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APPENDIX A
Air Quality and GHG Assessment by Illingworth & Rodkin, Inc., dated 2021 and 2023

S. MILPITAS BOULEVARD VEHICULAR BRIDGE AIR QUALITY ASSESSMENT

Milpitas, California

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Introduction

The purpose of this report is to address air quality and community health risk impacts associated with the proposed construction of a new vehicular bridge over Penitencia Creek at the end of the new S. Milpitas Blvd. Extension with new roadway connections to Tarob Court and Sango Court in the City of Milpitas, California. The air quality impacts from this project would be associated with the preparation of the site, construction of the new bridge and roadways, and traffic using the new local roadway connection. Air pollutants emissions associated with construction and operation of the project were predicted using appropriate computer models. In addition, the potential community risk impact to nearby sensitive receptors from construction-related and existing sources of toxic air contaminants (TACs) was evaluated. The analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1]

Project Description

The project proposes to construct an approximately 40 feet long and 48 feet wide bridge across Penitencia East Channel which would connect S. Milpitas Boulevard on the north side of the channel with Tarob Court and Sango Court on the south side of the channel. This project is identified by the City's Metro Specific Plan (formerly Transit Area Specific Plan) as necessary to improve vehicular, bicycle, and pedestrian connectivity in the area, consistent with the TASP's goals and policies. The proposed project would require demolition of the existing vacant office building and associated parking lot, approximately 112,000 square feet (sf) of material, located at 1831-1841 Tarob Court (APN 086-36-030) which is owned by the City of Milpitas.

Setting

The project is in Santa Clara County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards except for ground-level ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).

Air Pollutants of Concern

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NO_X). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both

[1] Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017.

region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic Air Contaminants

TACs are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer). TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter [DPM] near a freeway or roadways). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complicated scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs. The most recent Office of Environmental Health Hazard Assessment (OEHHA) risk assessment guidelines were published in February of 2015.[2] See *Attachment 1* for a detailed description of the community risk modeling methodology used in this assessment.

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks. For cancer risk assessments, children are the most sensitive receptors, since they are more susceptible to cancer causing TACs. Residential locations are assumed to include infants and small children. The closest sensitive receptors to the site are children that may be living in the multi-family housing developments adjacent to the eastside of project site. Additionally, the Crossing Early Care and Learning Center is located approximately 788 feet northeast of the bridge site and the Stratford School is approximately 1,300 feet to the northwest.

[2] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.

Regulatory Agencies

Federal Regulations

The United States Environmental Protection Agency (EPA) sets nationwide emission standards for mobile sources, which include on-road (highway) motor vehicles such trucks, buses, and automobiles, and non-road (off-road) vehicles and equipment used in construction, agricultural, industrial, and mining activities (such as bulldozers and loaders). The EPA also sets nationwide fuel standards. California also has the ability to set motor vehicle emission standards and standards for fuel used in California, as long as they are the same or more stringent than the Federal standards.

In the past decade, the EPA has established several emission standards for on- and non-road heavy-duty diesel engines used in trucks and other equipment. This was done in part because diesel engines are a significant source of nitrogen oxides, or NO_X, and particulate matter (PM_{10} and $PM_{2.5}$) and because the EPA has identified diesel particulate matter as a probable carcinogen. Implementation of the heavy-duty diesel on-road vehicle standards and the non-road diesel engine standards are estimated to reduce PM and NO_X emissions from diesel engines up to 95 percent in 2030 when the heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards.[3]

In concert with the diesel engine emission standards, the EPA has also substantially reduced the amount of sulfur allowed in diesel fuels. The sulfur contained in diesel fuel is a significant contributor to the formation of particulate matter in diesel-fueled engine exhaust. The new standards reduced the amount of sulfur allowed by 97 percent for highway diesel fuel (from 500 parts per million by weight [ppmw] to 15 ppmw), and by 99 percent for off-highway diesel fuel (from about 3,000 ppmw to 15 ppmw). The low sulfur highway fuel (15 ppmw sulfur), also called ultra-low sulfur diesel (ULSD) is currently required for use by all vehicles in the U.S.

All of the above Federal diesel engine and diesel fuel requirements have been adopted by California, in some cases with modifications making the requirements more stringent or the implementation dates sooner.

State Regulations

To address the issue of diesel emissions in the state, CARB developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles[4]. In addition to requiring more stringent emission standards for new on-road and off-road mobile sources and stationary diesel-fueled engines to reduce particulate matter emissions by 90 percent, a significant component of the plan involves application of emission control strategies to existing diesel vehicles and equipment. Many of the measures of the Diesel Risk Reduction Plan have been

[3] USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.

[4] California Air Resources Board, 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October.

approved and adopted, including the Federal on-road and non-road diesel engine emission standards for new engines, as well as adoption of regulations for low sulfur fuel in California.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. CARB regulations require on-road diesel trucks to be retrofitted with particulate matter controls or replaced to meet 2010 or later engine standards that have much lower DPM and $PM_{2.5}$ emissions. This regulation will substantially reduce these emissions between 2013 and 2023. While new trucks and buses will meet strict federal standards, this measure is intended to accelerate the rate at which the fleet either turns over so there are more cleaner vehicles on the road or is retrofitted to meet similar standards. With this regulation, older, more polluting trucks would be removed from the roads sooner.

CARB has also adopted and implemented regulations to reduce DPM and NO_X emissions from in-use (existing) and new off-road heavy-duty diesel vehicles (e.g., loaders, tractors, bulldozers, backhoes, off-highway trucks, etc.). The regulations apply to diesel-powered off-road vehicles with engines 25 horsepower (hp) or greater. The regulations are intended to reduce particulate matter and NO_X exhaust emissions by requiring owners to turn over their fleet (replace older equipment with newer equipment) or retrofit existing equipment in order to achieve specified fleet-averaged emission rates. Implementation of this regulation, in conjunction with stringent Federal off-road equipment engine emission limits for new vehicles, will significantly reduce emissions of DPM and NO_X.

Bay Area Air Quality Management District (BAAQMD)

BAAQMD has jurisdiction over an approximately 5,600-square mile area, commonly referred to as the San Francisco Bay Area (Bay Area). The district's boundary encompasses the nine San Francisco Bay Area counties, including Alameda County, Contra Costa County, Marin County, San Francisco County, San Mateo County, Santa Clara County, Napa County, southwestern Solano County, and southern Sonoma County.

BAAQMD is the lead agency in developing plans to address attainment and maintenance of the National Ambient Air Quality Standards and California Ambient Air Quality Standards. The district also has permit authority over most types of stationary equipment utilized for the proposed project. The BAAQMD is responsible for permitting and inspection of stationary sources; enforcement of regulations, including setting fees, levying fines, and enforcement actions; and ensuring that public nuisances are minimized.

BAAQMD's Community Air Risk Evaluation (CARE) program was initiated in 2004 to evaluate and reduce health risks associated with exposures to outdoor TACs in the Bay Area.[5] The program examines TAC emissions from point sources, area sources, and on-road and off-road mobile sources with an emphasis on diesel exhaust, which is a major contributor to airborne health risk in California. The CARE program is an on-going program that encourages community involvement

[5] See BAAQMD: https://www.baaqmd.gov/community-health/community-health-protection-program/community-air-risk-evaluation-care-program , accessed 2/18/2021.

and input. The technical analysis portion of the CARE program is being implemented in three phases that includes an assessment of the sources of TAC emissions, modeling and measurement programs to estimate concentrations of TAC, and an assessment of exposures and health risks. Throughout the program, information derived from the technical analyses will be used to focus emission reduction measures in areas with high TAC exposures and high density of sensitive populations. Risk reduction activities associated with the CARE program are focused on the most at-risk communities in the Bay Area. Overburdened communities are areas located (i) within a census tract identified by the California Communities Environmental Health Screening Tool (CalEnviroScreen), Version 4.0 implemented by OEHHA, as having an overall CalEnviroScreen score at or above the 70th percentile, or (ii) within 1,000 feet of any such census tract.[6] The BAAQMD has identified six communities as impacted: Concord, Richmond/San Pablo, Western Alameda County, San José, Redwood City/East Palo Alto, and Eastern San Francisco. The project site is not within a CARE area or a BAAQMD overburdened area as identified by CalEnviroScreen.

The BAAQMD *California Environmental Quality Act (CEQA) Air Quality Guidelines*[7] were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process consistent with CEQA requirements including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies for air toxics, odors, and greenhouse gas emissions. *Attachment 1* includes detailed community risk modeling methodology.

City of Milpitas General Plan 2040

The *City of Milpitas General Plan 2040* outlines a vision for the long-range physical and economic development of the community through 2040. It includes goals, policies, and actions to reduce exposure of the City's sensitive population to exposure of air pollution, toxic air contaminants, and GHG emissions. The following goals and policies are applicable to the proposed project:

Goals

CIR-1: Provide a transportation system that efficiently, equitably, and effectively supports the City's land use vision, minimizes vehicle miles traveled (VMT), enhances connectivity of the existing network, and supports the use of all modes of transportation.

CIR-6: Support and expand the City's efforts to promote economic, environmental, and social sustainability through initiatives to reduce greenhouse gas emissions and other air pollutants, reduce runoff, promote public health, equity and engage the community in an inclusive planning process.

CON-7: Implement a proactive approach to maintain and improve air quality within Milpitas and the region.

[6] See BAAQMD: https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-2-permits/2021-amendments/documents/20210722_01_appendixd_mapsofoverburdenedcommunities-pdf.pdf?la=en , accessed 10/1/2021.

[7] Bay Area Air Quality Management District, 2011. *CEQA Air Quality Guidelines*. May. (Updated May 2017)

Policies

CIR 1-3: Promote interconnectivity of the transportation network in existing and new developments and actively measure the quality of conditions in neighborhoods to better understand what barriers exist in order to support use of and access to the network.

CIR 1-4: Coordinate development of safe, inclusive, and health-promoting transportation infrastructure with local, county, regional, and state agencies to optimize efficiency of the transportation network for all users and increase opportunities for physical activity for all types of users.

CIR 6-2: Support development of healthier communities through the use of lower- or non-polluting modes of transportation to reduce GHG vehicle emissions and local air pollution levels.

CON 7-1: Ensure that land use and transportation plans support air quality goals through a logical development pattern that focuses growth in and around existing urbanized areas, locates new housing near places of employment, encourages alternative modes of transportation, supports efficient parking strategies, reduces vehicle miles traveled, and requires projects to mitigate significant air quality impacts.

CON 7-2: Minimize exposure of the public to toxic or harmful air emissions and odors through requiring an adequate buffer or setback distance between residential and other sensitive land uses and land uses that typically generate air pollutants, toxic air contaminants, or obnoxious fumes or odors, including but not limited to industrial, manufacturing, and processing facilities, high-volume roadways, and industrial rail lines. New sensitive receptors, such as residences (including residential care and assisted living facilities for the elderly), childcare centers, schools, playgrounds, churches, and medical facilities shall be located away from existing point sources of air pollution such that excessive levels of exposure do not result in unacceptable health risks. Compliance shall be verified through the preparation of a Health Risk Assessment when deemed necessary by the Planning Director.

CON 7-4: Require projects to adhere to the requirements of the Bay Area Air Quality Management District (BAAQMD).

CON 7-5: Use the City's development review process and the California Environmental Quality Act (CEQA) to evaluate and mitigate the local and cumulative effects of new development on air quality.

CON 7-7: Comply with regional, state, and federal standards and programs for control of all airborne pollutants and noxious odors, regardless of source.

CON 7-8: Consider the health risks associated with Toxic Air Contaminants (TACs) when reviewing development applications.

CON 7-11: Encourage improvements and design features that reduce vehicle delay such as bus turnouts, and synchronized traffic signals for new development to reduce excessive vehicle emissions caused by idling.

CON 7-12: Encourage and prioritize infrastructure investments and improvements that promote safe walking, bicycling and increased transit ridership.

Actions

Action CIR-1j: Seek opportunities to eliminate close walking and bicycling network gaps across barriers to mobility, including I-680, I-880, SR 237, and the Union Pacific and BART tracks.

Action CIR-4q: Make improvements to roads, signs, and traffic signals as needed to improve accessible, safe, and convenient bicycle and pedestrian travel.

Action CON-7e: Require dust control measures, including those included in the Santa Clara Valley Non-point Source Pollution Control Program, and BAAQMD's Best Management Practices for fugitive dust control during construction.

Action CON-7f: Use the BAAQMD "Air Quality Guidelines", as amended, or replaced, in identifying thresholds, evaluating the potential project and cumulative impacts, and determining appropriate mitigation measures.

Review development, infrastructure, and planning projects for consistency with BAAQMD requirements during the CEQA review process. Require project applicants to prepare air quality analyses to address BAAQMD, and General Plan requirements, which includes analysis and identification of:

- Air pollutant emissions associated with the project during construction, project operation, and cumulative conditions;
- Potential exposure of sensitive receptors to toxic air contaminants;
- Significant air quality impacts associated with the project for construction, project operation, and cumulative conditions; and
- Mitigation measures to reduce significant impacts to less than significant or the maximum extent feasible where impacts cannot be mitigated to less than significant.

Action CON-7i: Require construction activity plans and grading and drainage plans to include and/or provide for dust management to prevent fugitive dust from leaving the property boundaries and causing a public nuisance or a violation of an ambient air standard. Project applicants, or their assigned agents/contractors, shall be responsible for ensuring that all adequate dust

control measures are implemented in a timely manner during all phases of project grading and construction.

Milpitas Metro Specific Plan (formerly Transit Area Specific Plan)

In early 2019, the city began updating the *Transit Area Specific Plan* (TASP) to enrich the Plan's scope and character of development and to update the goals and strategies to reflect current and future needs for the Plan area. The updated document is called the *Milpitas Metro Specific Plan* (MMSP). The *Milpitas Metro Specific Plan* outlines a vision for the redevelopment of an approximately 437-acre area in the southern portion of the city that currently includes a number of industrial uses near the Great Mall shopping center. The proposed new bridge and roadway connection is within the Plan area.

Section 4.3 of the draft MMSP contains several mobility and circulation goals that are applicable to the proposed project including:

M 1. Multi-Modal Circulation.:	Develop a highly connected street grid that prioritizes multimodal transportation including walking, bicycling, and transit.
M 4. Neighborhood Streets.:	Create local streets within residential neighborhoods with a slower, pedestrian character.
M 5. Trails.:	Develop trails that link into the citywide trail system in order to aid connectivity and provide recreational and leisure spaces.

When completed, the MMSP will be accompanied by a Subsequent Environmental Impact Report (SEIR) to assess and mitigate, as feasible, the impacts of the Plan, of which this project is a part. As noted above, the MMSP would replace the TASP, for which a prior Environmental Impact Report (EIR) was prepared. The SEIR analysis will focus on the potential impacts of the changes to the MMSP and will not reassess the Plan as a whole. Accordingly, the SEIR examines the Plan in the context of the 2007 EIR focusing on the changes to environmental impacts and mitigation that would result from its revisions.

The 2007 TASP EIS identifies the applicable City and air district policies that reduce air quality impacts associate with the project. The EIS determined that the City's General Plan Goals, Policies, and Actions and BAAQMD's CEQA thresholds, emissions control measures, and CEQA guidance were sufficient to control and mitigate the impacts of the TASP and likely the subsequent MMSP. No additional air quality mitigation requirements were provided in the 2007 TASP EIS.

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under the CEQA and these significance thresholds were contained in the district's 2011 *CEQA Air Quality Guidelines*. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. The thresholds were challenged through a series of court challenges and were mostly upheld. BAAQMD updated the *CEQA Air Quality Guidelines* in 2017 to include the latest significance

thresholds, which were used in this analysis and are summarized in Table 1. Impacts above these thresholds are considered potentially significant.

Table 1. BAAQMD CEQA Air Quality Significance Thresholds

Criteria Air Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	**Average Daily Emissions (lbs./day)**	**Annual Average Emissions (tons/year)**
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	None	
Health Risks and Hazards	**Single Sources Within 1,000-foot Zone of Influence**	**Combined Sources (Cumulative from all sources within 1000-foot zone of influence)**	
Excess Cancer Risk	10 per one million	100 per one million	
Hazard Index	1.0	10.0	
Incremental annual $PM_{2.5}$	0.3 µg/m^3	0.8 µg/m^3	
Greenhouse Gas Emissions			
Land Use Projects – direct and indirect emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually or 4.6 metric tons per capita (for 2020) *		

Note: ROG = reactive organic gases, NOx = nitrogen oxides, PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases.

*BAAQMD does not have a recommended post-2020 GHG threshold.

AIR QUALITY IMPACTS AND MITIGATION MEASURES

Impact AIR-1: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable State or federal ambient air quality standard?

The Bay Area is considered a non-attainment area for ground-level ozone and $PM_{2.5}$ under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM_{10} under the California Clean Air Act, but not the federal act. The area has attained both State and federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NO_X), PM_{10}, and $PM_{2.5}$ and apply to both construction period and operational period impacts.

Construction Period Emissions

Two emissions models were utilized to estimate construction emissions from the project. The Sacramento Metropolitan Air Quality Management District's Road Construction Emission Model (RCEM) version 9.0 was used to estimate construction emissions from the bridge and roadway components of the project, while the California Emissions Estimator Model (CalEEMod) Version 2020.4.0 was used to estimate emissions from the demolition of the existing office building and associated parking lot.

RCEM Modeling

BAAQMD recommends the use of RCEM to analyze construction emissions for transportation projects. The model provides emission estimates for both on-site and off-site construction activities and uses California Air Resources Board's OFFROAD database to compute emissions from construction equipment use and CARB's EMission FACtors 2017 model (EMFAC2017) on-road motor vehicle emissions estimation model to predict emissions from trucks and worker vehicles. The model predicts emissions of carbon monoxide (CO), ozone precursor pollutants (ROG and NO_X), particulate matter (PM_{10} and $PM_{2.5}$) and greenhouse gases (GHGs) in metric tons of carbon dioxide equivalent (CO_2e).

RCEM models were developed for two project types (bridge and roadway) with four default phases for each project type: Grubbing/Land Clearing (including mobilization), Grading/Excavation, Drainage/Utilities/Sub-Grade, and Paving. Data on the construction start date, durations, equipment, material quantities, etc. were provided by the applicant in September and October 2021.

Construction would begin in June 2023, with bridge construction occurring first, lasting approximately 4 months. The demolition of the existing office building and construction of the new roadway connections would occur after the bridge is substantially complete and take approximately 2 months and 12 months to complete, respectively, for a total project duration of 18 months.

RCEM defaults were used for worker trips and haul trips unless specific information was provided by the applicant. Material haul trip capacity was assumed to be 10 cubic yards (CY) given the size and location of the project. Worker vehicle trip emissions were adjusted to include the Safer Affordable Efficient (SAFE) Vehicle Rule Part One impacts. The SAFE vehicle Rule Part One revoked California's authority to set its own GHG emission standards and set zero emission vehicle mandates in California. As a result of this ruling, criteria pollutant, and CO_2 emissions from construction worker vehicles (i.e., light-duty vehicles) were increased using CARB's SAFE Rule adjustment factors. *Attachment 2* lists all the constructions inputs provided and entered into RCEM. Detailed construction plans were not available at the time of this analysis.

CalEEMod Modeling

CalEEMod computes annual emissions for construction that are based on the project type, size, and acreage. The model provides emission estimates for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. CalEEMod was used to estimate emissions from the demolition of the approximately 42,000-sf single-story office building that would be removed to make way for the proposed new roadway connection.

The demolition site size (1.06 acre) and anticipated demolition schedule were input to CalEEMod. The demolition scenario, including equipment list and schedule, were based on the information provided by the applicant. The work schedule assumes demolition would start in October 2023, after work on the new bridge is complete, and take approximately 20 workdays and 2 months to complete.[8] Like RCEM, the latest version of CalEEMod uses on-road vehicle emissions factors from EMFAC2017 with SAFE Rule adjustment factors applied. CalEEMod estimated 509 haul trips would be associated with the demolition of the existing general office building, based on the total square footage of both the building and associated parking lot (i.e., 112,000-sf total). The model output from CalEEMod along with demolition inputs are included as *Attachment 2*.

Summary of Computed Construction Period Emissions

Annual emissions were predicted using CalEEMod and the estimated 396 construction workdays spread over two calendar years (2023 and 2024). Average daily emissions were computed by dividing the construction emissions in a given year by the number of construction days in that year. Table 2 shows average daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction of the project. As indicated in Table 2, predicted uncontrolled construction period emissions would not exceed the BAAQMD significance thresholds.

[8] CalEEMod default duration for demolition is 20 days.

