
Internal Link Dist (ft)	974			823			1085			2523
Turn Bay Length (ft)			180		200	160			180	
Base Capacity (vph)	889	831	1315	1329	1261	869	2768	1260	1127	3180
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.10	0.04	0.04	0.01	0.12	0.19	0.03	0.02	0.12

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	208	151	62	78	51	522	264	433	107
v/c Ratio	0.62	0.38	0.29	0.15	0.26	0.46	0.68	0.29	0.14
Control Delay	44.2	28.7	44.0	18.8	44.4	29.0	42.8	21.5	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	28.7	44.0	18.8	44.4	29.0	42.8	21.5	3.2
Queue Length 50th (ft)	80	53	24	7	20	69	99	71	0
Queue Length 95th (ft)	#313	140	100	32	87	174	#431	209	22
Internal Link Dist (ft)		828		952		920		1085	
Turn Bay Length (ft)	240		250		205		210		210
Base Capacity (vph)	539	508	674	1141	539	2703	539	1931	925
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.30	0.09	0.07	0.09	0.19	0.49	0.22	0.12

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	205	1057	28	170	636	506	11	159	250
v/c Ratio	0.45	0.61	0.09	0.18	0.76	0.33	0.04	0.28	0.54
Control Delay	42.6	23.1	47.8	29.8	41.1	16.9	50.4	33.8	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.6	23.1	47.8	29.8	41.1	16.9	50.4	33.8	9.0
Queue Length 50th (ft)	43	113	6	24	131	62	2	34	0
Queue Length 95th (ft)	130	295	29	62	#493	194	15	82	57
Internal Link Dist (ft)		1814		1587		624		920	
Turn Bay Length (ft)	300		300		240		245		
Base Capacity (vph)	837	1946	837	1890	837	1556	837	1178	694
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.54	0.03	0.09	0.76	0.33	0.01	0.13	0.36

Intersection Summary

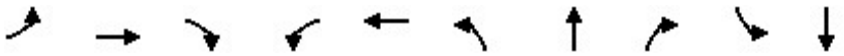
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	239	516	630	652	141	707
v/c Ratio	0.48	0.86	0.79	0.62	0.42	0.69
Control Delay	21.5	27.3	26.7	4.6	33.0	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	27.3	26.7	4.6	33.0	15.0
Queue Length 50th (ft)	72	103	190	0	25	157
Queue Length 95th (ft)	145	#252	#469	63	60	365
Internal Link Dist (ft)	1288		1245			1196
Turn Bay Length (ft)					155	
Base Capacity (vph)	804	834	942	1123	813	1358
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.62	0.67	0.58	0.17	0.52

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	94	250	938	467	939	411	313	172	5	479
v/c Ratio	0.32	0.80	0.90	0.88	0.86	0.70	0.25	0.25	0.07	0.84
Control Delay	51.8	72.6	35.9	60.7	50.4	60.4	33.1	6.1	73.0	67.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.8	72.6	35.9	60.7	50.4	60.4	33.1	6.1	73.0	67.1
Queue Length 50th (ft)	75	221	253	379	372	167	95	0	4	201
Queue Length 95th (ft)	144	355	332	#851	#728	#335	187	59	22	323
Internal Link Dist (ft)		1261			1089		822			911
Turn Bay Length (ft)	250		250			265		265	250	
Base Capacity (vph)	296	311	1041	602	1230	589	1268	677	68	588
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.80	0.90	0.78	0.76	0.70	0.25	0.25	0.07	0.81

Intersection Summary

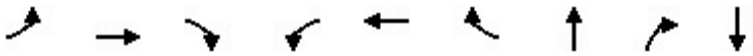
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	65	941	1237	925
v/c Ratio	0.17	0.51	0.79	0.64
Control Delay	27.8	1.0	11.6	2.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.8	1.0	11.6	2.9
Queue Length 50th (ft)	12	0	285	12
Queue Length 95th (ft)	29	0	#722	43
Internal Link Dist (ft)		932	822	
Turn Bay Length (ft)	280			315
Base Capacity (vph)	1118	1863	1496	1425
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.06	0.51	0.83	0.65

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	34	148	40	199	153	85	267	170	364
v/c Ratio	0.29	0.60	0.14	0.64	0.28	0.16	0.70	0.23	0.67
Control Delay	56.5	54.4	1.0	50.6	32.1	7.7	49.3	8.3	41.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	54.4	1.0	50.6	32.1	7.7	49.3	8.3	41.4
Queue Length 50th (ft)	21	90	0	119	80	0	159	25	202
Queue Length 95th (ft)	60	177	0	221	151	36	280	66	#428
Internal Link Dist (ft)		1454			543		254		1444
Turn Bay Length (ft)	110		110	240		150		75	
Base Capacity (vph)	266	840	762	798	1408	1217	834	1143	547
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.18	0.05	0.25	0.11	0.07	0.32	0.15	0.67