Table 2. Uncontrolled Construction Period Emissions

Year	Source	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
2023	Bridge Construction Emissions (tons)	0.06	0.59	0.03	0.02
	Demolition Emissions (tons)	0.01	0.16	0.01	0.01
	Roadway Construction Emissions (tons)	0.04	0.39	0.02	0.02
	Total (tons)	0.11	1.15	0.05	0.04
	Daily emissions *(pounds per day)*[1]	1.69	17.36	0.75	0.66
	BAAQMD Thresholds (pounds per day)	*54*	*54*	*82*	*54*
	Exceed Threshold?	No	No	No	No
2024	Roadway Construction Emissions (tons)	0.15	1.57	0.07	0.06
	Daily emissions *(pounds per day)*[2]	1.17	11.87	0.54	0.47
	BAAQMD Thresholds (pounds per day)	*54*	*54*	*82*	*54*
	Exceed Threshold?	No	No	No	No
Total/Average	Total Construction (tons)	0.27	2.71	0.12	0.11
	Project average daily emissions (pounds)	1.34	13.70	0.61	0.54
	BAAQMD Thresholds (pounds per day)	*54*	*54*	*82*	*54*
	Exceed Threshold?	No	No	No	No

Notes: [1]Assumes 132 workdays in 2023. [2] Assumes 264 workdays in 2024.

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less than significant if best management practices (BMPs) are implemented to reduce these emissions. *Mitigation Measure AQ-1 would implement BAAQMD's basic and additional best management practices*.

Mitigation Measure AQ-1: Implement BAAQMD-Recommended Basic and Additional Measures to Control Fugitive Dust Emissions during Construction.

Basic and additional dust control BMPs are needed to reduce fugitive dust (i.e., $PM_{2.5}$) emissions from construction and are recommended to and ensure that health impacts to nearby sensitive receptors are minimized. During any construction period ground disturbance, the applicant shall ensure that the project contractor implements basic BMPs to control dust. Implementation of the dust control measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less-than-significant level. The contractor shall implement the following BMPs:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.

2. All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.

3. The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.

4. Wind breaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity.

5. Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established.

6. 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.

7. All vehicle speeds on unpaved roads shall be limited to 15 mph.

8. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

9. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel.

10. All trucks and equipment, including their tires, shall be washed off prior to leaving the site.

11. All visible mud or dirt track-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.

12. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.

13. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time two 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.

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

15. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Effectiveness of Mitigation Measure AQ-1

The measures above are consistent with BAAQMD-recommended basic and additional control measures for reducing fugitive particulate matter that are contained in the BAAQMD CEQA Air Quality Guidelines. It is estimated implementing these BMPs will reduce fugitive $PM_{2.5}$ emissions by approximately 69 percent.[9]

Mitigation Measure AQ-2: **Selection of equipment during construction to minimize emissions.**

The project shall develop a plan demonstrating that the off-road equipment used onsite to construct the project would achieve a fleet-wide average 86-percent reduction in DPM exhaust emissions or greater. One feasible plan to achieve this reduction would include the following:

- All diesel-powered off-road equipment, larger than 25 horsepower, operating on the site for more than two days continuously shall, at a minimum, meet U.S. EPA particulate matter emissions standards for Tier 4 Final engines. Where Tier 4 equipment is not available, exceptions could be made for equipment that includes CARB-certified Level 3 Diesel Particulate Filters or equivalent. Equipment that is electrically powered or uses non-diesel fuels would also meet this requirement.

Effectiveness of Mitigation Measure AQ-2

RCEM and CalEEMod were used to compute emissions associated with this mitigation measure assuming that all equipment met U.S. EPA Tier 4 Final engines standards. With the implementation of *Mitigation Measure AQ-2*, the cancer risk levels and total annual $PM_{2.5}$ concentrations from the project's construction would be reduced by approximately 90 percent and would not exceed the BAAQMD single-source health risk significance thresholds (see **Impact AIR-2** below).

[9] Based on emissions reductions estimated using CalEEMod.

Operational Period Emissions

Operational air emissions from the project would be generated primarily from traffic using the new bridge and roadway connections. EMFAC2021 was used to estimate emissions from operation of the proposed project using traffic volumes estimated using the new bridge.

Traffic

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates projected by EMFAC2021. This analysis assumed that the bridge and new roadway connection would be operating in the year 2024. Emissions associated with operation later than 2024 would be lower assuming traffic growth on the new bridge and roadways remains at one percent or less per year.

Daily traffic forecasts for the new bridge and roadway connections were provided by the project's traffic consultant[10] and used to estimate VMT associated with the new bridge/roadways, which were used to estimate emissions. *Attachment 3* provides the traffic volumes, lengths, and emissions factors used to estimate emissions from operation of the project.

EMFAC2021 and CT-EMFAC2017

Emissions rates for criteria pollutants (i.e., ROG, NO_X, PM_{10} and $PM_{2.5}$) and GHGs (i.e., CO_2, N_2O, CH_4, and HFCs) were developed using the latest version of CARB's on-road vehicle emissions model, EMFAC2021. EMFAC2021 became available for use in January 2021 but has yet to be approved by the EPA.[11] It includes the latest data on California's car and truck fleets and travel activity. Emission processes modeled for the analysis include running exhaust, running evaporative losses, and fugitive dust (i.e., road dust, tire ware, and break ware).

The 2024 CalEEMod default fleet mix for Santa Clara County was used to estimate the fraction of trucks (i.e., Truck 1 and Truck 2) in the project area. CT-EMFAC2017 was used to estimate the fraction of gasoline and diesel vehicles in three vehicle categories (i.e., Non-Truck, Truck 1, and Truck 2) based on the CalEEMod default truck percentage of 4.5 percent. CT-EMFAC2017 is the Caltrans version of the CARB's EMFAC2017 emissions model and provides the vehicle fractions by fuel type based on the fraction of trucks and non-trucks. These CT-EMFAC2017 fractions were then applied to the EMFAC2021 emissions rates and aggregated to provide one emissions factor for each pollutant and speed needed. *Attachment 3* provides the information used to generate the emissions factors used.

CT-EMFAC2017 was also used to develop the fugitive road dust emissions factors based on CARB's current methodology. EMFAC2021 does not include road dust emissions factors. For other pollutants not included in the EMAC2021 model (i.e., DPM, N_2O, HFC, etc.), a ratio of emissions factors produced by CT-EMFAC2017 model was applied to an appropriate

10 Email from Natalie Noyes, David J. Powers & Associates, Inc. to Illingworth & Rodkin. September 25, 2021. Daily vehicle trips estimated by Hexagon Traffic Consultants to be 700-800.

11 While approved for use by CARB, EMFAC2021 has yet to be approved by the EPA for use on federally funded transportation projects.

EMFAC2021 pollutant emissions factor to develop an appropriate EMFAC2021-based emissions factor for the speed needed (i.e., 25 miles per hour). Inputs to both emissions models include region (i.e., Santa Clara County), year of analysis (i.e., 2024), and season (i.e., annual).

Existing Uses

A CalEEMod model run was developed to estimate the indirect emissions from operation of the existing land use, a 41,307-sf general office building and associated parking lot, in 2024 to compare to the operation of the new bridge and roadway connection. CalEEMod default data were used to estimate emissions. Table 3 shows that, when compared to the existing use, the new bridge and roadway connections would generate less criteria pollutant emissions. Thus, the project would result in a regional air quality benefit to criteria pollutant emissions. *Attachment 2* provides the CalEEMod run conducted to generate the emissions existing condition emissions.

Summary of Computed Operational Period Emissions

The emissions factors described above were applied to the daily traffic data (i.e., VMT estimated based on traffic volumes) for the new bridge and roadway connections to estimate daily emissions in grams per day. These estimates were then converted to pounds of pollutant per day and tons of pollutant per year. GHG emissions were estimated at the grams per day level and then converted to metric tons of CO_2 equivalent (MT CO_2e) using the appropriate global warming potential (GWP). Table 3 shows average daily construction emissions of ROG, NO_X, total PM_{10}, and total $PM_{2.5}$ during operation of the project. GHG emissions are provided in Table 10. The operational period emissions would not exceed the BAAQMD significance thresholds.

Table 3. Operational Period Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2024 Project Operational Emissions (*tons/year*)[1]	0.002 tons	0.004 tons	0.03 tons	0.004 tons
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Threshold?	*No*	*No*	*No*	*No*
2024 Project Operational Emissions *(pounds/day)*	*0.01*	*0.02*	*0.14*	*0.02*
BAAQMD Thresholds (pounds/day)	*54* lbs.	*54* lbs.	*82* lbs.	*54* lbs.
Exceed Threshold?	*No*	*No*	*No*	*No*
2024 Existing Use Emissions (*tons/year*)[1]	0.39	0.17	0.25	0.07
Net Change (tons/year)	*-0.39*	*-0.16*	*-0.22*	*-0.06*

Notes: [1] Assumes 365-day operation.

Impact AIR-2: Expose sensitive receptors to substantial pollutant concentrations?

Project impacts related to increased community risk can occur either by introducing a new source of TACs during construction and operation with the potential to adversely affect existing sensitive receptors in the project vicinity or by introducing a new sensitive receptor, such as residents, in proximity to an existing source of TACs.

Temporary project construction activity would generate dust and equipment exhaust that could affect nearby sensitive receptors. Additionally, the new bridge and roadway connections would attract traffic, which would produce additional TAC and air pollutant emissions not currently being emitted near the existing residential areas. The project traffic would consist of primarily light-duty vehicles and the number of daily trips generated by the project are small (i.e., 700-800 daily trips).[12] Emissions from automobile traffic generated by the project would be localized in the area of the new bridge and roadway connections and would not be considered a substantial new source of TACs or $PM_{2.5}$. Despite this, an analysis of the health risks associated with both the temporary construction activities and long-term operational conditions of the project were conducted.

Community risk impacts are addressed by predicting increased lifetime cancer risk, the increase in annual $PM_{2.5}$ concentrations, and computing the Hazard Index (HI) for non-cancer health risks. This involved modeling of TAC and $PM_{2.5}$ emissions, dispersion modeling, and computing cancer risk and HI. The methodology for computing community risks impacts is provided in *Attachment 1*.

Additionally, the impact of the existing sources of TACs upon the existing sensitive receptors was assessed. There are a few existing sources of TACs in the vicinity of the project: one auto body shop and two major roadways exceeding average daily traffic (ADT) of 10,000 vehicles (Montague Expressway and E. Capitol Avenue). All the other roadways near the project site are assumed to have an ADT of less than 10,000 vehicles.

Community Risk from Project Construction Activity

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. Although it was concluded in the previous sections (see Table 2) that construction exhaust air pollutant emissions would not contribute substantially to existing or projected air quality violations, construction exhaust emissions may still pose health risks for sensitive receptors such as surrounding residents. The primary community risks associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. A health risk assessment of the project construction activities was conducted to evaluate the potential health effects to nearby sensitive receptors from construction emissions of DPM and $PM_{2.5}$.[13]

[12] Based on daily trip rates provided to DJP by Hexagon Transportation Consultants, Inc. via email to Natalie Noyes. September 25, 2021.
[13] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

Construction Period Emissions

The RCEM and CalEEMod models provided total annual PM_{10} exhaust emissions (assumed to be DPM) for the off-road construction equipment and on-road vehicles. Total uncontrolled DPM emissions from the construction site was estimated to be 0.11 tons (218 pounds). The on-road emissions are a result of haul truck travel during grading activities, worker travel, and vendor deliveries during construction. A trip length of a half-mile was used to represent vehicle travel while at or near the construction site. It was assumed emissions from on-road vehicles traveling at or near the site would occur at the construction site. Uncontrolled fugitive $PM_{2.5}$ dust emissions were estimated to be 0.11 tons (227 pounds) using the same methods and assumptions used to estimate site DPM emissions.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict DPM and $PM_{2.5}$ concentrations at sensitive receptors (i.e., residents, school children) in the vicinity of the project construction area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling ambient impacts of these types of emission activities for CEQA projects.[14] Emission sources for the construction site were grouped into two categories: exhaust emissions of DPM and fugitive $PM_{2.5}$ dust emissions. Combustion equipment exhaust emissions were modeled as a series of point sources with a 9-foot release height (i.e., construction equipment exhaust stack height) placed at 32.8-feet (10-meter) intervals throughout the construction site. This resulted in 169 individual point sources being used to represent mobile equipment DPM exhaust emissions in the construction area, with DPM emissions occurring throughout the project construction site. Construction fugitive $PM_{2.5}$ dust emissions were modeled as an area source encompassing the entire construction site with a near ground level release height of 7 feet (2 meters). Fugitive emissions from the construction activities and on-site vehicle travel were distributed throughout the modeled area sources. Construction emissions were modeled as occurring daily between 7:00 a.m. to 7:00 p.m.

A five-year data set (2013-2017) of hourly meteorological data from Norman Y. Mineta San José International Airport (SJC) prepared for use with the AERMOD model by BAAQMD was used. Annual DPM and $PM_{2.5}$ concentrations from construction activities during June 2023 through October 2024 were calculated at nearby sensitive receptors using AERMOD. Receptor heights of 4.9 feet (1.5 meters), 15.1 feet (4.6 meters), and 24.9 feet (7.6 meters) were used to represent the breathing heights at nearby multi-family homes.

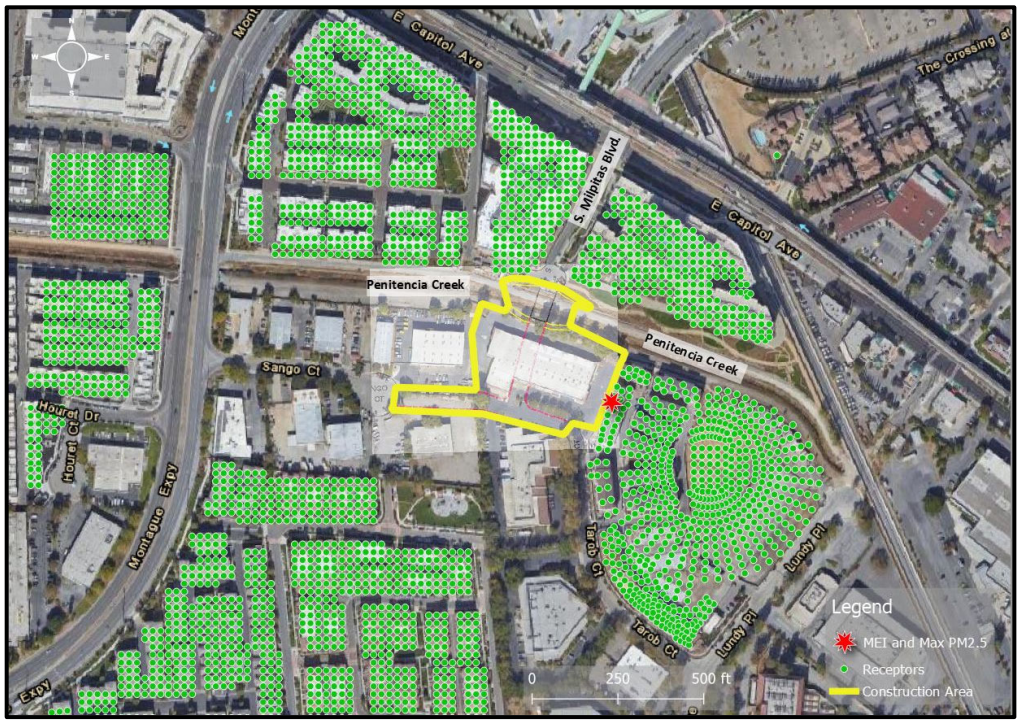
Construction Impacts

The maximum modeled annual DPM and $PM_{2.5}$ concentrations, and thus the maximally exposed individuals (MEIs), were identified as those living at an adjacent multi-family residence approximately 16 feet to the east of the project site (as shown in Figure 1). Both the maximum cancer risk and maximum $PM_{2.5}$ concentration occurred at the same location (i.e., the MEI) with the highest $PM_{2.5}$ concentration occurring on the first floor of the MEI (4.9 feet or 1.5 meters above

[14] Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May.

ground) and the maximum cancer risk occurring on the second floor (15.1 feet or 4.6 meters above ground). Using the maximum modeled annual DPM concentrations, maximum increased cancer risks were calculated using BAAQMD recommended methods and exposure parameters described in *Attachment 1*. Non-cancer health hazards and maximum annual $PM_{2.5}$ concentrations were also calculated and identified. *Attachment 4* to this report includes the emission calculations used for the construction area source modeling and the construction cancer risk calculations.

Figure 1. Project Construction Site, Locations of Off-Site Sensitive Receptors, and Locations of TAC Impacts



Results indicate the unmitigated maximum increased cancer risks and maximum annual $PM_{2.5}$ concentrations from construction exceed the BAAQMD single-source thresholds of greater than 10.0 per million for cancer risk and greater than 0.3 $\mu g/m^3$ for $PM_{2.5}$ concentrations. However, with the incorporation of *Mitigation Measure AQ-1* and *Mitigation Measure AQ-2,* the increased project cancer risk and $PM_{2.5}$ concentration from construction would not exceed their single-source thresholds. Both the unmitigated and mitigated non-cancer HI from construction activities would be below the single-source significance threshold of 1.0. Table 4 summarizes the maximum cancer risks, $PM_{2.5}$ concentrations, and HIs for project related construction activities affecting the off-site residential MEI. Implementing *Mitigation Measure AQ-2* would reduce the maximum increased cancer risk to nearby residential areas from construction, assuming infant exposure, to 8.28 in one million or less and implementing *Mitigation Measure AQ-1* and *Mitigation Measure AQ-2* would reduce the total maximum annual $PM_{2.5}$ concentration to 0.24 $\mu g/m^3$.

Table 4. Construction Risk Impacts at the Off-site Residential MEI

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction	Unmitigated	**82.77 (infant)**	**0.87**	0.06
	Mitigated*	8.28 (infant)	0.24	<0.01
BAAQMD Single-Source Threshold		***10***	***0.3***	***1.0***
Exceed Threshold?	Unmitigated	***Yes***	***Yes***	*No*
	Mitigated*	*No*	*No*	*No*

* Mitigation Measure AQ-1 includes basic and enhanced fugitive dust controls and Mitigation Measure AQ-2 includes construction equipment engines with Tier 4 Final emissions limits.

Community Risks from Project Operation – Traffic

Operation of the project would generate emissions from mobile sources (i.e., traffic). While these emissions would not be as intensive at or near the site as construction activity, they would contribute to long-term effects to sensitive receptors.

It is estimated the new roadway connection would attract 700-800 vehicles per day. Most of the vehicles using the new route consist mostly of light-duty vehicles that are not a source of substantial TACs or $PM_{2.5}$. Despite this, the TAC emissions generated from the traffic on the new route were estimated using EMFAC2021 and the length (in miles) of the new roadway. *Attachment 3* provides the traffic volumes, lengths, and emissions factors used to estimate emissions from operation of the project.

EMFAC2021 and CT-EMFAC2017

Emissions rates for TAC pollutants (i.e., DPM and Fugitive $PM_{2.5}$) were developed using EMFAC2021 using the same methodology describe previously for project operation emissions. The 2024 CalEEMod default fleet mix for Santa Clara County was used to estimate the fraction of trucks (i.e., Truck 1 and Truck 2) in the project area and CT-EMFAC2017 was used to estimate the fraction of gasoline and diesel vehicles in three vehicle categories (i.e., Non-Truck, Truck 1, and Truck 2) and emissions factors for $PM_{2.5}$ fugitive road dust. CT-EMFAC2017 vehicle fractions were then applied to EMFAC2021 emissions rates and aggregated to provide one emissions factor for each pollutant needed.

To estimate DPM, which is not included in the EMAC2021 model, the CT-EMFAC2017 ratio of $PM_{2.5}$ emissions rates to DPM emissions rates was applied to the EMFAC2021 $PM_{2.5}$ emissions factor to produce an appropriate EMFAC2021-based emissions factor for the speed needed (i.e., 25 miles per hour). Inputs to both emissions models include region (i.e., Santa Clara County), year of analysis (i.e., 2024), and season (i.e., annual). *Attachment 3* provides the information used to generate the emissions factors used.

Hourly TAC emissions rates were developed for the traffic using the new roadway connection. Hourly traffic distributions were estimated using the hourly distributions obtained from Caltrans Performance Measurement System (PeMS). PeMS data is collected in real-time from nearly 40,000 individual detectors spanning the freeway system across all major metropolitan areas of

California.[15] The fraction of traffic volume on each hour on Interstate 880 west of the project area and Interstate 680 east of the project area were calculated, averaged, and applied to the ADT estimate (700) to obtain hourly traffic emissions for the project. These emissions were then input into the dispersion model to estimate the impacts to existing residents.

Dispersion Modeling

To obtain an estimate of potential cancer risks and $PM_{2.5}$ impacts from operation of the new roadway, the U.S. EPA AERMOD dispersion model was used to calculate the maximum annual TAC concentrations at off-site sensitive receptor locations (nearby residences). The same receptors, breathing heights, and meteorological data used in the construction dispersion modeling were used for this analysis. Hourly emissions from vehicle traffic were modeled using a series of area sources along a line (line area sources), with line segments used to represent the new roadway connections. Figure 2 shows the roadway links used for the modeling and receptor locations where concentrations were calculated.