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	23	69	23	24	33	80	319	33	7	415
v/c Ratio	0.10	0.20	0.06	0.06	0.07	0.24	0.16	0.03	0.03	0.29
Control Delay	30.2	4.9	19.2	19.3	0.3	27.1	11.9	0.1	30.8	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.2	4.9	19.2	19.3	0.3	27.1	11.9	0.1	30.8	18.7
Queue Length 50th (ft)	6	0	6	6	0	20	23	0	2	51
Queue Length 95th (ft)	31	19	21	22	0	87	110	0	14	155
Internal Link Dist (ft)	974			823			1085			2523
Turn Bay Length (ft)			180		200	160			180	
Base Capacity (vph)	760	881	1372	1394	1311	930	2888	1310	1218	3194
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.08	0.02	0.02	0.03	0.09	0.11	0.03	0.01	0.13

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	65	98	38	87	49	380	16	413	60
v/c Ratio	0.18	0.18	0.11	0.10	0.14	0.14	0.06	0.27	0.08
Control Delay	32.7	9.7	34.9	17.6	33.7	13.6	38.5	19.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.7	9.7	34.9	17.6	33.7	13.6	38.5	19.9	0.2
Queue Length 50th (ft)	17	5	10	8	13	21	4	55	0
Queue Length 95th (ft)	95	49	65	35	77	107	37	190	0
Internal Link Dist (ft)		828		952		920		1085	
Turn Bay Length (ft)	240		250		205		210		210
Base Capacity (vph)	956	898	1107	1987	956	3692	956	2556	1182
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.11	0.03	0.04	0.05	0.10	0.02	0.16	0.05

Intersection Summary



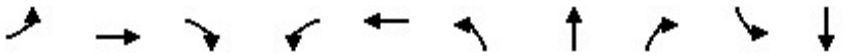
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	147	777	22	163	217	386	27	174	283
v/c Ratio	0.33	0.43	0.06	0.16	0.42	0.31	0.08	0.27	0.54
Control Delay	37.9	21.2	43.4	25.7	36.4	17.9	42.8	28.1	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	21.2	43.4	25.7	36.4	17.9	42.8	28.1	8.1
Queue Length 50th (ft)	24	65	3	17	36	40	4	30	0
Queue Length 95th (ft)	99	238	24	58	135	143	28	86	63
Internal Link Dist (ft)		1814		1587		624		920	
Turn Bay Length (ft)	300		300		240		245		
Base Capacity (vph)	1014	2309	1014	2279	1014	1427	1014	1410	801
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.34	0.02	0.07	0.21	0.27	0.03	0.12	0.35

Intersection Summary



Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	89	511	489	721	63	684
v/c Ratio	0.17	0.83	0.66	0.68	0.18	0.76
Control Delay	14.7	22.7	19.5	5.2	28.1	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.7	22.7	19.5	5.2	28.1	17.5
Queue Length 50th (ft)	17	71	115	0	8	129
Queue Length 95th (ft)	57	238	283	64	32	349
Internal Link Dist (ft)	1288		1245			1196
Turn Bay Length (ft)					155	
Base Capacity (vph)	1121	1072	1242	1295	615	1491
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.48	0.39	0.56	0.10	0.46

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	74	250	1036	435	885	438	222	144	10	433
v/c Ratio	0.28	0.91	0.95	0.83	0.83	0.62	0.17	0.21	0.14	0.83
Control Delay	51.3	87.0	38.6	54.1	45.7	50.6	27.9	5.7	64.9	64.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	87.0	38.6	54.1	45.7	50.6	27.9	5.7	64.9	64.7
Queue Length 50th (ft)	58	222	275	361	360	177	64	0	8	182
Queue Length 95th (ft)	109	#392	#390	#514	447	235	106	49	28	#257
Internal Link Dist (ft)		1261			1089		822			911
Turn Bay Length (ft)	250		250			265		265	250	
Base Capacity (vph)	271	284	1094	582	1192	704	1329	684	72	560
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.88	0.95	0.75	0.74	0.62	0.17	0.21	0.14	0.77