To calculate the increased cancer risk from the new roadway connection at the MEI, the cancer risks exposure duration was adjusted to account for the MEI being exposed to traffic on the new roadway for a 30-year lifetime period. Table 5 lists the risks and hazards from the project. The emissions and health risk calculations for the new roadway connections are included in *Attachment 4*.

Summary of Operations-Related Community Risks at the Off-site MEI

The MEI related to the operation of the new roadway is located at the multi-family residential building directly to the east of the new roadway. $PM_{2.5}$ and HI are based on an annual maximum exposure, which would be approximately the same every year over the 30-year operation of the roadway. However, cancer risk is based on a total 30-year exposure to traffic using the new roadway. Full operation of the project is assumed to occur in 2024 or later. Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates produced by EMFAC2021 and CT-EMFAC2017. Year 2024 emissions were conservatively assumed as being representative of future conditions over the period that cancer risks are evaluated (30 years), since, as discussed above, overall vehicle emissions, in particular diesel truck emissions will decrease in the future.

Table 5 shows the health risk associated with operation of the new roadway connection would be well below the BAAQMD single-source thresholds for increased cancer risk, maximum annual $PM_{2.5}$ concentration, and HI.

[15] https://dot.ca.gov/programs/traffic-operations/mpr/pems-source

Table 5. Operation Risk Impacts at the Off-site Residential MEI

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Roadway Operation (Years 0-30)	Unmitigated	0.05 (infant)	0.02	<0.1
BAAQMD Single-Source Threshold		***10***	***0.3***	***1.0***
Exceed Threshold?		*No*	*No*	*No*

Summary of Project-Related Community Risks at the Off-site Project MEI

For this project, the construction MEI identified in Figure 1 is also the MEI for the project. $PM_{2.5}$ and HI are based on an annual maximum exposure, which would occur during construction. However, cancer risk is based on a total 30-year exposure. At the MEI location, individuals would be exposed to 18 months (i.e., 2 years) of health risk impacts from construction and 28 years of impacts from the new roadway connection. Thus, to estimate total project cancer risk from construction and operation of the project were summed together for a 30-year exposure period at the MEI. Unlike the increased maximum cancer risk, the annual $PM_{2.5}$ concentration and HI risks are not additive but based on an annual maximum risk for the entirety of the project.

As shown in Table 6, the total unmitigated project risks would exceed the BAAQMD single-source thresholds for increased cancer risk and maximum $PM_{2.5}$ concentration. However, with the incorporation of *Mitigation Measure AQ-1* and *Mitigation Measure AQ-2*, the total increased cancer risk and maximum $PM_{2.5}$ concentration would be reduced to below the BAAQMD single-source thresholds. The maximum annual HI value for the project does not exceed the BAAQMD annual HI single-source thresholds.

Table 6. Construction and Operation Risk Impacts at the Off-site Residential MEI

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction (Years 0-2)	Unmitigated Mitigated*	**82.77 (infant)** 8.28 (infant)	**0.87** 0.24	0.06 <0.01
Roadway Operation (Years 3-30)		0.02	0.02	<0.01
Total/Maximum Project Risks (Years 0-30)	Unmitigated Mitigated*	**82.79 (infant)** 8.30 (infant)	**0.87** 0.24	0.06 <0.01
BAAQMD Single-Source Threshold		***10***	***0.3***	***1.0***
Exceed Threshold?	Unmitigated Mitigated*	***Yes*** *No*	***Yes*** *No*	*No* *No*

* Mitigation Measures AQ-1 and AQ-2 include basic fugitive dust controls and construction equipment engines with Tier 4 Final emissions limits.

Cumulative Impact of TAC Sources on the Off-Site Construction MEI

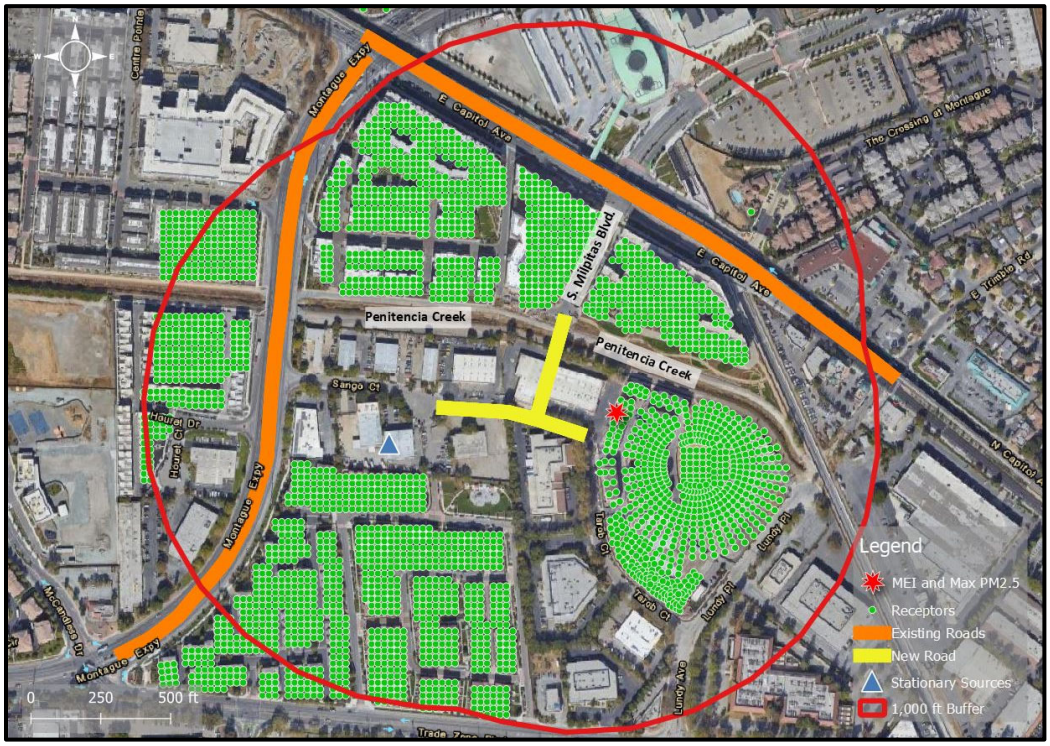
Community health risk assessments typically look at all substantial sources of TACs that can affect sensitive receptors that are located within 1,000 feet of the project site (i.e., influence area). These sources include railroads, freeways or highways, busy surface streets, and existing stationary sources identified by BAAQMD. A review of the project area indicates that traffic on Montague Expressway and E. Capitol Avenue exceed the ADT threshold of 10,000 vehicles. All other roadways within the area are assumed to be below the 10,000 ADT threshold. One existing stationary source of TACs is located within the 1,000-foot influence area according to BAAQMD's stationary source website map. Figure 2 shows the existing TAC sources near the project site. Community risk impacts from these sources upon the project MEI are reported in Table 6. Details of the modeling and community risk calculations are included in *Attachments 5 and 6.*

Montague Expressway and E. Capitol Avenue

The project site and project MEI are both close to Montague Expressway and E. Capitol Avenue, with the project MEI located approximately 1,186 feet east of Montague Expressway and 635 feet south of E. Capitol Avenue. A refined analysis of the impacts of TACs and $PM_{2.5}$ from the arterial roadways on the project MEI is necessary to evaluate potential cancer risks and $PM_{2.5}$ concentrations associated with it. A review of the 2024 with project peak hour traffic information provided by Hexagon[16] indicates this portion of Montague Expressway would have an estimated weekday traffic volume of approximately 33,000 vehicles per day and E. Capitol Avenue would have an estimated weekday traffic volume of 20,100 northwest of S. Milpitas Boulevard. and approximately 12,000 vehicles southeast of S. Milpitas Boulevard. The emissions estimation methodology previously described to estimate emissions from the project was used to estimate emissions for these roadways given the daily traffic volumes and posted speeds.

[16] Hexagon Transportation Consultants, Inc. Traffic data provided to Illingworth and Rodkin by DJP via email from Natalie Noyes. September 25, 2021.

Figure 2. Project Site and Nearby TAC and $PM_{2.5}$ Sources



Modeling Roadway Emissions

Analysis of Montague Expressway and E. Capitol Avenue involved developing emissions estimates of DPM, organic TACs (as TOG), and $PM_{2.5}$ emissions for 2024 traffic volume estimates were developed using EMFAC2021 and the same methodology describe previously for project operation emissions. The 2024 CalEEMod default fleet mix for Santa Clara County was used to estimate the fraction of trucks (i.e., Truck 1 and Truck 2) in the project area and CT-EMFAC2017 was used to estimate the fraction of gasoline and diesel vehicles in three vehicle categories (i.e., Non-Truck, Truck 1, and Truck 2) and emissions factors for $PM_{2.5}$ fugitive road dust. CT-EMFAC2017 vehicle fractions were then applied to EMFAC2021 emissions rates and aggregated to provide one emissions factor for each pollutant needed.

To estimate DPM, which is not included in the EMAC2021 model, the CT-EMFAC2017 ratio of $PM_{2.5}$ emissions rates to DPM emissions rates was applied to the EMFAC2021 $PM_{2.5}$ emissions factor to produce an appropriate EMFAC2021-based emissions factor for the speeds needed. Inputs to both emissions models include region (i.e., Santa Clara County), year of analysis (i.e., 2024), and season (i.e., annual). For all hours of the day, other than during peak a.m. and p.m. periods, an average speed of 45 mph was assumed for all vehicles on Montague Expressway and an average speed of 40 mph was used for E. Capitol Avenue. Traffic speeds during the peak a.m. and p.m. periods were assumed to be 5 miles per hour slower (i.e., 40 mph and 35 mph, respectively) to account for congestion and the limited amount of access in the area. *Attachment 5* provides the information used to generate the emissions factors used for the analysis of Montague Expressway and E. Capitol Avenue.

Full operation of the project is assumed to occur in 2024 or later with construction beginning in June 2023. Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates produced by EMFAC2021 and CT-EMFAC2017. Year 2024 emissions were conservatively assumed as being representative of future conditions over the period that cancer risks are evaluated (30 years), since, as discussed above, overall vehicle emissions, in particular diesel truck emissions will decrease in the future.

Hourly traffic distributions were estimated using the hourly distributions obtained from Caltrans (PeMS) data as previously described. The fraction of traffic volume on each hour on Interstate 880 west of the project area and Interstate 680 east of the project area were calculated, averaged, and applied to the AADT estimates for each roadway to obtain hourly traffic. Emissions rates were then applied to the hourly traffic estimates to produce hourly emissions estimates for DPM, organic TACs, and $PM_{2.5}$ along the applicable roadway segments within 1,000 feet of the project. These emissions were then input into an air quality dispersion model (AERMOD) to estimate TAC and $PM_{2.5}$ concentrations at the project MEI previously identified.

Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the U.S. EPA AERMOD dispersion model, which is recommended by the BAAQMD for this type of analysis. Traffic on Montague Expressway and E. Capitol Avenue within approximately 1,000 feet of the project site was evaluated with the model. Emissions from vehicle traffic were modeled using a series of area sources along a line (line area sources), with line segments used to represent all lanes of traffic. The modeling used a five-year data set (2013-2017) of hourly meteorological data from Norman Y. Mineta San José International Airport (SJC) prepared by the BAAQMD for use with the AERMOD model. Other inputs to the model included road geometry, hourly traffic emissions, and receptor locations and heights. Figure 2 shows the roadway links used for the modeling and receptor locations where concentrations were calculated.

Computed Cancer and Non-Cancer Health Impacts of Montague Expressway and E. Capitol Avenue

The increased lifetime cancer risks and maximum annual $PM_{2.5}$ concentrations from the major roadways in the area at the MEI were computed using the modeled TAC and $PM_{2.5}$ concentrations and BAAQMD methods and exposure parameters described in *Attachment 1*. The maximum increased cancer risk associated with Montague Expressway at the MEI receptor would be 0.61 in one million, the maximum $PM_{2.5}$ concentration at the MEI receptors would be 0.03 $\mu g/m^3$, and the HI at the MEI location would be less than 0.01. The maximum increased cancer risk associated with E. Capitol Avenue at the MEI receptor would be 0.13 in one million, the maximum $PM_{2.5}$ concentration at the MEI receptors would be less than 0.01 $\mu g/m^3$, and the HI at the MEI location would be less than 0.01.

The risk impacts from both roadways on the MEI are shown in Table 7. Details of the emission calculations, dispersion modeling and cancer risk calculations for the MEI are provided in *Attachment 6.*

Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2018* GIS website,[17] which identifies the location of nearby stationary sources and their estimated risk and hazard impacts, including emissions and adjustments to account for new OEHHA guidance. A Stationary Source Information Form (SSIF) containing the identified sources was prepared and submitted to BAAQMD. BAAQMD provided updated emissions data and risk values.[18] The provided risk values were then adjusted for distance using the appropriate BAAQMD *Distance Multiplier Tool for Diesel Internal Combustion Engines, Gasoline Dispensing Facilities (GDFs), or Generic Sources.*

Four stationary sources were initially identified in the area, but only one of the stationary sources was identified within 1,000 ft of the project, Facility IDs #17576 (an Auto Body Coating Operation). Estimated risk values for this stationary source at the MEI are listed in Table 7.

Combined Community Health Risk at Off-Site Construction MEI

Table 7 reports both the construction and cumulative community risk impacts at the sensitive receptors most affected by the project (i.e., the construction MEI). Without mitigation, the project's community risk from construction activities would exceed the single-source maximum cancer risk and $PM_{2.5}$ concentration significance thresholds but would not exceed the HI significance threshold. With the incorporation of *Mitigation Measure AQ-1 and AQ-2*, the project would not exceed single-source thresholds. The cumulative HI value would not exceed cumulative significance thresholds for either the unmitigated or mitigated condition.

The cumulative unmitigated construction cancer risk and HI would not exceed the BAAQMD cumulative significance thresholds of 100 in a million, and 10.0, respectively. However, the unmitigated annual maximum $PM_{2.5}$ concentration would exceed the BAAQMD cumulative significance threshold of 0.8 $\mu g/m^3$ $PM_{2.5}$. With *Mitigation Measure AQ-1 and AQ-2* the cumulative annual maximum $PM_{2.5}$ concentration would not exceed the cumulative-source threshold.

[17]BAAQMD, https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65
[18] Email correspondence with Matthew Hanson, BAAQMD, November 4, 2021.

Table 7. Impacts from Combined Sources at Off-Site Construction MEI

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Impacts				
Total/Maximum Construction Risks (Years 0-30)	Unmitigated	**82.77 (infant)**	**0.87**	0.06
	Mitigated*	8.28 (infant)	0.24	<0.01
BAAQMD Single-Source Threshold		***10***	***0.3***	***1.0***
Exceed Single Source Threshold?	Unmitigated	***Yes***	***Yes***	*No*
	Mitigated*	*No*	*No*	*No*
Cumulative Impacts				
Montague Expressway		0.61	0.03	<0.01
E. Capitol Avenue		0.13	<0.01	<0.01
Facility #17576 (Auto Body Coating Operation)		NA	NA	<0.01
Cumulative Total	Unmitigated	83.51	**0.91**	<0.09
	Mitigated*	9.02	0.28	<0.04
BAAQMD Cumulative Source Threshold		***100***	***0.8***	***10.0***
Exceed Cumulative Source Threshold?	Unmitigated	*No*	***Yes***	*No*
	Mitigated*	*No*	*No*	*No*

* Mitigation Measures AQ-1 and AQ-2 include basic fugitive dust controls and construction equipment engines with Tier 4 Final emissions limits.

Cumulative Impact of TAC Sources on the Off-Site Operations MEI

The cumulative impacts of operating the project with the existing TAC sources described above are presented in Table 8. Operation of the new roadway connection with the existing TAC sources would not exceed the BAAQMD cumulative-source thresholds for increased cancer risk, maximum annual $PM_{2.5}$ concentration, or HI.

Table 8. Impacts from Combined Sources at Off-Site Operation MEI

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Impacts				
Roadway Operation (Years 0-30)	Unmitigated	0.05 (infant)	0.02	<0.01
BAAQMD Single-Source Threshold		***10***	***0.3***	***1.0***
Exceed Single Source Threshold?	Unmitigated	*No*	*No*	*No*
Cumulative Impacts				
Montague Expressway		0.61	0.03	<0.01
E. Capitol Avenue		0.13	<0.01	<0.01
Facility #17576 (Auto Body Coating Operation)		NA	NA	<0.01
Cumulative Total	Unmitigated	0.79	<0.06	<0.04
BAAQMD Cumulative Source Threshold		***100***	***0.8***	***10.0***
Exceed Cumulative Source Threshold?	Unmitigated	*No*	*No*	*No*

Cumulative Impact of Project and TAC Sources on the Off-Site Project MEI

The cumulative impacts of the total project (i.e., operations and construction) including the existing TAC sources previously described are presented in Table 9. Because the Construction MEI and

the Project MEI are the same, the only difference between the impacts in Table 7 and Table 9 is the addition of 28 years of TAC emissions from the new roadway connection. Without mitigation, the project's total community risk would exceed BAAQMD's single-source maximum cancer risk and $PM_{2.5}$ concentration significance thresholds but would not exceed the HI significance threshold. With the incorporation of *Mitigation Measure AQ-1* and *AQ-2*, the project would not exceed single-source thresholds.

Table 9. Impacts from Combined Sources at Off-Site Project MEI

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Impacts				
Total/Maximum Construction Risks (Years 0-2)	Unmitigated	**82.77 (infant)**	**0.87**	0.06
	Mitigated*	8.28 (infant)	0.24	<0.01
Roadway Operation (Years 3-30)		0.02	0.02	<0.01
BAAQMD Single-Source Threshold		***10***	***0.3***	***1.0***
Exceed Single Source Threshold?	Unmitigated	***Yes***	***Yes***	*No*
	Mitigated*	*No*	*No*	*No*
Cumulative Impacts				
Montague Expressway		0.61	0.03	<0.01
E. Capitol Avenue		0.13	<0.01	<0.01
Facility #17576 (Auto Body Coating Operation)		NA	NA	<0.01
Cumulative Total	Unmitigated	83.53	**0.91**	<0.09
	Mitigated*	9.04	0.28	<0.04
BAAQMD Cumulative Source Threshold		***100***	***0.8***	***10.0***
Exceed Cumulative Source Threshold?	Unmitigated	*No*	***Yes***	*No*
	Mitigated*	*No*	*No*	*No*

* Mitigation Measures AQ-1 and AQ-2 include basic fugitive dust controls and construction equipment engines with Tier 4 Final emissions limits.

The cumulative unmitigated construction cancer risk and HI would not exceed the BAAQMD cumulative significance thresholds of 100 in a million, and 10.0, respectively. However, the unmitigated annual maximum $PM_{2.5}$ concentration would exceed the BAAQMD cumulative significance threshold of 0.8 $\mu g/m^3$ $PM_{2.5}$. With *Mitigation Measure AQ-1 and AQ-2* the cumulative annual maximum $PM_{2.5}$ concentration would not exceed the cumulative-source threshold.

GREENHOUSE GAS EMISSIONS

Setting

Gases that trap heat in the atmosphere, GHGs, regulate the earth's temperature. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate. The most common GHGs are carbon dioxide (CO_2) and water vapor but there are also several others, most importantly methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These are released into the earth's atmosphere through a variety of natural processes and human activities. Sources of GHGs are generally as follows:

- CO_2 and N_2O are byproducts of fossil fuel combustion.
- N_2O is associated with agricultural operations such as fertilization of crops.
- CH_4 is commonly created by off-gassing from agricultural practices (e.g., keeping livestock) and landfill operations.
- Chlorofluorocarbons (CFCs) were widely used as refrigerants, propellants, and cleaning solvents but their production has been stopped by international treaty.
- HFCs are now used as a substitute for CFCs in refrigeration and cooling.
- PFCs and sulfur hexafluoride emissions are commonly created by industries such as aluminum production and semi-conductor manufacturing.

Each GHG has its own potency and effect upon the earth's energy balance. This is expressed in terms of a global warming potential (GWP), with CO_2 being assigned a value of 1 and sulfur hexafluoride being several orders of magnitude stronger. In GHG emission inventories, the weight of each gas is multiplied by its GWP and is measured in units of CO_2 equivalents (CO_2e).

An expanding body of scientific research supports the theory that global climate change is currently affecting changes in weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. The climate and several naturally occurring resources within California are adversely affected by the global warming trend. Increased precipitation and sea level rise will increase coastal flooding, saltwater intrusion, and degradation of wetlands. Mass migration and/or loss of plant and animal species could also occur. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes and drought; and increased levels of air pollution.

Recent Regulatory Actions for GHG Emissions

Executive Order S-3-05 – California GHG Reduction Targets

Executive Order (EO) S-3-05 was signed by Governor Arnold Schwarzenegger in 2005 to set GHG emission reduction targets for California. The three targets established by this EO are as follows: (1) reduce California's GHG emissions to 2000 levels by 2010, (2) reduce California's GHG emissions to 1990 levels by 2020, and (3) reduce California's GHG emissions by 80 percent below 1990 levels by 2050.