Intersection Summary

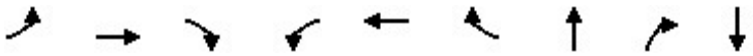
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	26	833	1172	896
v/c Ratio	0.07	0.45	0.70	0.59
Control Delay	26.6	0.8	7.3	2.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.6	0.8	7.3	2.0
Queue Length 50th (ft)	4	0	0	0
Queue Length 95th (ft)	15	0	#639	22
Internal Link Dist (ft)		932	822	
Turn Bay Length (ft)	280			315
Base Capacity (vph)	1167	1863	1562	1472
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.45	0.75	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	23	163	41	155	185	47	335	325	370
v/c Ratio	0.22	0.62	0.14	0.59	0.36	0.10	0.75	0.42	0.70
Control Delay	58.5	56.0	1.0	53.8	35.6	5.7	49.5	11.5	44.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.5	56.0	1.0	53.8	35.6	5.7	49.5	11.5	44.6
Queue Length 50th (ft)	15	103	0	97	104	0	207	69	217
Queue Length 95th (ft)	47	197	0	187	189	19	339	139	#458
Internal Link Dist (ft)		1454			543		254		1444
Turn Bay Length (ft)	110		110	240		150		75	
Base Capacity (vph)	257	814	741	773	1363	1175	804	1188	531
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.20	0.06	0.20	0.14	0.04	0.42	0.27	0.70

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	23	85	50	50	8	106	634	33	25	410
v/c Ratio	0.09	0.26	0.13	0.13	0.02	0.30	0.35	0.04	0.09	0.30
Control Delay	31.7	8.4	21.0	21.0	0.0	28.5	15.5	0.1	31.5	20.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	8.4	21.0	21.0	0.0	28.5	15.5	0.1	31.5	20.4
Queue Length 50th (ft)	6	0	13	13	0	28	55	0	7	54
Queue Length 95th (ft)	25	33	30	30	0	109	225	0	26	157
Internal Link Dist (ft)	974			823			1085			2523
Turn Bay Length (ft)			180		200	160			180	
Base Capacity (vph)	869	817	1284	1298	1234	853	2703	1233	1102	3126
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.10	0.04	0.04	0.01	0.12	0.23	0.03	0.02	0.13

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	215	151	62	83	51	612	266	471	110
v/c Ratio	0.64	0.38	0.30	0.16	0.26	0.51	0.69	0.31	0.15
Control Delay	45.3	29.3	45.2	18.5	45.6	29.8	44.2	21.6	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.3	29.3	45.2	18.5	45.6	29.8	44.2	21.6	3.5
Queue Length 50th (ft)	87	55	26	8	21	86	105	79	0
Queue Length 95th (ft)	#328	140	100	32	87	206	#435	228	25
Internal Link Dist (ft)		828		952		920		1085	
Turn Bay Length (ft)	240		250		205		210		210
Base Capacity (vph)	520	494	650	1103	520	2610	520	1864	898
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.31	0.10	0.08	0.10	0.23	0.51	0.25	0.12

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	213	1057	28	170	636	589	11	168	281
v/c Ratio	0.46	0.61	0.09	0.18	0.76	0.38	0.04	0.29	0.57
Control Delay	42.7	23.1	48.1	30.0	41.3	18.1	50.5	34.0	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	23.1	48.1	30.0	41.3	18.1	50.5	34.0	9.1
Queue Length 50th (ft)	45	113	6	24	132	78	2	36	0
Queue Length 95th (ft)	135	295	29	63	#495	236	15	86	60
Internal Link Dist (ft)		1814		1587		624		920	
Turn Bay Length (ft)	300		300		240		245		
Base Capacity (vph)	834	1942	834	1882	834	1559	834	1174	713
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.54	0.03	0.09	0.76	0.38	0.01	0.14	0.39

Intersection Summary

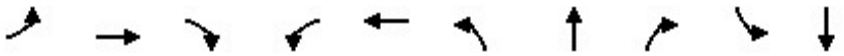
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	302	516	630	652	147	707
v/c Ratio	0.60	0.86	0.79	0.62	0.43	0.69
Control Delay	24.3	27.3	26.9	4.6	33.1	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	27.3	26.9	4.6	33.1	15.0
Queue Length 50th (ft)	95	104	191	0	27	158
Queue Length 95th (ft)	185	#252	#472	63	62	365
Internal Link Dist (ft)	1288		1245			1196
Turn Bay Length (ft)					155	
Base Capacity (vph)	803	833	941	1122	812	1356
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.62	0.67	0.58	0.18	0.52

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	94	250	938	475	962	411	313	172	13	479
v/c Ratio	0.32	0.81	0.91	0.88	0.87	0.70	0.26	0.26	0.19	0.84
Control Delay	52.1	73.5	37.5	61.1	51.1	60.9	35.1	6.5	76.5	67.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.1	73.5	37.5	61.1	51.1	60.9	35.1	6.5	76.5	67.8
Queue Length 50th (ft)	76	224	263	387	385	170	96	0	11	204
Queue Length 95th (ft)	144	355	336	#872	#758	#335	187	59	41	323
Internal Link Dist (ft)		1261			1089		822			911
Turn Bay Length (ft)	250		250			265		265	250	
Base Capacity (vph)	295	309	1031	599	1222	586	1208	653	67	585
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.81	0.91	0.79	0.79	0.70	0.26	0.26	0.19	0.82

Intersection Summary

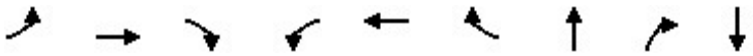
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	65	941	1251	939
v/c Ratio	0.17	0.51	0.80	0.65
Control Delay	27.8	1.0	12.1	3.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.8	1.0	12.1	3.1
Queue Length 50th (ft)	12	0	295	13
Queue Length 95th (ft)	29	0	#734	45
Internal Link Dist (ft)		932	822	
Turn Bay Length (ft)	280			315
Base Capacity (vph)	1118	1863	1496	1425
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.06	0.51	0.84	0.66

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	34	157	41	199	156	88	288	169	395
v/c Ratio	0.29	0.62	0.14	0.65	0.29	0.17	0.72	0.23	0.74
Control Delay	58.4	55.9	1.0	52.2	32.8	7.7	50.4	9.0	46.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.4	55.9	1.0	52.2	32.8	7.7	50.4	9.0	46.3
Queue Length 50th (ft)	22	99	0	123	84	0	177	28	234
Queue Length 95th (ft)	62	191	0	228	157	38	307	70	#512
Internal Link Dist (ft)		1454			543		254		1444
Turn Bay Length (ft)	110		110	240		150		75	
Base Capacity (vph)	259	818	745	777	1371	1188	811	1137	533
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.19	0.06	0.26	0.11	0.07	0.36	0.15	0.74

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	28	69	23	24	33	80	437	33	7	490
v/c Ratio	0.12	0.20	0.06	0.06	0.07	0.24	0.21	0.03	0.03	0.33
Control Delay	31.2	4.9	20.8	20.8	0.3	28.4	11.8	0.1	32.6	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	4.9	20.8	20.8	0.3	28.4	11.8	0.1	32.6	18.8
Queue Length 50th (ft)	7	0	6	6	0	21	34	0	2	62
Queue Length 95th (ft)	36	19	22	23	0	89	150	0	15	186
Internal Link Dist (ft)	974			823			1085			2523
Turn Bay Length (ft)			180		200	160			180	
Base Capacity (vph)	728	861	1339	1361	1282	905	2820	1282	1181	3135
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.08	0.02	0.02	0.03	0.09	0.15	0.03	0.01	0.16

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	73	98	38	92	49	487	20	478	65
v/c Ratio	0.20	0.18	0.11	0.11	0.14	0.18	0.07	0.30	0.08
Control Delay	33.0	9.8	35.7	17.4	34.6	13.9	38.8	20.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.0	9.8	35.7	17.4	34.6	13.9	38.8	20.1	0.2
Queue Length 50th (ft)	21	5	11	10	14	29	6	66	0
Queue Length 95th (ft)	104	49	66	36	78	139	43	222	0
Internal Link Dist (ft)		828		952		920		1085	
Turn Bay Length (ft)	240		250		205		210		210
Base Capacity (vph)	934	886	1079	1933	934	3631	934	2514	1164
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.11	0.04	0.05	0.05	0.13	0.02	0.19	0.06

Intersection Summary



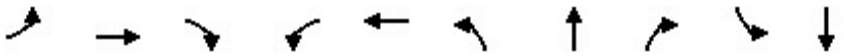
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	157	777	22	163	217	484	27	189	334
v/c Ratio	0.34	0.43	0.06	0.16	0.42	0.38	0.08	0.28	0.58
Control Delay	38.4	21.6	44.0	26.4	37.1	19.7	43.7	28.2	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	21.6	44.0	26.4	37.1	19.7	43.7	28.2	8.0
Queue Length 50th (ft)	27	69	3	18	37	56	4	33	0
Queue Length 95th (ft)	105	238	25	59	136	191	28	93	67
Internal Link Dist (ft)		1814		1587		624		920	
Turn Bay Length (ft)	300		300		240		245		
Base Capacity (vph)	995	2271	995	2237	995	1410	995	1385	823
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.34	0.02	0.07	0.22	0.34	0.03	0.14	0.41

Intersection Summary



Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	165	511	489	721	73	684
v/c Ratio	0.30	0.82	0.67	0.68	0.20	0.77
Control Delay	15.9	22.3	19.8	5.3	28.1	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	22.3	19.8	5.3	28.1	17.6
Queue Length 50th (ft)	33	71	115	0	9	129
Queue Length 95th (ft)	97	238	285	64	36	349
Internal Link Dist (ft)	1288		1245			1196
Turn Bay Length (ft)					155	
Base Capacity (vph)	1112	1066	1231	1290	611	1489
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.48	0.40	0.56	0.12	0.46