Assembly Bill 32 – California Global Warming Solutions Act (2006)

Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, codified the State's GHG emissions target by directing CARB to reduce the State's global warming emissions to 1990 levels by 2020. AB 32 was signed and passed into law by Governor Schwarzenegger on September 27, 2006. Since that time, the CARB, CEC, California Public Utilities Commission (CPUC), and Building Standards Commission have all been developing regulations that will help meet the goals of AB 32 and Executive Order S-3-05, which has a target of reducing GHG emissions 80 percent below 1990 levels.

A Scoping Plan for AB 32 was adopted by CARB in December 2008. It contains the State's main strategies to reduce GHGs from business-as-usual emissions projected in 2020 back down to 1990 levels. Business-as-usual (BAU) is the projected emissions in 2020, including increases in emissions caused by growth, without any GHG reduction measures. The Scoping Plan has a range of GHG reduction actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system.

As directed by AB 32, CARB has also approved a statewide GHG emissions limit. On December 6, 2007, CARB staff resolved an amount of 427 million metric tons (MMT) of CO_2e as the total statewide GHG 1990 emissions level and 2020 emissions limit. The limit is a cumulative statewide limit, not a sector- or facility-specific limit. CARB updated the future 2020 BAU annual emissions forecast, due to the economic downturn, to 545 MMT of CO_2e. Two GHG emissions reduction measures currently enacted that were not previously included in the 2008 Scoping Plan baseline inventory were included, further reducing the baseline inventory to 507 MMT of CO_2e. Thus, an estimated reduction of 80 MMT of CO_2e is necessary to reduce statewide emissions to meet the AB 32 target by 2020.

Executive Order B-30-15 & Senate Bill 32 GHG Reduction Targets – 2030 GHG Reduction Target

In April 2015, Governor Brown signed EO B-30-15, which extended the goals of AB 32, setting a greenhouse gas emissions target at 40 percent of 1990 levels by 2030. On September 8, 2016, Governor Brown signed Senate Bill (SB) 32, which legislatively established the GHG reduction target of 40 percent of 1990 levels by 2030. In November 2017, CARB issued *California's 2017 Climate Change Scoping Plan*.[19] While the State is on track to exceed the AB 32 scoping plan 2020 targets, this plan is an update to reflect the enacted SB 32 reduction target.

SB 32 was passed in 2016, which codified a 2030 GHG emissions reduction target of 40 percent below 1990 levels. CARB is currently working on a second update to the Scoping Plan to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32. The proposed Scoping Plan Update was published on January 20, 2017 as directed by SB 32 companion legislation AB 197. The mid-term 2030 target is considered critical by CARB on the path to obtaining an even deeper GHG emissions target of 80 percent below 1990 levels by 2050, as directed in Executive Order S-3-05. The Scoping Plan outlines the suite of policy measures, regulations, planning efforts,

[19] California Air Resource Board, 2017. *California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Targets.* November. Web: https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf

and investments in clean technologies and infrastructure, providing a blueprint to continue driving down GHG emissions and obtain the statewide goals.

The new Scoping Plan establishes a strategy that will reduce GHG emissions in California to meet the 2030 target (note that the AB 32 Scoping Plan only addressed 2020 targets and a long-term goal). Key features of this plan are:

- Cap and Trade program places a firm limit on 80 percent of the State's emissions.
- Achieving a 50-percent Renewable Portfolio Standard by 2030 (currently at about 29 percent statewide).
- Increase energy efficiency in existing buildings.
- Develop fuels with an 18-percent reduction in carbon intensity.
- Develop more high-density, transit-oriented housing.
- Develop walkable and bikeable communities.
- Greatly increase the number of electric vehicles on the road and reduce oil demand in half.
- Increase zero-emissions transit so that 100 percent of new buses are zero emissions.
- Reduce freight-related emissions by transitioning to zero emissions where feasible and near-zero emissions with renewable fuels everywhere else, and
- Reduce "super pollutants" by reducing methane and hydrofluorocarbons or HFCs by 40 percent.

In the updated Scoping Plan, CARB recommends statewide targets of no more than 6 metric tons CO_2e per capita (statewide) by 2030 and no more than 2 metric tons CO_2e per capita by 2050. The statewide per capita targets account for all emissions sectors in the State, statewide population forecasts, and the statewide reductions necessary to achieve the 2030 statewide target under SB 32 and the longer-term State emissions reduction goal of 80 percent below 1990 levels by 2050.

Executive Order B-55-18 – Carbon Neutrality

In 2018, a new statewide goal was established to achieve carbon neutrality as soon as possible, but no later than 2045, and to maintain net negative emissions thereafter. CARB and other relevant state agencies are tasked with establishing sequestration targets and create policies/programs that would meet this goal.

Senate Bill 375 – California's Regional Transportation and Land Use Planning Efforts (2008)

California enacted legislation (SB 375) to expand the efforts of AB 32 by controlling indirect GHG emissions caused by urban sprawl. SB 375 provides incentives for local governments and applicants to implement new conscientiously planned growth patterns. This includes incentives for creating attractive, walkable, and sustainable communities and revitalizing existing communities. The legislation also allows applicants to bypass certain environmental reviews under CEQA if they build projects consistent with the new sustainable community strategies. Development of more alternative transportation options that would reduce vehicle trips and miles traveled, along with traffic congestion, would be encouraged. SB 375 enhances CARB's ability to reach the AB 32 goals by directing the agency in developing regional GHG emission reduction targets to be

achieved from the transportation sector for 2020 and 2035. CARB works with the metropolitan planning organizations (e.g., Association of Bay Area Governments [ABAG] and Metropolitan Transportation Commission [MTC]) to align their regional transportation, housing, and land use plans to reduce vehicle miles traveled and demonstrate the region's ability to attain its GHG reduction targets. A similar process is used to reduce transportation emissions of ozone precursor pollutants in the Bay Area.

Senate Bill 350 - Renewable Portfolio Standards

In September 2015, the California Legislature passed SB 350, which increases the states Renewables Portfolio Standard (RPS) for content of electrical generation from the 33 percent target for 2020 to a 50 percent renewables target by 2030.

Senate Bill 100 – Current Renewable Portfolio Standards

In September 2018, SB 100 was signed by Governor Brown to revise California's RPS program goals, furthering California's focus on using renewable energy and carbon-free power sources for its energy needs. The bill would require all California utilities to supply a specific percentage of their retail sales from renewable resources by certain target years. By December 31, 2024, 44 percent of the retails sales would need to be from renewable energy sources, by December 31, 2026 the target would be 40 percent, by December 31, 2017 the target would be 52 percent, and by December 31, 2030 the target would be 60 percent. By December 31, 2045, all California utilities would be required to supply retail electricity that is 100 percent carbon-free and sourced from eligible renewable energy resource to all California end-use customers.

California Building Standards Code – Title 24 Part 11 & Part 6

The California Green Building Standards Code (CALGreen Code) is part of the California Building Standards Code under Title 24, Part 11.[20] The CALGreen Code encourages sustainable construction standards that involve planning/design, energy efficiency, water efficiency resource efficiency, and environmental quality. These green building standard codes are mandatory statewide and are applicable to residential and non-residential developments. The most recent CALGreen Code (2019 California Building Standard Code) was effective as of January 1, 2020.

The California Building Energy Efficiency Standards (California Energy Code) is under Title 24, Part 6 and is overseen by the California Energy Commission (CEC). This code includes design requirements to conserve energy in new residential and non-residential developments, while being cost effective for homeowners. This Energy Code is enforced and verified by cities during the planning and building permit process. The current energy efficiency standards (2019 Energy Code) replaced the 2016 Energy Code as of January 1, 2020. Under the 2019 standards, single-family homes are predicted to be 53 percent more efficient than homes built under the 2016 standard due more stringent energy-efficiency standards and mandatory installation of solar photovoltaic systems. For nonresidential developments, it is predicted that these buildings will use 30 percent less energy due to lightening upgrades.[21]

[20] See: https://www.dgs.ca.gov/BSC/Resources/Page-Content/Building-Standards-Commission-Resources-List-Folder/CALGreen#:~:text=CALGreen%20is%20the%20first%2Din,to%201990%20levels%20by%202020.
[21] See: https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf

Federal and Statewide GHG Emissions

The U.S. EPA reported that in 2018, total gross nationwide GHG emissions were 6,676.6 million metric tons (MMT) carbon dioxide equivalent (CO_2e).[22] These emissions were lower than peak levels of 7,416 MMT that were emitted in 2007. CARB updates the statewide GHG emission inventory on an annual basis where the latest inventory includes 2000 through 2018 emissions.[23] In 2018, GHG emissions from statewide emitting activities were 425 MMT. Per capita GHG emissions in California have dropped from a 2001 peak of 14.0 MMT per person to 10.7 MMT per person in 2018, a 24 percent decrease. They are also 6 MMT below the 1990 emissions level and the State's 2020 GHG limit. The most recent Bay Area emission inventory was computed for the year 2011.[24] The Bay Area GHG emission were 87 MMT. As a point of comparison, statewide emissions were about 444 MMT in 2011.

City of Milpitas Climate Action Plan

In May 2013, the City of Milpitas' Climate Action Plan (CAP) was adopted.[25] It is designed to streamline environmental review of future development projects in the City of Milpitas consistent with the CEQA Guidelines Section 15183.5(b) and BAAQMD Air Quality Guidelines. The CAP identifies a strategy, reduction measures, and implementation strategies to comply with AB 32 and SB 375. The CAP establishes a local GHG reduction target of 15% below baseline 2005 emissions levels by 2020 which matches the State's goals. The purpose of the reduction target is to identify a level of community GHG emissions below which emissions would not be cumulatively considerable under the State and BAAQMD CEQA Guidelines. The CAP does not have a specific metric ton GHG threshold for project-level construction or operation. Therefore, the BAAQMD's CEQA Air Quality Guideline's thresholds are used.

Milpitas Metro Specific Plan (formerly Transit Area Specific Plan)

In early 2019, the city began updating the *Transit Area Specific Plan* (TASP) to enrich the Plan's scope and character of development and to update the goals and strategies to reflect current and future needs for the Plan area. The updated document is called the *Milpitas Metro Specific Plan* (MMSP). When completed, the MMSP will be accompanied by a SEIR to assess and mitigate, as feasible, the impacts of the Plan, of which this project is a part. As previously noted, the MMSP would replace the TASP, for which a prior EIR was prepared.[26] The SEIR analysis will focus on the potential impacts of the changes to the MMSP and will not reassess the Plan as a whole.

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[22] United States Environmental Protection Agency, 2020. *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2018*. April. Web: https://www.epa.gov/sites/production/files/2020-04/documents/us-ghg-inventory-2020-main-text.pdf

[23] CARB. 2020. *2020 Edition, California Greenhouse Gas Emission Inventory: 2000 – 2018*. Web: https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2018/ghg_inventory_trends_00-18.pdf

[24] BAAQMD. 2015. *Bay Area Emissions Inventory Summary Report: Greenhouse Gases Base Year 2011*. January. Web: http://www.baaqmd.gov/~/media/files/planning-and-research/emission-inventory/by2011_ghgsummary.pdf accessed Nov. 26, 2019.

[25] City of Milpitas, *Climate Action Plan – A Qualified Greenhouse Gas Reduction Strategy*, May 2013. Web: https://www.ci.milpitas.ca.gov/_pdfs/Climate_ActionPlan.pdf

[26] TASP DEIR available at https://www.ci.milpitas.ca.gov/_pdfs/plan_eir_tasp_draft.pdf

Accordingly, the SEIR examines the Plan in the context of the 2007 EIR focusing on the changes to environmental impacts and mitigation that would result from its revisions.

The 2007 TASP EIS identified several Plan policies that would reduce GHG emissions. They include:

Policy 3.16: Establish and implement a travel demand management (TDM) program in order to encourage alternate modes of travel and thereby reduce automobile trips.

Policy 3.21: Provide continuous pedestrian sidewalks and safe bike travel routes throughout the entire Transit Area and within development projects.

Policy 3.28: Provide continuous bicycle circulation through the project site and to adjacent areas by closing existing gaps in bicycle lanes and bicycle routes.

Policy 3.28: Provide continuous bicycle circulation through the project site and to adjacent areas by closing existing gaps in bicycle lanes and bicycle routes.

By implementing the TSAP and subsequent MMSP, GHG emissions in the city will be reduced by reducing VMT in the area and encouraging walking, biking, and use of public transportation.

BAAQMD Significance Thresholds

For quantified emissions, the BAAQMD's CEQA Air Quality Guidelines recommended a GHG threshold of 1,100 metric tons or 4.6 metric tons (MT) per capita. These thresholds were developed based on meeting the 2020 GHG targets set in the scoping plan that addressed AB 32. Development of the project would occur beyond 2020, so a threshold that addresses a future target is appropriate. Although BAAQMD has not published a quantified threshold for 2030 yet, this assessment uses a bright-line threshold of 660 MT CO_{2e}/year based on the GHG reduction goals of EO B-30-15. The 2030 bright-line threshold of 660 MT CO_{2e}/year is a 40 percent reduction of the 2020 1,100 MT CO_{2e}/year threshold.

Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

GHG emissions associated with development of the proposed project would occur over the short-term from construction activities, consisting primarily of emissions from equipment exhaust and worker and vendor trips. There would also be long-term operational emissions associated with vehicular traffic on the new bridge and roadway connection. Emissions for the proposed project are discussed below and were analyzed using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.

Emissions Modeling

Both RCEM and CalEEMod were used to predict GHG emissions from construction and operation of the new roadway connection as previously described in Impact AIR-1. The project's daily traffic

estimate and other project-specific information were input to the emissions models, as previously described. RCEM and CalEEMod outputs are included in *Attachment 2*.

Existing Uses

A CalEEMod run was developed to estimate GHG emissions from the existing land use. The project land use types, sizes, and other project-specific information were input to the model, as previously described. CalEEMod output is included in *Attachment 2*.

Construction Emissions

GHG emissions associated with construction were computed to be 608 MT of CO_2e for the 18-month construction period. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips. Neither the City nor BAAQMD have an adopted threshold of significance for construction related GHG emissions, though BAAQMD recommends quantifying emissions and disclosing that GHG emissions would occur during construction. BAAQMD also encourages the incorporation of best management practices to reduce GHG emissions during construction where feasible and applicable.

Operational Emissions

The EMFAC2021 and CT-EMFAC2017 emissions models, along with the projected AADT for the new connection were used to estimate daily emissions associated with operation of the proposed project. As shown in Table 10, the net annual emissions resulting from operation of the proposed project are predicted to be a reduction of 353 MT of CO_{2e} in 2030. As shown in Table 10, the project would not exceed the 660 MT CO_2e/year bright-line threshold in 2024 or 2030. Therefore, the project would not be significant for GHG emissions.

Table 10. Annual Project GHG Emissions (CO_2e) in Metric Tons

Source Category	**Existing Use** (MT CO2e/yr)	**Proposed Project** (MT CO2e/yr)
	2030	**2030**
Area	0.0	NA
Energy Consumption	106.8	NA
Mobile	227.5	10.3
Solid Waste Generation	19.3	NA
Water Usage	9.7	NA
Total Emissions (MT CO2e/yr)	363.3	10.3
Net Emissions Decrease (MT CO_2e/yr)	353.1	
Bright-Line Significance Threshold	***660 MT CO_2e/year***	
Exceed threshold?	*No*	

Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The proposed project would not conflict or otherwise interfere with the statewide GHG reduction measures identified in CARB's Scoping Plan. Vehicles using the new connection would be subject to CARB emissions standards which are projected to reduce the amount of GHGs emitted in future. The project would also reduce vehicle miles traveled in the area by providing a more direct travel route from new high-density residential areas to major roadways and transit centers. The project would also facilitate biking and walking trips to the nearby transit centers.

Supporting Documentation

Attachment 1 is the methodology used to compute community risk impacts, including the methods to compute lifetime cancer risk from exposure to project emissions.

Attachment 2 includes the RCEM and CalEEMod modeling assumptions and outputs for project construction criteria air pollutant and GHG emissions. The operational outputs for existing uses are also included in this attachment.

Attachment 3 includes the traffic volumes, lengths, and EMFAC2021/CT-EMFAC2017 emissions factors used to estimate emissions from operation of the project The input files for these calculations are voluminous and are available upon request in digital format.

Attachment 4 is the project's construction and operations health risk assessment. AERMOD dispersion modeling files for this assessment, which are quite voluminous, are available upon request and would be provided in digital format.

Attachment 5 includes the major roadway and stationary source emissions information.

Attachment 6 includes the Cumulative Community Health Risk Impacts.

Attachment 1: Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[27] These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.[28] This HRA used the 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.[29] Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

Potential increased cancer risk from inhalation of TACs is calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency and duration of exposure. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day) or liters per kilogram of body weight per 8-hour period for the case of worker or school child exposures. As recommended by the BAAQMD for residential exposures, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. For children at schools and daycare facilities, BAAQMD recommends using the 95th percentile 8-hour breathing rates. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of 30 years for sources with long-term emissions (e.g., roadways). For workers, assumed to be adults,

[27] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.
[28] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[29] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

a 25-year exposure period is recommended by the BAAQMD. For school children a 9-year exposure period is recommended by the BAAQMD.

Under previous OEHHA and BAAQMD HRA guidance, residential receptors are assumed to be at their home 24 hours a day, or 100 percent of the time. In the 2015 Risk Assessment Guidance, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which can be less than 100 percent of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than 2 years old, 0.72 for ages 2 to less than 16 years, and 0.73 for ages 16 to 70 years. Use of the FAH factors is allowed by the BAAQMD if there are no schools in the project vicinity have a cancer risk of one in a million or greater assuming 100 percent exposure (FAH = 1.0).

Functionally, cancer risk is calculated using the following parameters and formulas:

Cancer Risk (per million) = $CPF \times Inhalation\ Dose \times ASF \times ED/AT \times FAH \times 10^6$

Where:

CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = $C_{air} \times DBR^* \times A \times (EF/365) \times 10^{-6}$

Where:

C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
8HrBR = 8-hour breathing rate (L/kg body weight-8 hours)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

* An 8-hour breathing rate (8HrBR) is used for worker and school child exposures.

The health risk parameters used in this evaluation are summarized as follows:

Parameter	*Exposure Type* →	Infant		Child	Adult
	Age Range →	3rd Trimester	0<2	2 < 16	16 - 30
DPM Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day) 80th Percentile Rate		273	758	572	261
Daily Breathing Rate (L/kg-day) 95th Percentile Rate		361	1,090	745	335
8-hour Breathing Rate (L/kg-8 hours) 95th Percentile Rate		-	1,200	520	240
Inhalation Absorption Factor		1	1	1	1
Averaging Time (years)		70	70	70	70
Exposure Duration (years)		0.25	2	14	14*
Exposure Frequency (days/year)		350	350	350	350*
Age Sensitivity Factor		10	10	3	1
Fraction of Time at Home (FAH)		0.85-1.0	0.85-1.0	0.72-1.0	0.73*

Non-Cancer Hazards

Non-cancer health risk is usually determined by comparing the predicted level of exposure to a chemical to the level of exposure that is not expected to cause any adverse effects (reference exposure level), even to the most susceptible people. Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The total HI is calculated as the sum of the HIs for each TAC evaluated and the total HI is compared to the BAAQMD significance thresholds to determine whether a significant non-cancer health impact from a project would occur.

Typically, for residential projects located near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is diesel particulate matter (DPM). For DPM, the chronic inhalation REL is 5 micrograms per cubic meter ($\mu g/m^3$).