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	74	250	1036	452	922	438	222	144	20	433
v/c Ratio	0.28	0.91	0.96	0.86	0.85	0.63	0.18	0.23	0.28	0.83
Control Delay	51.5	88.4	42.3	56.1	47.2	51.1	31.2	6.1	70.9	65.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.5	88.4	42.3	56.1	47.2	51.1	31.2	6.1	70.9	65.1
Queue Length 50th (ft)	58	222	281	381	382	177	72	0	17	182
Queue Length 95th (ft)	109	#392	#401	#569	472	235	106	49	45	#257
Internal Link Dist (ft)		1261			1089		822			911
Turn Bay Length (ft)	250		250			265		265	250	
Base Capacity (vph)	268	282	1076	576	1180	697	1214	637	71	556
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.89	0.96	0.78	0.78	0.63	0.18	0.23	0.28	0.78

Intersection Summary

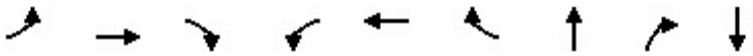
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	26	833	1196	920
v/c Ratio	0.07	0.45	0.72	0.61
Control Delay	26.6	0.8	7.8	2.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.6	0.8	7.8	2.1
Queue Length 50th (ft)	4	0	0	0
Queue Length 95th (ft)	15	0	#661	22
Internal Link Dist (ft)		932	822	
Turn Bay Length (ft)	280			315
Base Capacity (vph)	1167	1863	1562	1475
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.45	0.77	0.62

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	34	153	41	199	157	90	296	169	384
v/c Ratio	0.29	0.61	0.14	0.64	0.29	0.17	0.73	0.23	0.72
Control Delay	58.8	56.2	1.0	52.4	33.1	7.7	50.4	9.0	45.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.8	56.2	1.0	52.4	33.1	7.7	50.4	9.0	45.6
Queue Length 50th (ft)	22	97	0	123	85	0	183	29	227
Queue Length 95th (ft)	62	188	0	229	159	38	315	71	#495
Internal Link Dist (ft)		1454			543		254		1444
Turn Bay Length (ft)	110		110	240		150		75	
Base Capacity (vph)	258	815	743	774	1366	1185	808	1139	532
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.19	0.06	0.26	0.11	0.08	0.37	0.15	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	27	69	23	24	33	80	399	33	7	527
v/c Ratio	0.12	0.20	0.06	0.06	0.07	0.24	0.19	0.03	0.03	0.35
Control Delay	32.0	4.8	21.4	21.4	0.3	28.9	11.5	0.1	33.4	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	4.8	21.4	21.4	0.3	28.9	11.5	0.1	33.4	18.7
Queue Length 50th (ft)	7	0	6	7	0	22	31	0	2	68
Queue Length 95th (ft)	35	19	23	23	0	90	136	0	15	200
Internal Link Dist (ft)	974			823			1085			2523
Turn Bay Length (ft)			180		200	160			180	
Base Capacity (vph)	721	852	1323	1345	1268	894	2786	1268	1165	3111
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.08	0.02	0.02	0.03	0.09	0.14	0.03	0.01	0.17

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	71	98	38	91	49	453	22	510	67
v/c Ratio	0.19	0.18	0.11	0.11	0.14	0.16	0.08	0.31	0.08
Control Delay	33.5	10.0	36.1	17.8	35.0	13.8	39.0	20.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	10.0	36.1	17.8	35.0	13.8	39.0	20.1	0.2
Queue Length 50th (ft)	20	6	11	10	14	27	7	72	0
Queue Length 95th (ft)	102	49	66	36	78	130	46	236	0
Internal Link Dist (ft)		828		952		920		1085	
Turn Bay Length (ft)	240		250		205		210		210
Base Capacity (vph)	915	873	1056	1900	915	3603	915	2497	1157
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.11	0.04	0.05	0.05	0.13	0.02	0.20	0.06

Intersection Summary



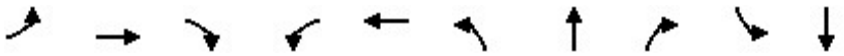
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	153	777	22	163	217	452	27	196	358
v/c Ratio	0.34	0.43	0.06	0.16	0.42	0.36	0.08	0.29	0.60
Control Delay	38.3	21.6	43.8	26.2	37.0	19.2	43.4	28.1	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	21.6	43.8	26.2	37.0	19.2	43.4	28.1	8.1
Queue Length 50th (ft)	26	69	3	18	37	51	4	34	0
Queue Length 95th (ft)	102	238	25	59	135	175	28	96	70
Internal Link Dist (ft)		1814		1587		624		920	
Turn Bay Length (ft)	300		300		240		245		
Base Capacity (vph)	997	2275	997	2243	997	1412	997	1388	838
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.34	0.02	0.07	0.22	0.32	0.03	0.14	0.43