Annual $PM_{2.5}$ Concentrations

While not a TAC, fine particulate matter ($PM_{2.5}$) has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under the California Environmental Quality Act (CEQA). The thresholds of significance for $PM_{2.5}$ (project level and cumulative) are in terms of an increase in the annual average concentration. When considering $PM_{2.5}$ impacts, the contribution from all sources of $PM_{2.5}$ emissions should be included. For projects with potential impacts from nearby local roadways, the $PM_{2.5}$ impacts should include those from vehicle exhaust emissions, $PM_{2.5}$ generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

Attachment 2: RCEM and CalEEMod Modeling Output

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Milpitas Blvd Bridge and Roadway Project

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.06	Acre	1.06	46,173.60	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Roadway/Bridge Project with building Demo. RCEM used for roadway and bridge construction emissions. CalEEMod used for estimating emissions from building Demo

Land Use - Using CalEEMod for Demo Emissions only

Construction Phase - Demo Emissions only

Off-road Equipment - Demo Only

Off-road Equipment - Demo Only

Off-road Equipment - Demo Emissions only, CalEEMod Default only

Off-road Equipment - Demo Only

Off-road Equipment - Demo Only

Off-road Equipment - Demo Only

Trips and VMT - Demo Only

Demolition - Existing office building to be demo-ed to make way for roadway connectivity project. Existing Building: approximate 42,000 SF. Existing Pavement: approximate 70,000 SF

Grading -

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Construction Off-road Equipment Mitigation - T4 mitigation, Consistent with RCEM analysis. Enhanced Fug Dust Mit

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	10.00	0.00
tblConstructionPhase	NumDays	200.00	0.00
tblConstructionPhase	NumDays	4.00	0.00
tblConstructionPhase	NumDays	10.00	0.00
tblConstructionPhase	NumDays	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblTripsAndVMT	VendorTripNumber	8.00	0.00
tblTripsAndVMT	WorkerTripNumber	19.00	0.00
tblTripsAndVMT	WorkerTripNumber	4.00	0.00

2.0 Emissions Summary

Milpitas Blvd Bridge and Roadway Project - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0144	0.1627	0.1328	3.9000e-004	0.0602	6.2900e-003	0.0665	9.7400e-003	5.9000e-003	0.0157	0.0000	36.0039	36.0039	5.5800e-003	2.4300e-003	36.8685
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0144**	**0.1627**	**0.1328**	**3.9000e-004**	**0.0602**	**6.2900e-003**	**0.0665**	**9.7400e-003**	**5.9000e-003**	**0.0157**	**0.0000**	**36.0039**	**36.0039**	**5.5800e-003**	**2.4300e-003**	**36.8685**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	3.4700e-003	0.0464	0.1498	3.9000e-004	0.0266	6.4000e-004	0.0273	3.0300e-003	6.3000e-004	3.6600e-003	0.0000	36.0039	36.0039	5.5800e-003	2.4300e-003	36.8684
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**3.4700e-003**	**0.0464**	**0.1498**	**3.9000e-004**	**0.0266**	**6.4000e-004**	**0.0273**	**3.0300e-003**	**6.3000e-004**	**3.6600e-003**	**0.0000**	**36.0039**	**36.0039**	**5.5800e-003**	**2.4300e-003**	**36.8684**

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Percent Reduction	**75.85**	**71.48**	**-12.80**	**0.00**	**55.83**	**89.83**	**59.04**	**68.89**	**89.32**	**76.61**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	10-16-2023	1-15-2024	0.1651	0.0469
		Highest	0.1651	0.0469

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.9500e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.9500e-003**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	tons/yr										MT/yr					
Area	3.9500e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.9500e-003**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	10/16/2023	11/10/2023	5	20	
2	Site Preparation	Site Preparation	11/11/2023	11/10/2023	5	0	
3	Grading	Grading	11/15/2023	11/14/2023	5	0	
4	Building Construction	Building Construction	11/21/2023	11/20/2023	5	0	
5	Paving	Paving	8/27/2024	8/26/2024	5	0	
6	Architectural Coating	Architectural Coating	9/10/2024	9/9/2024	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Acres of Paving: 1.06

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 2,770 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	1	8.00	158	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading	Graders	0	0.00	187	0.41
Grading	Rubber Tired Dozers	0	0.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction	Cranes	0	0.00	231	0.29
Building Construction	Forklifts	0	0.00	89	0.20
Building Construction	Generator Sets	0	0.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction	Welders	0	0.00	46	0.45
Paving	Cement and Mortar Mixers	0	0.00	9	0.56
Paving	Pavers	0	0.00	130	0.42
Paving	Paving Equipment	0	0.00	132	0.36
Paving	Rollers	0	0.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Architectural Coating	Air Compressors	0	0.00	78	0.48

Trips and VMT

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Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	509.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0551	0.0000	0.0551	8.3500e-003	0.0000	8.3500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0136	0.1280	0.1225	2.3000e-004		6.0100e-003	6.0100e-003		5.6300e-003	5.6300e-003	0.0000	20.1517	20.1517	5.0400e-003	0.0000	20.2778
Total	**0.0136**	**0.1280**	**0.1225**	**2.3000e-004**	**0.0551**	**6.0100e-003**	**0.0611**	**8.3500e-003**	**5.6300e-003**	**0.0140**	**0.0000**	**20.1517**	**20.1517**	**5.0400e-003**	**0.0000**	**20.2778**

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Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.3000e-004	0.0346	8.0200e-003	1.5000e-004	4.3200e-003	2.8000e-004	4.6000e-003	1.1900e-003	2.7000e-004	1.4600e-003	0.0000	15.2408	15.2408	5.2000e-004	2.4200e-003	15.9738
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.7000e-004	2.2400e-003	1.0000e-005	7.9000e-004	0.0000	8.0000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6114	0.6114	2.0000e-005	2.0000e-005	0.6168
Total	**7.8000e-004**	**0.0348**	**0.0103**	**1.6000e-004**	**5.1100e-003**	**2.8000e-004**	**5.4000e-003**	**1.4000e-003**	**2.7000e-004**	**1.6700e-003**	**0.0000**	**15.8522**	**15.8522**	**5.4000e-004**	**2.4400e-003**	**16.5906**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0215	0.0000	0.0215	1.6300e-003	0.0000	1.6300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6900e-003	0.0116	0.1395	2.3000e-004		3.6000e-004	3.6000e-004		3.6000e-004	3.6000e-004	0.0000	20.1517	20.1517	5.0400e-003	0.0000	20.2778
Total	**2.6900e-003**	**0.0116**	**0.1395**	**2.3000e-004**	**0.0215**	**3.6000e-004**	**0.0219**	**1.6300e-003**	**3.6000e-004**	**1.9900e-003**	**0.0000**	**20.1517**	**20.1517**	**5.0400e-003**	**0.0000**	**20.2778**

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Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.3000e-004	0.0346	8.0200e-003	1.5000e-004	4.3200e-003	2.8000e-004	4.6000e-003	1.1900e-003	2.7000e-004	1.4600e-003	0.0000	15.2408	15.2408	5.2000e-004	2.4200e-003	15.9738
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.7000e-004	2.2400e-003	1.0000e-005	7.9000e-004	0.0000	8.0000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6114	0.6114	2.0000e-005	2.0000e-005	0.6168
Total	**7.8000e-004**	**0.0348**	**0.0103**	**1.6000e-004**	**5.1100e-003**	**2.8000e-004**	**5.4000e-003**	**1.4000e-003**	**2.7000e-004**	**1.6700e-003**	**0.0000**	**15.8522**	**15.8522**	**5.4000e-004**	**2.4400e-003**	**16.5906**

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

Milpitas Blvd Bridge and Roadway Project - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

Milpitas Blvd Bridge and Roadway Project - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

Milpitas Blvd Bridge and Roadway Project - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

Milpitas Blvd Bridge and Roadway Project - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

Milpitas Blvd Bridge and Roadway Project - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Milpitas Blvd Bridge and Roadway Project - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Milpitas Blvd Bridge and Roadway Project - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Milpitas Blvd Bridge and Roadway Project - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Milpitas Blvd Bridge and Roadway Project - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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Milpitas Blvd Bridge and Roadway Project - Santa Clara County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for ->	Milpitas Blvd. Bridge			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust				
Project Phases (Pounds)	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**SOx (lbs/day)**	**CO2 (lbs/day)**	**CH4 (lbs/day)**	**N2O (lbs/day)**	**CO2e (lbs/day)**
Grubbing/Land Clearing	1.44	10.75	14.90	1.44	0.64	0.80	0.75	0.58	0.17	0.02	2,411.11	0.74	0.02	2,436.70
Grading/Excavation	1.82	15.81	20.39	1.73	0.93	0.80	0.92	0.75	0.17	0.05	5,012.08	0.86	0.29	5,121.34
Drainage/Utilities/Sub-Grade	1.67	14.19	16.54	1.57	0.77	0.80	0.84	0.67	0.17	0.03	3,080.76	0.84	0.04	3,112.56
Paving	1.23	12.26	11.83	0.53	0.53	0.00	0.47	0.47	0.00	0.03	2,880.29	0.79	0.05	2,913.99
Maximum (pounds/day)	3.26	26.56	35.29	3.18	1.58	1.60	1.67	1.34	0.33	0.08	7,423.18	1.64	0.32	7,558.04
Total (tons/construction project)	0.06	0.56	0.59	0.04	0.03	0.01	0.03	0.02	0.00	0.00	136.83	0.04	0.00	138.69

Notes:

Project Start Year ->	2023
Project Length (months) ->	4
Total Project Area (acres) ->	0
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	200	0
Grading/Excavation	135	0	420	0	1,120	0
Drainage/Utilities/Sub-Grade	0	0	0	0	720	0
Paving	0	0	0	30	320	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for ->	Milpitas Blvd. Bridge			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust				
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**SOx (tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0.01	0.05	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	10.61	0.00	0.00	9.73
Grading/Excavation	0.01	0.09	0.11	0.01	0.01	0.00	0.01	0.00	0.00	0.00	27.57	0.00	0.00	25.55
Drainage/Utilities/Sub-Grade	0.00	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.78	0.00	0.00	6.21
Paving	0.04	0.39	0.38	0.02	0.02	0.00	0.01	0.01	0.00	0.00	91.88	0.03	0.00	84.33
Maximum (tons/phase)	0.04	0.39	0.38	0.02	0.02	0.00	0.01	0.01	0.00	0.00	91.88	0.03	0.00	84.33
Total (tons/construction project)	0.06	0.56	0.59	0.04	0.03	0.01	0.03	0.02	0.00	0.00	136.83	0.04	0.00	125.82

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Worker Commute Emissions -RCEM

Emissions	ROG	CO	NOx	PM10	PM2.5	CO2	CO2e
Pounds per day - Grubbing/Land Clearing	0.02974687	0.463082407	0.03841911	0.0204571	0.0084945	141.5687898	142.7087
Tons per const. Period - Grubbing/Land Clearing	0.000130886	0.002037563	0.00016904	9.0011E-05	3.7376E-05	0.622902675	0.627918
Pounds per day - Grading/Excavation	0.166582471	2.593261477	0.21514703	0.11455976	0.04756922	792.7852229	799.1685
Tons per const. Period - Grading/Excavation	0.000916204	0.014262938	0.00118331	0.00063008	0.00026163	4.360318726	4.395427
Pounds per day - Drainage/Utilities/Sub-Grade	0.107088731	1.667096664	0.13830881	0.07364556	0.03058021	509.6476433	513.7512
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.000235595	0.003667613	0.00030428	0.00016202	6.7276E-05	1.121224815	1.130253
Pounds per day - Paving	0.047594992	0.740931851	0.06147058	0.03273136	0.01359121	226.5100637	228.3339
Tons per const. Period - Paving	0.00151828	0.023635726	0.00196091	0.00104413	0.00043356	7.225671032	7.28385
Total tons per construction project	0.002800965	0.043603839	0.00361754	0.00192624	0.00079984	13.33011725	13.43745

SAFE Adjustment Factors for EMFAC2017 Gasoline Light Duty Vehicles

Year	TOG Exhaust	CO Exhaust	NOx Exhaust	PM Exhaust	CO2 Exhaust
2023	1.0007	1.0027	1.0007	1.0032	1.0126

Worker Commute Emissions -SAFE Adjusted

Emissions	ROG	CO	NOx	PM10	PM2.5	CO2	CO2e
Pounds per day - Grubbing/Land Clearing	0.029767693	0.464332729	0.03844601	0.02052256	0.00852169	143.3525566	144.3269
Tons per const. Period - Grubbing/Land Clearing	0.000130978	0.002043064	0.00016916	9.0299E-05	3.7495E-05	0.630751249	0.635038
Pounds per day - Grading/Excavation	0.166699078	2.600263283	0.21529764	0.11492635	0.04772144	802.7743167	808.2305
Tons per const. Period - Grading/Excavation	0.000916845	0.014301448	0.00118414	0.00063209	0.00026247	4.415258742	4.445268
Pounds per day - Drainage/Utilities/Sub-Grade	0.107163693	1.671597825	0.13840562	0.07388123	0.03067807	516.0692036	519.5767
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00023576	0.003677515	0.00030449	0.00016254	6.7492E-05	1.135352248	1.143069
Pounds per day - Paving	0.047628308	0.742932367	0.06151361	0.0328361	0.0136347	229.3640905	230.923
Tons per const. Period - Paving	0.001519343	0.023699542	0.00196228	0.00104747	0.00043495	7.316714487	7.366444
Total tons per construction project	0.002802926	0.04372157	0.00362008	0.0019324	0.0008024	13.49807673	13.58982

Road Construction Emissions Model, Version 9.0.0
SAFE Adjustments Applied

Daily Emission Estimates for -> Milpitas Blvd. Bridge

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.44	10.75	14.90	1.44	0.64	0.80	0.75	0.58	0.17	0.02	2,412.89	0.74	0.02	2,438.31
Grading/Excavation	1.82	15.82	20.39	1.73	0.94	0.80	0.92	0.75	0.17	0.05	5,022.06	0.86	0.29	5,130.40
Drainage/Utilities/Sub-Grade	1.67	14.19	16.54	1.57	0.77	0.80	0.84	0.67	0.17	0.03	6.42	0.84	0.04	3,118.38
Paving	1.23	12.26	11.83	0.53	0.53	0.00	0.47	0.47	0.00	0.03	2,883.15	0.79	0.05	2,916.58
Maximum (pounds/day)	3.26	26.56	35.29	3.18	1.58	1.60	1.67	1.34	0.33	0.08	7,423.18	1.64	0.32	7,558.04
Total (tons/construction project)	0.06	0.56	0.59	0.04	0.03	0.01	0.03	0.02	0.00	0.00	137.00	0.04	0.00	138.84

Notes:

Project Start Year ->	2023
Project Length (months) ->	4
Total Project Area (acres) ->	0
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	200	0
Grading/Excavation	135	0	420	0	1,120	0
Drainage/Utilities/Sub-Grade	0	0	0	0	720	0
Paving	0	0	0	30	320	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Milpitas Blvd. Bridge

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.01	0.05	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	10.62	0.00	0.00	9.73
Grading/Excavation	0.01	0.09	0.11	0.01	0.01	0.00	0.01	0.00	0.00	0.00	27.62	0.00	0.00	25.60
Drainage/Utilities/Sub-Grade	0.00	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.79	0.00	0.00	6.22
Paving	0.04	0.39	0.38	0.02	0.02	0.00	0.01	0.01	0.00	0.00	91.97	0.03	0.00	84.41
Maximum (tons/phase)	0.04	0.39	0.38	0.02	0.02	0.00	0.01	0.01	0.00	0.00	91.88	0.03	0.00	84.33
Total (tons/construction project)	0.06	0.56	0.59	0.04	0.03	0.01	0.03	0.02	0.00	0.00	137.00	0.04	0.00	125.97

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for ->	Milpitas Blvd. Road Extension			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Pounds)	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**SOx (lbs/day)**	**CO2 (lbs/day)**	**CH4 (lbs/day)**	**N2O (lbs/day)**	**CO2e (lbs/day)**
Grubbing/Land Clearing	0.66	5.91	7.06	10.30	0.30	10.00	2.34	0.26	2.08	0.02	1,523.91	0.41	0.04	1,545.52
Grading/Excavation	3.10	31.10	32.04	11.38	1.38	10.00	3.29	1.21	2.08	0.07	7,277.87	1.98	0.18	7,380.86
Drainage/Utilities/Sub-Grade	2.46	25.63	23.55	11.00	1.00	10.00	2.99	0.91	2.08	0.05	5,235.69	1.07	0.07	5,284.14
Paving	0.85	12.79	9.05	0.45	0.45	0.00	0.37	0.37	0.00	0.03	2,581.80	0.56	0.12	2,630.46
Maximum (pounds/day)	3.76	38.42	39.11	21.68	1.68	20.00	5.63	1.47	4.16	0.09	8,801.77	2.39	0.22	8,926.38
Total (tons/construction project)	0.19	2.27	1.96	0.58	0.09	0.50	0.18	0.08	0.10	0.00	482.48	0.11	0.01	489.68

Notes:

Project Start Year ->	2023
Project Length (months) ->	12
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	160	40
Grading/Excavation	48	0	150	0	680	40
Drainage/Utilities/Sub-Grade	0	0	0	0	560	40
Paving	0	0	0	120	400	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for ->	Milpitas Blvd. Road Extension			Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**SOx (tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0.00	0.03	0.04	0.06	0.00	0.06	0.01	0.00	0.01	0.00	8.38	0.00	0.00	7.71
Grading/Excavation	0.07	0.68	0.70	0.25	0.03	0.22	0.07	0.03	0.05	0.00	160.11	0.04	0.00	147.31
Drainage/Utilities/Sub-Grade	0.05	0.56	0.52	0.24	0.02	0.22	0.07	0.02	0.05	0.00	115.19	0.02	0.00	105.46
Paving	0.07	0.98	0.70	0.03	0.03	0.00	0.03	0.03	0.00	0.00	198.80	0.04	0.01	183.75
Maximum (tons/phase)	0.07	0.98	0.70	0.25	0.03	0.22	0.07	0.03	0.05	0.00	198.80	0.04	0.01	183.75
Total (tons/construction project)	0.19	2.27	1.96	0.58	0.09	0.50	0.18	0.08	0.10	0.00	482.48	0.11	0.01	444.23

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Worker Commute Emissions -RCEM

Emissions	ROG	CO	NOx	PM10	PM2.5	CO2	CO2e
Pounds per day - Grubbing/Land Clearing	0.023797496	0.370465925	0.03073529	0.01636568	0.0067956	113.2550318	114.1669
Tons per const. Period - Grubbing/Land Clearing	0.000130886	0.002037563	0.00016904	9.0011E-05	3.7376E-05	0.622902675	0.627918
Pounds per day - Grading/Excavation	0.097336504	1.51472249	0.12260992	0.06949953	0.02883098	472.9203621	476.6332
Tons per const. Period - Grading/Excavation	0.002141403	0.033323895	0.00269742	0.00152899	0.00063428	10.40424797	10.48593
Pounds per day - Drainage/Utilities/Sub-Grade	0.077112354	1.199536364	0.09455063	0.05719115	0.02370282	382.7223083	385.6495
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.001696472	0.0263898	0.00208011	0.00125821	0.00052146	8.419890782	8.484289
Pounds per day - Paving	0.055080253	0.856811689	0.06753617	0.04085082	0.01693059	273.3730773	275.4639
Tons per const. Period - Paving	0.004241179	0.0659745	0.00520028	0.00314551	0.00130366	21.04972696	21.21072
Total tons per construction project	0.008209941	0.127725757	0.01014686	0.00602272	0.00249677	40.49676838	40.80886

SAFE Adjustment Factors for EMFAC2017 Gasoline Light Duty Vehicles

Year	TOG Exhaust	CO Exhaust	NOx Exhaust	PM Exhaust	CO2 Exhaust
2023	1.0007	1.0027	1.0007	1.0032	1.0126

Worker Commute Emissions -SAFE Adjusted

Emissions	ROG	CO	NOx	PM10	PM2.5	CO2	CO2e
Pounds per day - Grubbing/Land Clearing	0.023814154	0.371466183	0.03075681	0.01641805	0.00681735	114.6820452	115.4615
Tons per const. Period - Grubbing/Land Clearing	0.000130978	0.002043064	0.00016916	9.0299E-05	3.7495E-05	0.630751249	0.635038
Pounds per day - Grading/Excavation	0.097404639	1.518812241	0.12269575	0.06972193	0.02892323	478.8791587	482.0389
Tons per const. Period - Grading/Excavation	0.002142902	0.033413869	0.00269931	0.00153388	0.00063631	10.53534149	10.60486
Pounds per day - Drainage/Utilities/Sub-Grade	0.077166333	1.202775112	0.09461682	0.05737416	0.02377867	387.5446094	390.0242
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.001697659	0.026461052	0.00208157	0.00126223	0.00052313	8.525981406	8.580533
Pounds per day - Paving	0.055118809	0.85912508	0.06758344	0.04098154	0.01698476	276.8175781	278.5887
Tons per const. Period - Paving	0.004244148	0.066152631	0.00520392	0.00315558	0.00130783	21.31495351	21.45133
Total tons per construction project	0.008215688	0.128070617	0.01015396	0.00604199	0.00250476	41.00702766	41.27176

Road Construction Emissions Model, Version 9.0.0
SAFE Adjustments Applied

Daily Emission Estimates for -> Milpitas Blvd. Road Extension

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.66	5.91	7.06	10.30	0.30	10.00	2.34	0.26	2.08	0.02	1,525.33	0.41	0.04	1,546.82
Grading/Excavation	3.10	31.10	32.04	11.38	1.38	10.00	3.29	1.21	2.08	0.07	7,283.82	1.98	0.18	7,386.26
Drainage/Utilities/Sub-Grade	2.46	25.63	23.55	11.00	1.00	10.00	2.99	0.91	2.08	0.05	4.82	1.07	0.07	5,288.52
Paving	0.85	12.79	9.05	0.45	0.45	0.00	0.37	0.37	0.00	0.03	2,585.24	0.56	0.12	2,633.58
Maximum (pounds/day)	3.76	38.42	39.11	21.68	1.68	20.00	5.63	1.47	4.16	0.09	8,801.77	2.39	0.22	8,926.38
Total (tons/construction project)	0.19	2.27	1.96	0.58	0.09	0.50	0.18	0.08	0.10	0.00	482.99	0.11	0.01	490.14

Notes:

Project Start Year ->	2023
Project Length (months) ->	12
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	160	40
Grading/Excavation	48	0	150	0	680	40
Drainage/Utilities/Sub-Grade	0	0	0	0	560	40
Paving	0	0	0	120	400	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Milpitas Blvd. Road Extension

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.03	0.04	0.06	0.00	0.06	0.01	0.00	0.01	0.00	8.39	0.00	0.00	7.72
Grading/Excavation	0.07	0.68	0.70	0.25	0.03	0.22	0.07	0.03	0.05	0.00	160.24	0.04	0.00	147.43
Drainage/Utilities/Sub-Grade	0.05	0.56	0.52	0.24	0.02	0.22	0.07	0.02	0.05	0.00	115.29	0.02	0.00	105.56
Paving	0.07	0.99	0.70	0.03	0.03	0.00	0.03	0.03	0.00	0.00	199.06	0.04	0.01	183.99
Maximum (tons/phase)	0.07	0.98	0.70	0.25	0.03	0.22	0.07	0.03	0.05	0.00	198.80	0.04	0.01	183.75
Total (tons/construction project)	0.19	2.27	1.96	0.58	0.09	0.50	0.18	0.08	0.10	0.00	482.99	0.11	0.01	444.69

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

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

Milpitas Blvd. Bridge - Existing Use Ops Analysis

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	41.31	1000sqft	0.95	41,307.00	0
Parking Lot	140.85	1000sqft	3.23	140,850.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Analysis of Existing Ops Emissions

Land Use - Emissions Analysis for Existing Ops

Construction Phase - Ops analysis, No construction

Off-road Equipment - Ops Analysis

Off-road Equipment - Ops Analysis

Off-road Equipment - Ops Analysis

Off-road Equipment - Ops Analysis

Off-road Equipment - Ops Analysis

Off-road Equipment - Ops Analysis

Grading -

Trips and VMT - Ops Analysis

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Vehicle Emission Factors - EMFAC2021 EFs

Vehicle Emission Factors -

Vehicle Emission Factors -

Fleet Mix - Fleet Mix based on county vehilcle Pop in EMFAC2021

Water And Wastewater - 100% WWTP, city sewer

Construction Off-road Equipment Mitigation - No Construction

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	18.00	0.00
tblConstructionPhase	NumDays	230.00	0.00
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	NumDays	8.00	0.00
tblConstructionPhase	NumDays	18.00	0.00
tblConstructionPhase	NumDays	5.00	0.00
tblConstructionPhase	PhaseEndDate	5/23/2024	4/29/2024
tblConstructionPhase	PhaseEndDate	4/3/2024	5/17/2023
tblConstructionPhase	PhaseEndDate	4/28/2023	3/31/2023
tblConstructionPhase	PhaseEndDate	5/17/2023	5/5/2023
tblConstructionPhase	PhaseEndDate	4/29/2024	4/3/2024
tblConstructionPhase	PhaseEndDate	5/5/2023	4/28/2023
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00

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

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblTripsAndVMT	VendorTripNumber	30.00	0.00
tblTripsAndVMT	WorkerTripNumber	72.00	0.00
tblTripsAndVMT	WorkerTripNumber	14.00	0.00
tblVehicleEF	HHD	0.02	0.23
tblVehicleEF	HHD	0.05	0.12
tblVehicleEF	HHD	6.33	5.20
tblVehicleEF	HHD	0.40	0.77
tblVehicleEF	HHD	5.9420e-003	6.2600e-004
tblVehicleEF	HHD	1,048.88	832.32
tblVehicleEF	HHD	1,413.90	1,617.13
tblVehicleEF	HHD	0.05	0.02
tblVehicleEF	HHD	0.17	0.13
tblVehicleEF	HHD	0.22	0.26
tblVehicleEF	HHD	7.0000e-006	2.0000e-005
tblVehicleEF	HHD	5.39	4.11
tblVehicleEF	HHD	2.69	1.85
tblVehicleEF	HHD	2.32	2.73
tblVehicleEF	HHD	2.5820e-003	2.1820e-003
tblVehicleEF	HHD	0.06	0.08
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.02	0.03
tblVehicleEF	HHD	2.4710e-003	2.0820e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8830e-003	8.7810e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	2.0000e-006	1.9600e-004
tblVehicleEF	HHD	9.3000e-005	5.8000e-005

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

tblVehicleEF	HHD	0.43	0.33
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	0.03	0.02
tblVehicleEF	HHD	4.1000e-005	5.2500e-004
tblVehicleEF	HHD	2.0000e-006	0.00
tblVehicleEF	HHD	9.7610e-003	7.2800e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	2.0000e-006	1.9600e-004
tblVehicleEF	HHD	9.3000e-005	5.8000e-005
tblVehicleEF	HHD	0.49	0.59
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	0.08	0.14
tblVehicleEF	HHD	4.1000e-005	5.2500e-004
tblVehicleEF	HHD	3.0000e-006	0.00
tblVehicleEF	LDA	1.7200e-003	2.0530e-003
tblVehicleEF	LDA	0.04	0.06
tblVehicleEF	LDA	0.52	0.65
tblVehicleEF	LDA	2.08	2.89
tblVehicleEF	LDA	234.59	246.81
tblVehicleEF	LDA	49.79	63.85
tblVehicleEF	LDA	3.9560e-003	4.1620e-003
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.16	0.23
tblVehicleEF	LDA	0.04	7.1680e-003
tblVehicleEF	LDA	1.2900e-003	1.1710e-003
tblVehicleEF	LDA	1.6800e-003	1.9100e-003
tblVehicleEF	LDA	0.02	2.5090e-003
tblVehicleEF	LDA	1.1880e-003	1.0780e-003

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

tblVehicleEF	LDA	1.5440e-003	1.7560e-003
tblVehicleEF	LDA	0.04	0.27
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.03	0.00
tblVehicleEF	LDA	6.4090e-003	7.8860e-003
tblVehicleEF	LDA	0.03	0.20
tblVehicleEF	LDA	0.19	0.30
tblVehicleEF	LDA	2.3210e-003	2.4400e-003
tblVehicleEF	LDA	4.9300e-004	6.3100e-004
tblVehicleEF	LDA	0.04	0.27
tblVehicleEF	LDA	0.08	0.08
tblVehicleEF	LDA	0.03	0.00
tblVehicleEF	LDA	9.3170e-003	0.01
tblVehicleEF	LDA	0.03	0.20
tblVehicleEF	LDA	0.21	0.32
tblVehicleEF	LDT1	3.6010e-003	6.2220e-003
tblVehicleEF	LDT1	0.06	0.10
tblVehicleEF	LDT1	0.85	1.42
tblVehicleEF	LDT1	2.26	5.22
tblVehicleEF	LDT1	280.86	327.08
tblVehicleEF	LDT1	60.30	86.29
tblVehicleEF	LDT1	5.8110e-003	9.3750e-003
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.07	0.13
tblVehicleEF	LDT1	0.21	0.38
tblVehicleEF	LDT1	0.04	9.2260e-003
tblVehicleEF	LDT1	1.6380e-003	1.9270e-003
tblVehicleEF	LDT1	2.1080e-003	2.8980e-003
tblVehicleEF	LDT1	0.02	3.2290e-003

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

tblVehicleEF	LDT1	1.5070e-003	1.7740e-003
tblVehicleEF	LDT1	1.9380e-003	2.6650e-003
tblVehicleEF	LDT1	0.07	0.60
tblVehicleEF	LDT1	0.15	0.16
tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	0.08	0.47
tblVehicleEF	LDT1	0.27	0.54
tblVehicleEF	LDT1	2.7790e-003	3.2330e-003
tblVehicleEF	LDT1	5.9700e-004	8.5300e-004
tblVehicleEF	LDT1	0.07	0.60
tblVehicleEF	LDT1	0.15	0.16
tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT1	0.02	0.04
tblVehicleEF	LDT1	0.08	0.47
tblVehicleEF	LDT1	0.30	0.59
tblVehicleEF	LDT2	2.9320e-003	2.8180e-003
tblVehicleEF	LDT2	0.06	0.08
tblVehicleEF	LDT2	0.73	0.83
tblVehicleEF	LDT2	2.69	3.62
tblVehicleEF	LDT2	301.75	340.73
tblVehicleEF	LDT2	65.36	87.22
tblVehicleEF	LDT2	5.6680e-003	6.0190e-003
tblVehicleEF	LDT2	0.03	0.04
tblVehicleEF	LDT2	0.06	0.07
tblVehicleEF	LDT2	0.25	0.33
tblVehicleEF	LDT2	0.04	8.8660e-003
tblVehicleEF	LDT2	1.3400e-003	1.3330e-003
tblVehicleEF	LDT2	1.7010e-003	2.1080e-003

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

tblVehicleEF	LDT2	0.02	3.1030e-003
tblVehicleEF	LDT2	1.2340e-003	1.2260e-003
tblVehicleEF	LDT2	1.5640e-003	1.9380e-003
tblVehicleEF	LDT2	0.06	0.29
tblVehicleEF	LDT2	0.12	0.08
tblVehicleEF	LDT2	0.06	0.00
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.21
tblVehicleEF	LDT2	0.28	0.38
tblVehicleEF	LDT2	2.9850e-003	3.3680e-003
tblVehicleEF	LDT2	6.4700e-004	8.6200e-004
tblVehicleEF	LDT2	0.06	0.29
tblVehicleEF	LDT2	0.12	0.08
tblVehicleEF	LDT2	0.06	0.00
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.21
tblVehicleEF	LDT2	0.31	0.42
tblVehicleEF	LHD1	4.9880e-003	5.3690e-003
tblVehicleEF	LHD1	7.8580e-003	8.1950e-003
tblVehicleEF	LHD1	0.01	0.02
tblVehicleEF	LHD1	0.18	0.20
tblVehicleEF	LHD1	0.71	0.90
tblVehicleEF	LHD1	1.05	2.16
tblVehicleEF	LHD1	8.86	8.72
tblVehicleEF	LHD1	779.34	782.62
tblVehicleEF	LHD1	11.55	17.84
tblVehicleEF	LHD1	7.4200e-004	6.4000e-004
tblVehicleEF	LHD1	0.04	0.04
tblVehicleEF	LHD1	0.02	0.04

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tblVehicleEF	LHD1	0.06	0.05
tblVehicleEF	LHD1	0.65	0.66
tblVehicleEF	LHD1	0.30	0.44
tblVehicleEF	LHD1	8.4200e-004	6.8100e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	9.7790e-003	9.4140e-003
tblVehicleEF	LHD1	9.6230e-003	0.01
tblVehicleEF	LHD1	2.4700e-004	2.2700e-004
tblVehicleEF	LHD1	8.0500e-004	6.5100e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.4450e-003	2.3540e-003
tblVehicleEF	LHD1	9.1590e-003	0.01
tblVehicleEF	LHD1	2.2800e-004	2.0900e-004
tblVehicleEF	LHD1	1.9120e-003	0.13
tblVehicleEF	LHD1	0.07	0.03
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	9.8500e-004	0.00
tblVehicleEF	LHD1	0.09	0.09
tblVehicleEF	LHD1	0.20	0.18
tblVehicleEF	LHD1	0.07	0.11
tblVehicleEF	LHD1	8.6000e-005	8.5000e-005
tblVehicleEF	LHD1	7.6080e-003	7.6450e-003
tblVehicleEF	LHD1	1.1400e-004	1.7600e-004
tblVehicleEF	LHD1	1.9120e-003	0.13
tblVehicleEF	LHD1	0.07	0.03
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	9.8500e-004	0.00
tblVehicleEF	LHD1	0.11	0.11
tblVehicleEF	LHD1	0.20	0.18

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tblVehicleEF	LHD1	0.08	0.12
tblVehicleEF	LHD2	3.0380e-003	3.1580e-003
tblVehicleEF	LHD2	6.6540e-003	6.9670e-003
tblVehicleEF	LHD2	7.7290e-003	0.01
tblVehicleEF	LHD2	0.14	0.14
tblVehicleEF	LHD2	0.59	0.57
tblVehicleEF	LHD2	0.60	1.22
tblVehicleEF	LHD2	13.88	13.77
tblVehicleEF	LHD2	754.92	827.31
tblVehicleEF	LHD2	7.59	9.92
tblVehicleEF	LHD2	1.7350e-003	1.6800e-003
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.77	0.90
tblVehicleEF	LHD2	0.17	0.24
tblVehicleEF	LHD2	1.4370e-003	1.3710e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.2700e-004	1.0100e-004
tblVehicleEF	LHD2	1.3750e-003	1.3110e-003
tblVehicleEF	LHD2	0.04	0.03
tblVehicleEF	LHD2	2.6920e-003	2.6640e-003
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.1700e-004	9.3000e-005
tblVehicleEF	LHD2	9.8500e-004	0.07
tblVehicleEF	LHD2	0.04	0.02
tblVehicleEF	LHD2	0.02	0.02

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tblVehicleEF	LHD2	5.1400e-004	0.00
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.04	0.06
tblVehicleEF	LHD2	1.3300e-004	1.3200e-004
tblVehicleEF	LHD2	7.2890e-003	7.9720e-003
tblVehicleEF	LHD2	7.5000e-005	9.8000e-005
tblVehicleEF	LHD2	9.8500e-004	0.07
tblVehicleEF	LHD2	0.04	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	5.1400e-004	0.00
tblVehicleEF	LHD2	0.13	0.13
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.04	0.07
tblVehicleEF	MCY	0.33	0.16
tblVehicleEF	MCY	0.25	0.18
tblVehicleEF	MCY	18.60	12.67
tblVehicleEF	MCY	9.06	8.00
tblVehicleEF	MCY	210.08	187.74
tblVehicleEF	MCY	60.71	48.38
tblVehicleEF	MCY	0.07	0.04
tblVehicleEF	MCY	0.02	8.0200e-003
tblVehicleEF	MCY	1.15	0.57
tblVehicleEF	MCY	0.27	0.14
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	1.9970e-003	1.9020e-003
tblVehicleEF	MCY	2.9300e-003	3.4560e-003
tblVehicleEF	MCY	5.0400e-003	4.2000e-003
tblVehicleEF	MCY	1.8650e-003	1.7790e-003

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tblVehicleEF	MCY	2.7520e-003	3.2480e-003
tblVehicleEF	MCY	0.90	3.90
tblVehicleEF	MCY	0.68	3.56
tblVehicleEF	MCY	0.49	0.00
tblVehicleEF	MCY	2.19	1.06
tblVehicleEF	MCY	0.53	3.75
tblVehicleEF	MCY	1.93	1.35
tblVehicleEF	MCY	2.0790e-003	1.8560e-003
tblVehicleEF	MCY	6.0100e-004	4.7800e-004
tblVehicleEF	MCY	0.90	0.09
tblVehicleEF	MCY	0.68	3.56
tblVehicleEF	MCY	0.49	0.00
tblVehicleEF	MCY	2.72	1.28
tblVehicleEF	MCY	0.53	3.75
tblVehicleEF	MCY	2.10	1.46
tblVehicleEF	MDV	3.4000e-003	3.7500e-003
tblVehicleEF	MDV	0.07	0.10
tblVehicleEF	MDV	0.78	0.94
tblVehicleEF	MDV	2.95	3.90
tblVehicleEF	MDV	364.87	411.00
tblVehicleEF	MDV	77.92	104.37
tblVehicleEF	MDV	7.5920e-003	8.3490e-003
tblVehicleEF	MDV	0.03	0.04
tblVehicleEF	MDV	0.07	0.10
tblVehicleEF	MDV	0.29	0.41
tblVehicleEF	MDV	0.04	9.0000e-003
tblVehicleEF	MDV	1.4300e-003	1.3730e-003
tblVehicleEF	MDV	1.8100e-003	2.1610e-003
tblVehicleEF	MDV	0.02	3.1500e-003

Milpitas Blvd. Bridge - Existing Use Ops Analysis - Santa Clara County, Annual

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

tblVehicleEF	MDV	1.3190e-003	1.2660e-003
tblVehicleEF	MDV	1.6640e-003	1.9870e-003
tblVehicleEF	MDV	0.07	0.35
tblVehicleEF	MDV	0.13	0.09
tblVehicleEF	MDV	0.07	0.00
tblVehicleEF	MDV	0.01	0.02
tblVehicleEF	MDV	0.06	0.27
tblVehicleEF	MDV	0.34	0.49
tblVehicleEF	MDV	3.6060e-003	4.0610e-003
tblVehicleEF	MDV	7.7100e-004	1.0320e-003
tblVehicleEF	MDV	0.07	0.35
tblVehicleEF	MDV	0.13	0.09
tblVehicleEF	MDV	0.07	0.00
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.06	0.27
tblVehicleEF	MDV	0.38	0.54
tblVehicleEF	MH	9.5570e-003	0.01
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	0.93	1.29
tblVehicleEF	MH	2.03	2.49
tblVehicleEF	MH	1,501.42	1,686.59
tblVehicleEF	MH	18.14	22.55
tblVehicleEF	MH	0.06	0.07
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.31	1.54
tblVehicleEF	MH	0.24	0.30
tblVehicleEF	MH	0.13	0.04
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.03

Milpitas Blvd. Bridge - Existing Use Ops Analysis - Santa Clara County, Annual

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

tblVehicleEF	MH	2.6100e-004	3.1300e-004
tblVehicleEF	MH	0.06	0.02
tblVehicleEF	MH	3.2790e-003	3.3010e-003
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	2.4000e-004	2.8800e-004
tblVehicleEF	MH	0.64	32.73
tblVehicleEF	MH	0.05	8.70
tblVehicleEF	MH	0.23	0.00
tblVehicleEF	MH	0.06	0.08
tblVehicleEF	MH	0.01	0.20
tblVehicleEF	MH	0.09	0.11
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	1.7900e-004	2.2300e-004
tblVehicleEF	MH	0.64	32.73
tblVehicleEF	MH	0.05	8.70
tblVehicleEF	MH	0.23	0.00
tblVehicleEF	MH	0.08	0.11
tblVehicleEF	MH	0.01	0.20
tblVehicleEF	MH	0.10	0.12
tblVehicleEF	MHD	3.5790e-003	0.01
tblVehicleEF	MHD	1.6940e-003	9.6580e-003
tblVehicleEF	MHD	9.1320e-003	8.7730e-003
tblVehicleEF	MHD	0.39	0.67
tblVehicleEF	MHD	0.23	0.35
tblVehicleEF	MHD	1.07	1.07
tblVehicleEF	MHD	72.08	160.26
tblVehicleEF	MHD	1,080.76	1,229.18
tblVehicleEF	MHD	9.15	8.53
tblVehicleEF	MHD	0.01	0.02

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

tblVehicleEF	MHD	0.14	0.16
tblVehicleEF	MHD	7.2440e-003	6.0320e-003
tblVehicleEF	MHD	0.41	0.89
tblVehicleEF	MHD	1.45	1.11
tblVehicleEF	MHD	1.70	1.41
tblVehicleEF	MHD	3.6900e-004	2.1280e-003
tblVehicleEF	MHD	0.13	0.05
tblVehicleEF	MHD	7.0230e-003	0.01
tblVehicleEF	MHD	1.1500e-004	1.0700e-004
tblVehicleEF	MHD	3.5300e-004	2.0350e-003
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	6.7130e-003	0.01
tblVehicleEF	MHD	1.0600e-004	9.8000e-005
tblVehicleEF	MHD	3.8300e-004	0.03
tblVehicleEF	MHD	0.02	6.2600e-003
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	1.9800e-004	0.00
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	0.02	0.05
tblVehicleEF	MHD	0.05	0.05
tblVehicleEF	MHD	6.8400e-004	1.4900e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	9.1000e-005	8.4000e-005
tblVehicleEF	MHD	3.8300e-004	0.03
tblVehicleEF	MHD	0.02	6.2600e-003
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	1.9800e-004	0.00
tblVehicleEF	MHD	0.02	0.05
tblVehicleEF	MHD	0.02	0.05

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

tblVehicleEF	MHD	0.05	0.05
tblVehicleEF	OBUS	7.0640e-003	7.4580e-003
tblVehicleEF	OBUS	3.6240e-003	9.2750e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.58	0.51
tblVehicleEF	OBUS	0.43	0.49
tblVehicleEF	OBUS	1.84	1.96
tblVehicleEF	OBUS	92.66	85.71
tblVehicleEF	OBUS	1,326.08	1,388.86
tblVehicleEF	OBUS	15.18	15.49
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.13	0.16
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.38	0.37
tblVehicleEF	OBUS	1.47	1.01
tblVehicleEF	OBUS	1.09	0.98
tblVehicleEF	OBUS	1.2200e-004	4.2300e-004
tblVehicleEF	OBUS	0.13	0.05
tblVehicleEF	OBUS	7.3930e-003	0.02
tblVehicleEF	OBUS	1.4500e-004	1.3400e-004
tblVehicleEF	OBUS	1.1700e-004	4.0500e-004
tblVehicleEF	OBUS	0.06	0.02
tblVehicleEF	OBUS	7.0600e-003	0.02
tblVehicleEF	OBUS	1.3300e-004	1.2400e-004
tblVehicleEF	OBUS	1.0900e-003	0.07
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.04
tblVehicleEF	OBUS	4.8500e-004	0.00
tblVehicleEF	OBUS	0.02	0.05