Intersection Summary



Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	140	511	489	721	77	684
v/c Ratio	0.26	0.82	0.67	0.68	0.21	0.77
Control Delay	15.5	22.3	19.9	5.3	28.1	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	22.3	19.9	5.3	28.1	17.6
Queue Length 50th (ft)	28	71	115	0	10	129
Queue Length 95th (ft)	83	238	286	64	37	349
Internal Link Dist (ft)	1288		1245			1196
Turn Bay Length (ft)					155	
Base Capacity (vph)	1112	1065	1230	1290	610	1488
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.48	0.40	0.56	0.13	0.46

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	74	250	1036	466	931	438	222	144	16	433
v/c Ratio	0.28	0.91	0.97	0.87	0.85	0.63	0.18	0.22	0.23	0.83
Control Delay	51.8	89.4	44.4	58.1	47.2	51.5	30.0	6.0	68.4	65.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.8	89.4	44.4	58.1	47.2	51.5	30.0	6.0	68.4	65.5
Queue Length 50th (ft)	58	222	283	397	387	177	64	0	13	182
Queue Length 95th (ft)	109	#392	#406	#600	479	235	106	49	39	#257
Internal Link Dist (ft)		1261			1089		822			911
Turn Bay Length (ft)	250		250			265		265	250	
Base Capacity (vph)	267	280	1067	573	1174	693	1261	657	70	553
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.89	0.97	0.81	0.79	0.63	0.18	0.22	0.23	0.78

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

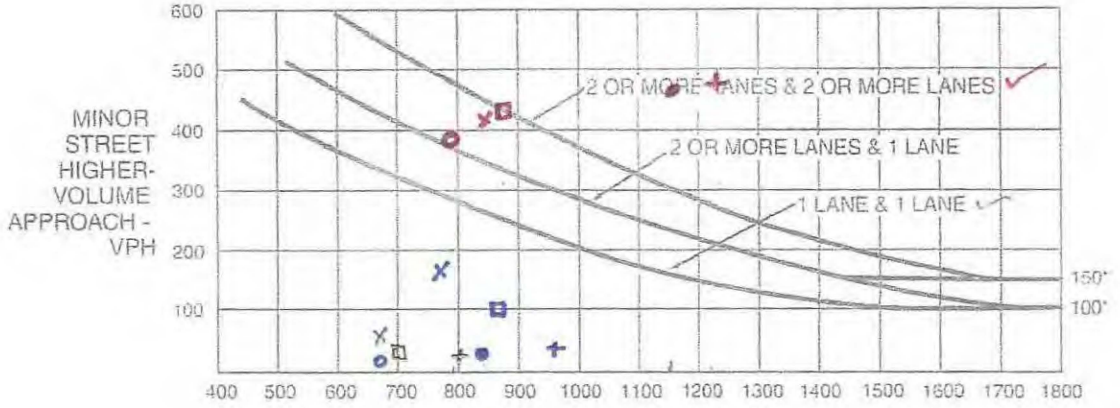


Lane Group	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	26	833	1207	931
v/c Ratio	0.07	0.45	0.72	0.61
Control Delay	26.6	0.8	8.0	2.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.6	0.8	8.0	2.2
Queue Length 50th (ft)	4	0	0	0
Queue Length 95th (ft)	15	0	#671	22
Internal Link Dist (ft)		932	822	
Turn Bay Length (ft)	280			315
Base Capacity (vph)	1167	1863	1562	1477
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.02	0.45	0.77	0.63

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

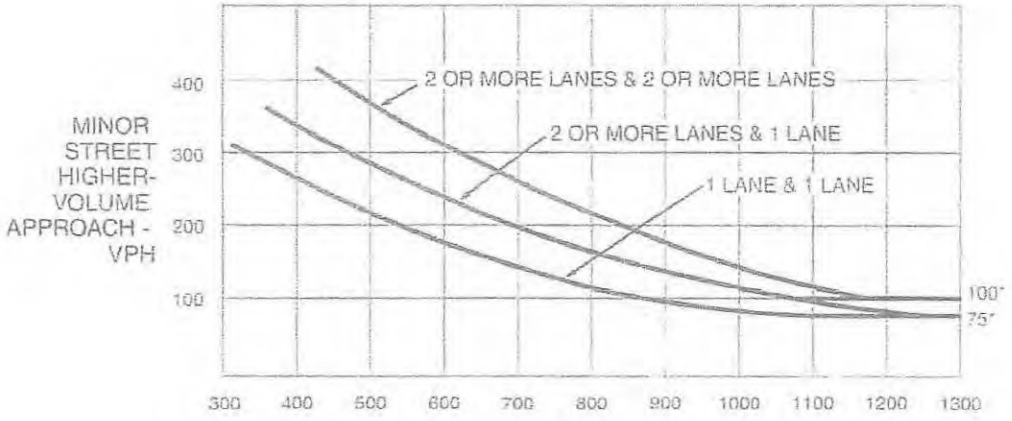
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

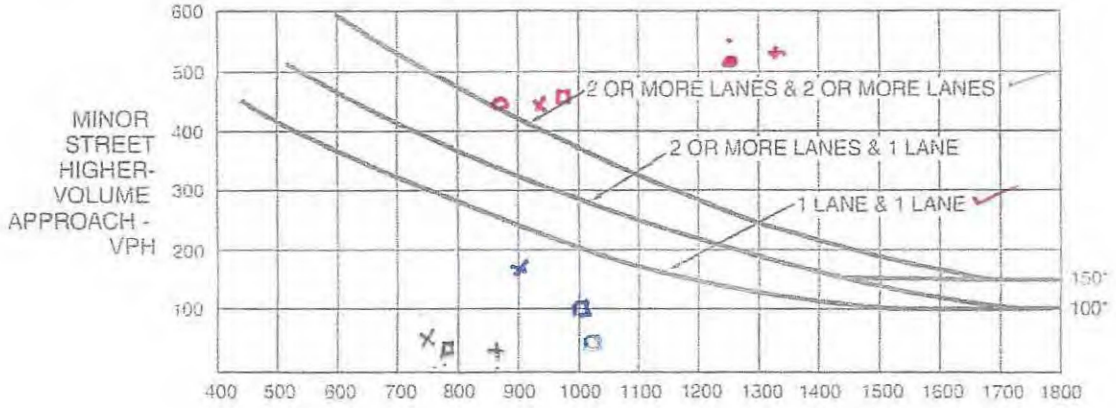


*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

	SV/NEITZELL	SV/SUISUN CT	ROCKVILLE/DW
EXIST PM	●	●	—
EXIST SAT	○	○	—
EPP PM	+	+	+
EPP SAT INBND	□	□	□
EPP SAT OUTBND	×	×	×

EXISTING

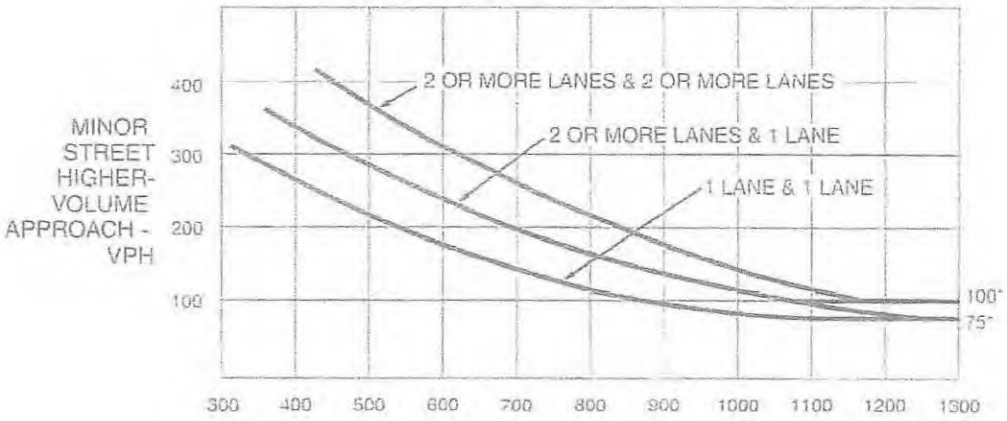
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

SV/NEITZELL | SV/SUISUN CT | ROCKVILLE/DW

CUM	PM	●	—	—
CUM	SAT	○	—	—
CPP	PM	+	+	+
CPP	SAT INBND	□	□	□
CPP	SAT OUTBND	×	×	×

CUMULATIVE

Attachment A

Winery Traffic Information / Trip Generation Sheet

Traffic during a Typical Weekday

Number of FT employees: 1 x 3.05 one-way trips per employee = 3 daily trips.

Number of PT employees: 3 x 1.90 one-way trips per employee = 6 daily trips.

Average number of weekday visitors: 60 / 2.6 visitors per vehicle x 2 one-way trips = 46 daily trips.

Gallons of production: — / 1,000 x .009 truck trips daily[3] x 2 one-way trips = — daily trips.

Total = 55 daily trips.

Number of total weekday trips x .38 = 21 PM peak trips.

per tasting room

Traffic during a Typical Saturday

Number of FT employees (on Saturdays): 1 x 3.05 one-way trips per employee = 3 daily trips.

Number of PT employees (on Saturdays): 3 x 1.90 one-way trips per employee = 6 daily trips.

Average number of weekend visitors: 80 / 2.8 visitors per vehicle x 2 one-way trips = 57 daily trips.

Total = 66 daily trips.

Number of total Saturday trips x .57 = 38 PM peak trips.

per tasting room

Traffic during a Crush Saturday

Number of FT employees (during crush): _____ x 3.05 one-way trips per employee = _____ daily trips.

Number of PT employees (during crush): _____ x 1.90 one-way trips per employee = _____ daily trips.