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

tblVehicleEF	OBUS	0.04	0.08
tblVehicleEF	OBUS	0.09	0.09
tblVehicleEF	OBUS	8.8000e-004	8.1100e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	1.5000e-004	1.5300e-004
tblVehicleEF	OBUS	1.0900e-003	0.07
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.06	0.05
tblVehicleEF	OBUS	4.8500e-004	0.00
tblVehicleEF	OBUS	0.03	0.06
tblVehicleEF	OBUS	0.04	0.08
tblVehicleEF	OBUS	0.10	0.10
tblVehicleEF	SBUS	0.05	0.07
tblVehicleEF	SBUS	6.0180e-003	0.09
tblVehicleEF	SBUS	4.9720e-003	4.8000e-003
tblVehicleEF	SBUS	2.27	1.65
tblVehicleEF	SBUS	0.49	0.88
tblVehicleEF	SBUS	0.72	0.66
tblVehicleEF	SBUS	346.78	189.38
tblVehicleEF	SBUS	1,049.23	1,027.72
tblVehicleEF	SBUS	4.12	3.73
tblVehicleEF	SBUS	0.05	0.03
tblVehicleEF	SBUS	0.13	0.13
tblVehicleEF	SBUS	4.7550e-003	4.2250e-003
tblVehicleEF	SBUS	3.44	1.39
tblVehicleEF	SBUS	4.65	2.57
tblVehicleEF	SBUS	0.86	0.48
tblVehicleEF	SBUS	3.6120e-003	1.3090e-003
tblVehicleEF	SBUS	0.74	0.04

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

tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	4.8000e-005	4.0000e-005
tblVehicleEF	SBUS	3.4560e-003	1.2520e-003
tblVehicleEF	SBUS	0.32	0.02
tblVehicleEF	SBUS	2.7190e-003	2.6500e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	4.4000e-005	3.6000e-005
tblVehicleEF	SBUS	5.6700e-004	0.03
tblVehicleEF	SBUS	5.5090e-003	7.3010e-003
tblVehicleEF	SBUS	0.25	0.18
tblVehicleEF	SBUS	2.4700e-004	0.00
tblVehicleEF	SBUS	0.08	0.06
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	SBUS	3.3010e-003	1.7230e-003
tblVehicleEF	SBUS	0.01	9.5530e-003
tblVehicleEF	SBUS	4.1000e-005	3.7000e-005
tblVehicleEF	SBUS	5.6700e-004	0.03
tblVehicleEF	SBUS	5.5090e-003	7.3010e-003
tblVehicleEF	SBUS	0.36	0.30
tblVehicleEF	SBUS	2.4700e-004	0.00
tblVehicleEF	SBUS	0.10	0.16
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.03	0.03
tblVehicleEF	UBUS	1.35	0.35
tblVehicleEF	UBUS	1.5380e-003	3.7340e-003
tblVehicleEF	UBUS	10.12	4.17
tblVehicleEF	UBUS	0.14	0.53

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

tblVehicleEF	UBUS	1,597.16	1,098.80
tblVehicleEF	UBUS	1.39	3.20
tblVehicleEF	UBUS	0.26	0.17
tblVehicleEF	UBUS	1.0770e-003	6.2180e-003
tblVehicleEF	UBUS	0.73	0.33
tblVehicleEF	UBUS	0.01	0.04
tblVehicleEF	UBUS	0.07	0.11
tblVehicleEF	UBUS	0.03	0.03
tblVehicleEF	UBUS	5.3280e-003	6.2290e-003
tblVehicleEF	UBUS	1.5000e-005	1.2000e-005
tblVehicleEF	UBUS	0.03	0.04
tblVehicleEF	UBUS	8.3320e-003	8.1710e-003
tblVehicleEF	UBUS	5.0960e-003	5.9560e-003
tblVehicleEF	UBUS	1.4000e-005	1.1000e-005
tblVehicleEF	UBUS	2.1000e-005	9.8940e-003
tblVehicleEF	UBUS	1.6100e-004	3.3030e-003
tblVehicleEF	UBUS	9.0000e-006	0.00
tblVehicleEF	UBUS	0.02	0.06
tblVehicleEF	UBUS	2.9000e-005	7.9870e-003
tblVehicleEF	UBUS	6.4070e-003	0.01
tblVehicleEF	UBUS	0.01	9.4250e-003
tblVehicleEF	UBUS	1.4000e-005	3.2000e-005
tblVehicleEF	UBUS	2.1000e-005	9.8940e-003
tblVehicleEF	UBUS	1.6100e-004	3.3030e-003
tblVehicleEF	UBUS	9.0000e-006	0.00
tblVehicleEF	UBUS	1.38	0.42
tblVehicleEF	UBUS	2.9000e-005	7.9870e-003
tblVehicleEF	UBUS	7.0150e-003	0.01
tblWater	AerobicPercent	87.46	100.00

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

tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					

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

2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1951	2.0000e-005	1.6700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.2500e-003	3.2500e-003	1.0000e-005	0.0000	3.4700e-003
Energy	3.6100e-003	0.0328	0.0276	2.0000e-004		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	105.8925	105.8925	0.0120	2.0300e-003	106.7987
Mobile	0.1956	0.1325	1.2622	2.6400e-003	0.2462	1.8600e-003	0.2481	0.0614	1.7400e-003	0.0631	0.0000	243.4156	243.4156	0.0141	0.0114	247.1644
Waste						0.0000	0.0000		0.0000	0.0000	7.7989	0.0000	7.7989	0.4609	0.0000	19.3215
Water						0.0000	0.0000		0.0000	0.0000	2.5977	5.1331	7.7308	9.7700e-003	5.7500e-003	9.6885
Total	**0.3942**	**0.1653**	**1.2914**	**2.8400e-003**	**0.2462**	**4.3600e-003**	**0.2506**	**0.0614**	**4.2400e-003**	**0.0656**	**10.3966**	**354.4444**	**364.8410**	**0.4969**	**0.0192**	**382.9765**

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

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1951	2.0000e-005	1.6700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.2500e-003	3.2500e-003	1.0000e-005	0.0000	3.4700e-003
Energy	3.6100e-003	0.0328	0.0276	2.0000e-004		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	105.8925	105.8925	0.0120	2.0300e-003	106.7987
Mobile	0.1956	0.1325	1.2622	2.6400e-003	0.2462	1.8600e-003	0.2481	0.0614	1.7400e-003	0.0631	0.0000	243.4156	243.4156	0.0141	0.0114	247.1644
Waste						0.0000	0.0000		0.0000	0.0000	7.7989	0.0000	7.7989	0.4609	0.0000	19.3215
Water						0.0000	0.0000		0.0000	0.0000	2.5977	5.1331	7.7308	9.7700e-003	5.7500e-003	9.6885
Total	**0.3942**	**0.1653**	**1.2914**	**2.8400e-003**	**0.2462**	**4.3600e-003**	**0.2506**	**0.0614**	**4.2400e-003**	**0.0656**	**10.3966**	**354.4444**	**364.8410**	**0.4969**	**0.0192**	**382.9765**

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

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1956	0.1325	1.2622	2.6400e-003	0.2462	1.8600e-003	0.2481	0.0614	1.7400e-003	0.0631	0.0000	243.4156	243.4156	0.0141	0.0114	247.1644
Unmitigated	0.1956	0.1325	1.2622	2.6400e-003	0.2462	1.8600e-003	0.2481	0.0614	1.7400e-003	0.0631	0.0000	243.4156	243.4156	0.0141	0.0114	247.1644

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	402.33	91.29	28.91	727,801	727,801
Parking Lot	0.00	0.00	0.00		
Total	402.33	91.29	28.91	727,801	727,801

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.572464	0.055653	0.187060	0.115672	0.020329	0.005102	0.007934	0.006404	0.000900	0.000380	0.024412	0.000914	0.002776
Parking Lot	0.572464	0.055653	0.187060	0.115672	0.020329	0.005102	0.007934	0.006404	0.000900	0.000380	0.024412	0.000914	0.002776

5.0 Energy Detail

Milpitas Blvd. Bridge - Existing Use Ops Analysis - Santa Clara County, Annual

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

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	70.1829	70.1829	0.0114	1.3800e-003	70.8768
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	70.1829	70.1829	0.0114	1.3800e-003	70.8768
NaturalGas Mitigated	3.6100e-003	0.0328	0.0276	2.0000e-004		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	35.7096	35.7096	6.8000e-004	6.5000e-004	35.9219
NaturalGas Unmitigated	3.6100e-003	0.0328	0.0276	2.0000e-004		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	35.7096	35.7096	6.8000e-004	6.5000e-004	35.9219

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	669173	3.6100e-003	0.0328	0.0276	2.0000e-004		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	35.7096	35.7096	6.8000e-004	6.5000e-004	35.9219
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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

Total		**3.6100e-003**	**0.0328**	**0.0276**	**2.0000e-004**		**2.4900e-003**	**2.4900e-003**		**2.4900e-003**	**2.4900e-003**	**0.0000**	**35.7096**	**35.7096**	**6.8000e-004**	**6.5000e-004**	**35.9219**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	669173	3.6100e-003	0.0328	0.0276	2.0000e-004		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	35.7096	35.7096	6.8000e-004	6.5000e-004	35.9219
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**3.6100e-003**	**0.0328**	**0.0276**	**2.0000e-004**		**2.4900e-003**	**2.4900e-003**		**2.4900e-003**	**2.4900e-003**	**0.0000**	**35.7096**	**35.7096**	**6.8000e-004**	**6.5000e-004**	**35.9219**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	709241	65.6217	0.0106	1.2900e-003	66.2706
Parking Lot	49297.5	4.5612	7.4000e-004	9.0000e-005	4.6063
Total		**70.1829**	**0.0114**	**1.3800e-003**	**70.8768**

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

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	709241	65.6217	0.0106	1.2900e-003	66.2706
Parking Lot	49297.5	4.5612	7.4000e-004	9.0000e-005	4.6063
Total		**70.1829**	**0.0114**	**1.3800e-003**	**70.8768**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1951	2.0000e-005	1.6700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.2500e-003	3.2500e-003	1.0000e-005	0.0000	3.4700e-003
Unmitigated	0.1951	2.0000e-005	1.6700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.2500e-003	3.2500e-003	1.0000e-005	0.0000	3.4700e-003

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

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0245					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1704					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.5000e-004	2.0000e-005	1.6700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.2500e-003	3.2500e-003	1.0000e-005	0.0000	3.4700e-003
Total	**0.1951**	**2.0000e-005**	**1.6700e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.2500e-003**	**3.2500e-003**	**1.0000e-005**	**0.0000**	**3.4700e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0245					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1704					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.5000e-004	2.0000e-005	1.6700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.2500e-003	3.2500e-003	1.0000e-005	0.0000	3.4700e-003

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Total	**0.1951**	**2.0000e-005**	**1.6700e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.2500e-003**	**3.2500e-003**	**1.0000e-005**	**0.0000**	**3.4700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.7308	9.7700e-003	5.7500e-003	9.6885
Unmitigated	7.7308	9.7700e-003	5.7500e-003	9.6885

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	7.34218 / 4.50005	7.7308	9.7700e-003	5.7500e-003	9.6885
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000

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

Total	**7.7308**	**9.7700e-003**	**5.7500e-003**	**9.6885**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	7.34218 / 4.50005	7.7308	9.7700e-003	5.7500e-003	9.6885
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**7.7308**	**9.7700e-003**	**5.7500e-003**	**9.6885**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	7.7989	0.4609	0.0000	19.3215

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

Unmitigated	7.7989	0.4609	0.0000	19.3215

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	38.42	7.7989	0.4609	0.0000	19.3215
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**7.7989**	**0.4609**	**0.0000**	**19.3215**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	38.42	7.7989	0.4609	0.0000	19.3215
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**7.7989**	**0.4609**	**0.0000**	**19.3215**

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9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod EMFAC2021 Fleet Mix Input - 2024

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY
	0.53116	0.041583	0.227794	0.127091	0.023141	0.005641	0.009358	0.007307	0.001055	0.000417	0.022105

SBUS	MH
0.000682	0.002666

CalEEMod EMFAC2021 Emission Factors Input -2024

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.005377	0.003249	0.013383	0.232934116	0.007458	0	0	0.074531	0
A	CH4_RUNEX	0.002051	0.006222	0.002817	0.003749	0.00818	0.006974	0.009658	0.121678903	0.009275	0.353984559	0.171772	0.091035	0.012488
A	CH4_STREX	0.067726	0.104963	0.08275	0.099602	0.022625	0.012599	0.008773	8.02769E-08	0.017671	0.00393016	0.189534	0.0048	0.026745
A	CO_IDLEX	0	0	0	0	0.196553	0.142433	0.671381	5.195559849	0.514566	0	0	1.654918	0
A	CO_RUNEX	0.649711	1.418726	0.829327	0.943281	0.89701	0.569575	0.346173	0.774886828	0.491534	4.169641806	14.38328	0.884386	1.294901
A	CO_STREX	3.008478	5.230353	3.655626	3.931792	2.13326	1.201025	1.07433	0.000626211	1.960551	0.525737998	7.689677	0.664389	2.491606
A	CO2_NBIO_IDLEX	0	0	0	0	8.727528	13.78864	160.3244	832.6005736	85.71146	0	0	189.4507	0
A	CO2_NBIO_RUNEX	246.8081	327.0753	340.7339	411.0049	784.1623	828.9778	1229.838	1617.576982	1389.139	1098.805139	190.6913	1028.119	1686.59
A	CO2_NBIO_STREX	64.09427	86.29597	87.2747	104.4236	17.80424	9.907975	8.533177	0.019577946	15.49631	3.197080643	51.77839	3.727325	22.54937
A	NOX_IDLEX	0	0	0	0	0.048387	0.093022	0.894313	4.111213715	0.365684	0	0	1.389668	0
A	NOX_RUNEX	0.037369	0.127832	0.068032	0.098516	0.661225	0.88969	1.112922	1.850604526	1.007061	0.327856595	0.598844	2.57268	1.5351
A	NOX_STREX	0.240038	0.379704	0.332074	0.41728	0.438657	0.24651	1.407896	2.731408381	0.979918	0.042218612	0.148555	0.480958	0.299202
A	PM10_IDLEX	0	0	0	0	0.000681	0.001371	0.002128	0.002182492	0.000423	0	0	0.001309	0
A	PM10_PMBW	0.007168	0.009226	0.008866	0.009	0.077823	0.090794	0.045399	0.08129752	0.049798	0.11066361	0.012	0.044858	0.044947
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.009414	0.010658	0.012	0.035125425	0.012	0.032683644	0.004	0.0106	0.013206
A	PM10_RUNEX	0.001171	0.001927	0.001333	0.001373	0.014027	0.022761	0.012985	0.025474433	0.015841	0.006229362	0.001954	0.013303	0.03019
A	PM10_STREX	0.001911	0.002898	0.002107	0.002161	0.000227	0.000101	0.000107	6.09682E-07	0.000134	1.21066E-05	0.00338	3.95E-05	0.000313
A	PM25_IDLEX	0	0	0	0	0.000651	0.001311	0.002035	0.002082052	0.000405	0	0	0.001252	0
A	PM25_PMBW	0.002509	0.003229	0.003103	0.00315	0.027238	0.031778	0.01589	0.028454132	0.017429	0.038732263	0.0042	0.0157	0.015732
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002354	0.002664	0.003	0.008781356	0.003	0.008170911	0.001	0.00265	0.003301
A	PM25_RUNEX	0.001078	0.001774	0.001226	0.001266	0.01338	0.021758	0.012415	0.0243688	0.015147	0.005956092	0.001827	0.012712	0.028836
A	PM25_STREX	0.001757	0.002664	0.001938	0.001987	0.000209	9.28E-05	9.82E-05	5.6058E-07	0.000124	1.11315E-05	0.003177	3.63E-05	0.000288
A	ROG_DIURN	0.272416	0.595124	0.287823	0.349834	0.128573	0.066802	0.025795	0.000195977	0.069031	0.00989389	3.900294	0.027017	32.73442
A	ROG_HTSK	0.080672	0.164385	0.080502	0.093899	0.032798	0.017191	0.00626	5.82846E-05	0.0166	0.00330336	3.559276	0.007301	8.700008
A	ROG_IDLEX	0	0	0	0	0.021942	0.016299	0.026359	0.329789936	0.040067	0	0	0.181581	0
A	ROG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	ROG_RUNEX	0.007886	0.027617	0.0111	0.015872	0.087665	0.11544	0.038113	0.018605536	0.047576	0.063031406	1.123169	0.055863	0.083758
A	ROG_RUNLS	0.203855	0.469715	0.214096	0.266358	0.182065	0.092651	0.050964	0.000525006	0.075921	0.007986926	3.75283	0.017605	0.204308
A	ROG_STREX	0.311462	0.537261	0.383703	0.4977	0.112219	0.061861	0.048943	4.36152E-07	0.093584	0.014025351	1.402019	0.027327	0.113367
A	SO2_IDLEX	0	0	0	0	8.5E-05	0.000132	0.001491	0.007282701	0.000811	0	0	0.001724	0
A	SO2_RUNEX	0.00244	0.003233	0.003368	0.004061	0.00766	0.007988	0.011671	0.014639651	0.013278	0.009424764	0.001885	0.009556	0.01654
A	SO2_STREX	0.000634	0.000853	0.000863	0.001032	0.000176	9.8E-05	8.44E-05	1.93548E-07	0.000153	3.16064E-05	0.000512	3.68E-05	0.000223
A	TOG_DIURN	0.272416	0.595124	0.287823	0.349834	0.128573	0.066802	0.025795	0.000195977	0.069031	0.00989389	0.086215	0.027017	32.73442
A	TOG_HTSK	0.080672	0.164385	0.080502	0.093899	0.032798	0.017191	0.00626	5.82846E-05	0.0166	0.00330336	3.559276	0.007301	8.700008
A	TOG_IDLEX	0	0	0	0	0.031162	0.022074	0.043266	0.594148623	0.053137	0	0	0.296054	0
A	TOG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	TOG_RUNEX	0.011489	0.040276	0.016182	0.023096	0.108371	0.134469	0.053054	0.142671417	0.063874	0.424562425	1.354171	0.155502	0.11065
A	TOG_RUNLS	0.203855	0.469715	0.214096	0.266358	0.182065	0.092651	0.050964	0.000525006	0.075921	0.007986926	3.75283	0.017605	0.204308
A	TOG_STREX	0.341012	0.588232	0.420106	0.544917	0.122865	0.06773	0.053586	4.77531E-07	0.102462	0.015355994	1.524416	0.029919	0.124122
A	N2O_IDLEX	0	0	0	0	0.000642	0.001685	0.024699	0.134118084	0.012191	0	0	0.025119	0
A	N2O_RUNEX	0.004156	0.009374	0.006017	0.008347	0.041472	0.08253	0.158314	0.25814886	0.157784	0.166447984	0.040955	0.128311	0.069357
A	N2O_STREX	0.030787	0.038539	0.037034	0.039993	0.035165	0.019738	0.006032	1.94763E-05	0.015206	0.00682938	0.008948	0.004225	0.031398

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	41.31	1000sqft	0.95	41,307.00	0
Parking Lot	140.85	1000sqft	3.23	140,850.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2030
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Analysis of Existing Ops Emissions

Land Use - Emissions Analysis for Existing Ops

Construction Phase - Ops analysis, No construction

Off-road Equipment - Ops Analysis

Off-road Equipment - Ops Analysis

Off-road Equipment - Ops Analysis

Off-road Equipment - Ops Analysis

Off-road Equipment - Ops Analysis

Off-road Equipment - Ops Analysis

Trips and VMT - Ops Analysis

Grading -

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Vehicle Emission Factors - EMFAC2021 EFs

Vehicle Emission Factors -

Vehicle Emission Factors -

Water And Wastewater - 100% WWTP, city sewer

Construction Off-road Equipment Mitigation - No Construction

Fleet Mix - Fleet Mix based on county vehilcle Pop in EMFAC2021

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	NumDays	5.00	0.00
tblConstructionPhase	NumDays	8.00	0.00
tblConstructionPhase	NumDays	230.00	0.00
tblConstructionPhase	NumDays	18.00	0.00
tblConstructionPhase	NumDays	18.00	0.00
tblFleetMix	HHD	6.1320e-003	7.8440e-003
tblFleetMix	HHD	6.1320e-003	7.8440e-003
tblFleetMix	LDA	0.58	0.51
tblFleetMix	LDA	0.58	0.51
tblFleetMix	LDT1	0.06	0.04
tblFleetMix	LDT1	0.06	0.04
tblFleetMix	LDT2	0.18	0.24
tblFleetMix	LDT2	0.18	0.24
tblFleetMix	LHD1	0.02	0.02
tblFleetMix	LHD1	0.02	0.02
tblFleetMix	LHD2	5.3980e-003	6.1702e-003
tblFleetMix	LHD2	5.3980e-003	6.1702e-003
tblFleetMix	MCY	0.02	0.02
tblFleetMix	MCY	0.02	0.02
tblFleetMix	MDV	0.12	0.14