Average number of weekend visitors: _____ / 2.8 visitors per vehicle x 2 one-way trips = _____ daily trips.

Gallons of production: _____ / 1,000 x .009 truck trips daily x 2 one-way trips = _____ daily trips.

Avg. annual tons of grape on-haul: _____ x .11 truck trips daily[4] x 2 one-way trips = _____ daily trips.

Total = _____ daily trips.

Number of total Saturday trips x .57 = _____ PM peak trips.

SATURDAY - USE OF MULTI PURPOSE ROOM FOR WINE EVENT

Largest Marketing Event- Additional Traffic

Number of event staff (largest event): 8 x 2 one-way trips per staff person = 16 trips.

Number of visitors (largest event): 100 / 2.8 visitors per vehicle x 2 one-way trips = 72 trips.

Number of special event truck trips (largest event): _____ x 2 one-way trips = 88 trips.

for multi purpose room (round trip)

[3] Assumes 1.47 materials & supplies trips + 0.8 case goods trips per 1,000 gallons of production / 250 days per year (see *Traffic Information Sheet Addendum* for reference).

[4] Assumes 4 tons per trip / 36 crush days per year (see *Traffic Information Sheet Addendum* for reference).

Solano Landing
PROJECT ANNUAL TRIPS
12/9/22

LU	Land Use		Size	Trip Rates Daily	Fri Rate	PM In	PM Out	Sat Rate	Pk In	Pk Out
330	**Hotel - Boutique (Resort Hotel)**	**Rooms**	10.00	--	**0.41**	43%	57%	**0.72**	56%	44%
931	**Fine Dining Restaurant**	**KSF**	7.60	--	**7.80**	67%	33%	**10.68**	59%	41%
	Wine Tasting Rooms (5@1500 sf)	**Rooms**	**0.00**	--	**22.00**	50%	50%	**38.00**	50%	50%
850	**Supermarket**	**KSF**	5.50	--	**8.95**	50%	50%	**10.10**	50%	50%
	Multipurpose Room / Event Center (100 people max) Assumed that 1 tasting rooom closed or event	**EA**	0.00	--	**88.00**	100%	0%	**88.00**	0%	100%

Used Napa County Winery Trip Gen sheet

Used Napa County Winery Trip Gen sheet

Trips

Wine Tasting – Friday and Saturday is 60 and 80 visitors per tasting room. Thursday – Sunday 10:00- 5:00

Multi-purpose/ Dinning Hall - Maximum of 24 events per year

Restaurant –. Wednesday- Monday 10:00-3:00 for lunch and 5:30-10:00 for dinner (Closed on Tuesday)

Hotel – Seven days a week 24 hours a day

Boutique Market- Monday – Sunday 7:00-8:00

				TOTAL TRIPS M	TU	WED	TH	FR	SAT	SU	EMPLOYEE TRIPS week reduction
330	**Hotel - Boutique (Resort Hotel)**		10.00	80	80	80	80	80	81	59	-53
931	**Fine Dining Restaurant**		7.60	637	X	637	637	637	684	547	-600
	Wine Tasting Rooms (5@1500 sf)		**0.00**	X	X	X	0	0	0	0	0
850	**Supermarket**		5.50	0	0	0	0	0	0	0	-175
	Multipurpose Room / Event Center (100 people max) Assumed that 1 tasting rooom closed or event	24/YR	0.00	X	X	X	X	X	0	X	0

TOTAL TRIPS EXCLUDING WINE BASED

ANNUAL

					weekly	annual	internal	passby		employee reduction	Employees
	Hotel - Boutique (Resort Hotel)				540	28,059	(7,015)			-2730	5
	Fine Dining Restaurant				3780	196,561	(49,140)			-31200	
	Wine Tasting Rooms (5@1500 sf)				0	0	0			0	
	Supermarket				0	0	0	0		-9100	
	Multipurpose Room / Event Center (100 people max) Assumed that 1 tasting rooom closed or event				0	0	0			0	
						224,620	-56,155	0		-43,030	

		midweek	sat	sun
310	hotel	7.99	8.07	5.94
311	all suites hotel	4.40		
312	business hotel	4.02	5.79	4.43
330	resort hotel	n/a		
931	fine dining	83.84	90.04	71.97
	wine tasting (midweek / weekend)	22.00	38.00	

TOTAL ANNUAL TRIPS **125,435**

770 daily trips rate **40,150**

net over **85,285**

INTERNAL	**Employees**	trips per employee
Hotel - Boutique (Resort Hotel) *25% internal*	3	8
Fine Dining Restaurant *25% internal*	10	20
Wine Tasting Room *25% internal*	3	4
Supermarket *10% internal*	10	25
Special Event (1.5 people / car)	10	13
PASSBY		
Supermarket *36%*		

daily m-f	sat	sun
83.84	90.04	71.97