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tblFleetMix	MDV	0.12	0.14
tblFleetMix	MH	2.5260e-003	2.2720e-003
tblFleetMix	MH	2.5260e-003	2.2720e-003
tblFleetMix	MHD	8.2190e-003	9.6587e-003
tblFleetMix	MHD	8.2190e-003	9.6587e-003
tblFleetMix	OBUS	8.5200e-004	1.0637e-003
tblFleetMix	OBUS	8.5200e-004	1.0637e-003
tblFleetMix	SBUS	8.3700e-004	6.8094e-004
tblFleetMix	SBUS	8.3700e-004	6.8094e-004
tblFleetMix	UBUS	3.3500e-004	3.9649e-004
tblFleetMix	UBUS	3.3500e-004	3.9649e-004
tblLandUse	LandUseSquareFeet	41,310.00	41,307.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00

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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblTripsAndVMT	VendorTripNumber	30.00	0.00
tblTripsAndVMT	WorkerTripNumber	72.00	0.00
tblTripsAndVMT	WorkerTripNumber	14.00	0.00
tblVehicleEF	HHD	0.02	0.20
tblVehicleEF	HHD	0.05	0.09
tblVehicleEF	HHD	0.00	4.4000e-008

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tblVehicleEF	HHD	6.28	5.00
tblVehicleEF	HHD	0.41	0.63
tblVehicleEF	HHD	6.6850e-003	8.7263e-004
tblVehicleEF	HHD	930.05	719.71
tblVehicleEF	HHD	1,226.35	1,395.93
tblVehicleEF	HHD	0.05	9.4375e-003
tblVehicleEF	HHD	0.15	0.12
tblVehicleEF	HHD	0.19	0.22
tblVehicleEF	HHD	2.0000e-006	3.7700e-006
tblVehicleEF	HHD	5.20	3.81
tblVehicleEF	HHD	2.52	1.45
tblVehicleEF	HHD	2.31	2.60
tblVehicleEF	HHD	2.1460e-003	1.7376e-003
tblVehicleEF	HHD	0.06	0.08
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	1.0000e-006	1.4400e-007
tblVehicleEF	HHD	2.0530e-003	1.6556e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.9050e-003	8.7863e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	1.0000e-006	1.3200e-007
tblVehicleEF	HHD	1.0000e-006	4.0200e-005
tblVehicleEF	HHD	5.8000e-005	1.2700e-005
tblVehicleEF	HHD	0.42	0.31
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	2.5000e-005	1.1399e-004
tblVehicleEF	HHD	2.0000e-006	2.3900e-007

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tblVehicleEF	HHD	8.6530e-003	6.2147e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	1.0000e-006	9.3300e-008
tblVehicleEF	HHD	1.0000e-006	4.0200e-005
tblVehicleEF	HHD	5.8000e-005	1.2700e-005
tblVehicleEF	HHD	0.49	0.54
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	0.07	0.10
tblVehicleEF	HHD	2.5000e-005	1.1399e-004
tblVehicleEF	HHD	2.0000e-006	2.6100e-007
tblVehicleEF	LDA	9.5900e-004	1.2508e-003
tblVehicleEF	LDA	0.03	0.05
tblVehicleEF	LDA	0.40	0.48
tblVehicleEF	LDA	1.69	2.09
tblVehicleEF	LDA	199.86	218.64
tblVehicleEF	LDA	42.17	55.99
tblVehicleEF	LDA	3.1760e-003	3.1649e-003
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.02	0.02
tblVehicleEF	LDA	0.12	0.18
tblVehicleEF	LDA	0.04	7.0779e-003
tblVehicleEF	LDA	8.0000e-003	8.0000e-003
tblVehicleEF	LDA	9.1600e-004	8.3824e-004
tblVehicleEF	LDA	1.2750e-003	1.4817e-003
tblVehicleEF	LDA	0.02	2.4773e-003
tblVehicleEF	LDA	2.0000e-003	2.0000e-003
tblVehicleEF	LDA	8.4300e-004	7.7101e-004
tblVehicleEF	LDA	1.1720e-003	1.3623e-003
tblVehicleEF	LDA	0.02	0.23

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

tblVehicleEF	LDA	0.06	0.06
tblVehicleEF	LDA	0.02	0.00
tblVehicleEF	LDA	3.2350e-003	4.3404e-003
tblVehicleEF	LDA	0.02	0.17
tblVehicleEF	LDA	0.12	0.20
tblVehicleEF	LDA	1.9770e-003	2.1614e-003
tblVehicleEF	LDA	4.1700e-004	5.5354e-004
tblVehicleEF	LDA	0.02	0.23
tblVehicleEF	LDA	0.06	0.06
tblVehicleEF	LDA	0.02	0.00
tblVehicleEF	LDA	4.6990e-003	6.3287e-003
tblVehicleEF	LDA	0.02	0.17
tblVehicleEF	LDA	0.13	0.22
tblVehicleEF	LDT1	1.6710e-003	3.2732e-003
tblVehicleEF	LDT1	0.04	0.07
tblVehicleEF	LDT1	0.53	0.90
tblVehicleEF	LDT1	1.82	3.41
tblVehicleEF	LDT1	241.46	296.02
tblVehicleEF	LDT1	51.55	76.24
tblVehicleEF	LDT1	3.7700e-003	5.8697e-003
tblVehicleEF	LDT1	0.02	0.03
tblVehicleEF	LDT1	0.03	0.07
tblVehicleEF	LDT1	0.15	0.27
tblVehicleEF	LDT1	0.04	9.1380e-003
tblVehicleEF	LDT1	8.0000e-003	8.0000e-003
tblVehicleEF	LDT1	1.0550e-003	1.2601e-003
tblVehicleEF	LDT1	1.4610e-003	2.0739e-003
tblVehicleEF	LDT1	0.02	3.1983e-003
tblVehicleEF	LDT1	2.0000e-003	2.0000e-003

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

tblVehicleEF	LDT1	9.7000e-004	1.1586e-003
tblVehicleEF	LDT1	1.3440e-003	1.9069e-003
tblVehicleEF	LDT1	0.05	0.47
tblVehicleEF	LDT1	0.09	0.12
tblVehicleEF	LDT1	0.04	0.00
tblVehicleEF	LDT1	6.4760e-003	0.01
tblVehicleEF	LDT1	0.06	0.36
tblVehicleEF	LDT1	0.15	0.34
tblVehicleEF	LDT1	2.3890e-003	2.9265e-003
tblVehicleEF	LDT1	5.1000e-004	7.5371e-004
tblVehicleEF	LDT1	0.05	0.47
tblVehicleEF	LDT1	0.09	0.12
tblVehicleEF	LDT1	0.04	0.00
tblVehicleEF	LDT1	9.4480e-003	0.02
tblVehicleEF	LDT1	0.06	0.36
tblVehicleEF	LDT1	0.17	0.37
tblVehicleEF	LDT2	1.7260e-003	1.8780e-003
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.55	0.64
tblVehicleEF	LDT2	2.25	2.73
tblVehicleEF	LDT2	249.80	304.99
tblVehicleEF	LDT2	53.79	77.16
tblVehicleEF	LDT2	4.0490e-003	4.5006e-003
tblVehicleEF	LDT2	0.02	0.03
tblVehicleEF	LDT2	0.03	0.04
tblVehicleEF	LDT2	0.17	0.25
tblVehicleEF	LDT2	0.04	8.8377e-003
tblVehicleEF	LDT2	8.0000e-003	8.0000e-003
tblVehicleEF	LDT2	1.0100e-003	9.8896e-004

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tblVehicleEF	LDT2	1.3400e-003	1.6579e-003
tblVehicleEF	LDT2	0.02	3.0932e-003
tblVehicleEF	LDT2	2.0000e-003	2.0000e-003
tblVehicleEF	LDT2	9.3000e-004	9.0987e-004
tblVehicleEF	LDT2	1.2320e-003	1.5244e-003
tblVehicleEF	LDT2	0.05	0.25
tblVehicleEF	LDT2	0.09	0.06
tblVehicleEF	LDT2	0.05	0.00
tblVehicleEF	LDT2	6.5290e-003	6.8652e-003
tblVehicleEF	LDT2	0.05	0.19
tblVehicleEF	LDT2	0.18	0.27
tblVehicleEF	LDT2	2.4710e-003	3.0147e-003
tblVehicleEF	LDT2	5.3200e-004	7.6281e-004
tblVehicleEF	LDT2	0.05	0.25
tblVehicleEF	LDT2	0.09	0.06
tblVehicleEF	LDT2	0.05	0.00
tblVehicleEF	LDT2	9.4890e-003	0.01
tblVehicleEF	LDT2	0.05	0.19
tblVehicleEF	LDT2	0.20	0.29
tblVehicleEF	LHD1	4.1480e-003	4.3354e-003
tblVehicleEF	LHD1	5.1950e-003	4.0282e-003
tblVehicleEF	LHD1	9.0230e-003	0.02
tblVehicleEF	LHD1	0.18	0.18
tblVehicleEF	LHD1	0.47	0.54
tblVehicleEF	LHD1	0.89	2.05
tblVehicleEF	LHD1	8.25	7.81
tblVehicleEF	LHD1	698.55	665.93
tblVehicleEF	LHD1	10.09	15.88
tblVehicleEF	LHD1	7.2900e-004	5.8852e-004

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tblVehicleEF	LHD1	0.04	0.04
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	0.05	0.04
tblVehicleEF	LHD1	0.30	0.31
tblVehicleEF	LHD1	0.23	0.33
tblVehicleEF	LHD1	9.1500e-004	6.6564e-004
tblVehicleEF	LHD1	0.08	0.07
tblVehicleEF	LHD1	9.9010e-003	9.3434e-003
tblVehicleEF	LHD1	7.0190e-003	9.1889e-003
tblVehicleEF	LHD1	2.1000e-004	1.3386e-004
tblVehicleEF	LHD1	8.7500e-004	6.3684e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.4750e-003	2.3359e-003
tblVehicleEF	LHD1	6.6710e-003	8.7606e-003
tblVehicleEF	LHD1	1.9300e-004	1.2308e-004
tblVehicleEF	LHD1	1.4030e-003	0.09
tblVehicleEF	LHD1	0.05	0.02
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	7.7200e-004	0.00
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.18	0.12
tblVehicleEF	LHD1	0.04	0.08
tblVehicleEF	LHD1	8.0000e-005	7.6000e-005
tblVehicleEF	LHD1	6.8120e-003	6.4983e-003
tblVehicleEF	LHD1	1.0000e-004	1.5704e-004
tblVehicleEF	LHD1	1.4030e-003	0.09
tblVehicleEF	LHD1	0.05	0.02
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	7.7200e-004	0.00

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tblVehicleEF	LHD1	0.09	0.06
tblVehicleEF	LHD1	0.18	0.12
tblVehicleEF	LHD1	0.05	0.09
tblVehicleEF	LHD2	2.5050e-003	2.5083e-003
tblVehicleEF	LHD2	5.3390e-003	4.4567e-003
tblVehicleEF	LHD2	4.8110e-003	8.7205e-003
tblVehicleEF	LHD2	0.13	0.14
tblVehicleEF	LHD2	0.49	0.38
tblVehicleEF	LHD2	0.48	1.11
tblVehicleEF	LHD2	13.00	13.36
tblVehicleEF	LHD2	679.81	713.03
tblVehicleEF	LHD2	6.44	8.54
tblVehicleEF	LHD2	1.6660e-003	1.6805e-003
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	0.07	0.08
tblVehicleEF	LHD2	0.38	0.50
tblVehicleEF	LHD2	0.12	0.18
tblVehicleEF	LHD2	1.5020e-003	1.4561e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	1.0600e-004	5.6700e-005
tblVehicleEF	LHD2	1.4370e-003	1.3932e-003
tblVehicleEF	LHD2	0.04	0.03
tblVehicleEF	LHD2	2.7110e-003	2.6336e-003
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	9.8000e-005	5.2200e-005
tblVehicleEF	LHD2	6.4200e-004	0.05

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tblVehicleEF	LHD2	0.02	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.7400e-004	0.00
tblVehicleEF	LHD2	0.10	0.08
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.02	0.04
tblVehicleEF	LHD2	1.2400e-004	1.2789e-004
tblVehicleEF	LHD2	6.5570e-003	6.8595e-003
tblVehicleEF	LHD2	6.4000e-005	8.4500e-005
tblVehicleEF	LHD2	6.4200e-004	0.05
tblVehicleEF	LHD2	0.02	0.01
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	3.7400e-004	0.00
tblVehicleEF	LHD2	0.11	0.10
tblVehicleEF	LHD2	0.06	0.07
tblVehicleEF	LHD2	0.02	0.05
tblVehicleEF	MCY	0.32	0.14
tblVehicleEF	MCY	0.25	0.16
tblVehicleEF	MCY	17.61	11.05
tblVehicleEF	MCY	9.20	7.83
tblVehicleEF	MCY	209.76	185.58
tblVehicleEF	MCY	59.23	42.83
tblVehicleEF	MCY	0.07	0.04
tblVehicleEF	MCY	0.02	6.3407e-003
tblVehicleEF	MCY	1.14	0.51
tblVehicleEF	MCY	0.27	0.10
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	4.0000e-003	4.0000e-003
tblVehicleEF	MCY	2.1380e-003	1.9967e-003

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tblVehicleEF	MCY	2.8620e-003	3.4163e-003
tblVehicleEF	MCY	5.0400e-003	4.2000e-003
tblVehicleEF	MCY	1.9940e-003	1.8635e-003
tblVehicleEF	MCY	2.6760e-003	3.1969e-003
tblVehicleEF	MCY	0.89	3.68
tblVehicleEF	MCY	0.63	3.56
tblVehicleEF	MCY	0.47	0.00
tblVehicleEF	MCY	2.13	0.89
tblVehicleEF	MCY	0.46	3.78
tblVehicleEF	MCY	1.88	1.13
tblVehicleEF	MCY	2.0760e-003	1.8346e-003
tblVehicleEF	MCY	5.8600e-004	4.2344e-004
tblVehicleEF	MCY	0.89	0.08
tblVehicleEF	MCY	0.63	3.56
tblVehicleEF	MCY	0.47	0.00
tblVehicleEF	MCY	2.67	1.09
tblVehicleEF	MCY	0.46	3.78
tblVehicleEF	MCY	2.04	1.23
tblVehicleEF	MDV	1.7720e-003	2.0971e-003
tblVehicleEF	MDV	0.04	0.07
tblVehicleEF	MDV	0.54	0.66
tblVehicleEF	MDV	2.29	2.78
tblVehicleEF	MDV	301.13	364.04
tblVehicleEF	MDV	63.46	91.48
tblVehicleEF	MDV	5.2660e-003	5.4054e-003
tblVehicleEF	MDV	0.02	0.03
tblVehicleEF	MDV	0.04	0.05
tblVehicleEF	MDV	0.18	0.27
tblVehicleEF	MDV	0.04	8.8924e-003

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tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.0200e-003	9.7072e-004
tblVehicleEF	MDV	1.3440e-003	1.6079e-003
tblVehicleEF	MDV	0.02	3.1123e-003
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	9.4000e-004	8.9404e-004
tblVehicleEF	MDV	1.2360e-003	1.4784e-003
tblVehicleEF	MDV	0.06	0.28
tblVehicleEF	MDV	0.10	0.07
tblVehicleEF	MDV	0.06	0.00
tblVehicleEF	MDV	6.8620e-003	8.0915e-003
tblVehicleEF	MDV	0.05	0.21
tblVehicleEF	MDV	0.20	0.30
tblVehicleEF	MDV	2.9760e-003	3.5970e-003
tblVehicleEF	MDV	6.2800e-004	9.0434e-004
tblVehicleEF	MDV	0.06	0.28
tblVehicleEF	MDV	0.10	0.07
tblVehicleEF	MDV	0.06	0.00
tblVehicleEF	MDV	9.9460e-003	0.01
tblVehicleEF	MDV	0.05	0.21
tblVehicleEF	MDV	0.22	0.33
tblVehicleEF	MH	5.0270e-003	6.0741e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.31	0.37
tblVehicleEF	MH	1.64	1.92
tblVehicleEF	MH	1,350.27	1,656.25
tblVehicleEF	MH	15.54	20.13
tblVehicleEF	MH	0.05	0.07
tblVehicleEF	MH	0.03	0.03

Milpitas Blvd. Bridge - Existing Use Ops Analysis - Santa Clara County, Annual

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

tblVehicleEF	MH	1.06	1.28
tblVehicleEF	MH	0.24	0.30
tblVehicleEF	MH	0.13	0.04
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	2.1200e-004	2.3307e-004
tblVehicleEF	MH	0.06	0.02
tblVehicleEF	MH	3.2970e-003	3.3357e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.9500e-004	2.1430e-004
tblVehicleEF	MH	0.35	20.30
tblVehicleEF	MH	0.03	4.90
tblVehicleEF	MH	0.14	0.00
tblVehicleEF	MH	0.04	0.05
tblVehicleEF	MH	5.8500e-003	0.12
tblVehicleEF	MH	0.07	0.09
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	1.5400e-004	1.9899e-004
tblVehicleEF	MH	0.35	20.30
tblVehicleEF	MH	0.03	4.90
tblVehicleEF	MH	0.14	0.00
tblVehicleEF	MH	0.05	0.06
tblVehicleEF	MH	5.8500e-003	0.12
tblVehicleEF	MH	0.08	0.10
tblVehicleEF	MHD	3.8320e-003	0.02
tblVehicleEF	MHD	1.0340e-003	9.4648e-003
tblVehicleEF	MHD	8.3830e-003	6.5780e-003
tblVehicleEF	MHD	0.41	0.63
tblVehicleEF	MHD	0.15	0.16

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

tblVehicleEF	MHD	0.87	0.72
tblVehicleEF	MHD	65.10	143.38
tblVehicleEF	MHD	993.45	1,074.54
tblVehicleEF	MHD	8.55	6.79
tblVehicleEF	MHD	9.3710e-003	0.02
tblVehicleEF	MHD	0.12	0.14
tblVehicleEF	MHD	7.7400e-003	4.7598e-003
tblVehicleEF	MHD	0.34	0.73
tblVehicleEF	MHD	1.43	0.58
tblVehicleEF	MHD	1.69	1.22
tblVehicleEF	MHD	1.6200e-004	6.5479e-004
tblVehicleEF	MHD	0.13	0.04
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.0060e-003	5.4200e-003
tblVehicleEF	MHD	1.1200e-004	8.2300e-005
tblVehicleEF	MHD	1.5500e-004	6.2582e-004
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	3.0000e-003	3.0000e-003
tblVehicleEF	MHD	6.6960e-003	5.1779e-003
tblVehicleEF	MHD	1.0300e-004	7.5600e-005
tblVehicleEF	MHD	2.8900e-004	0.01
tblVehicleEF	MHD	0.01	3.4196e-003
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	1.6800e-004	0.00
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	0.04	0.03
tblVehicleEF	MHD	6.1800e-004	1.3196e-003
tblVehicleEF	MHD	9.4800e-003	0.01

Milpitas Blvd. Bridge - Existing Use Ops Analysis - Santa Clara County, Annual

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

tblVehicleEF	MHD	8.5000e-005	6.7100e-005
tblVehicleEF	MHD	2.8900e-004	0.01
tblVehicleEF	MHD	0.01	3.4196e-003
tblVehicleEF	MHD	0.03	0.04
tblVehicleEF	MHD	1.6800e-004	0.00
tblVehicleEF	MHD	0.01	0.03
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	0.05	0.04
tblVehicleEF	OBUS	7.0980e-003	7.5210e-003
tblVehicleEF	OBUS	2.1970e-003	0.01
tblVehicleEF	OBUS	0.02	0.01
tblVehicleEF	OBUS	0.64	0.55
tblVehicleEF	OBUS	0.26	0.29
tblVehicleEF	OBUS	1.58	1.46
tblVehicleEF	OBUS	97.36	89.81
tblVehicleEF	OBUS	1,210.85	1,245.37
tblVehicleEF	OBUS	13.46	12.02
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.12	0.15
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	0.43	0.33
tblVehicleEF	OBUS	1.45	0.83
tblVehicleEF	OBUS	1.13	0.93
tblVehicleEF	OBUS	1.4200e-004	3.1074e-004
tblVehicleEF	OBUS	0.13	0.05
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.8820e-003	0.01
tblVehicleEF	OBUS	1.5600e-004	1.1806e-004
tblVehicleEF	OBUS	1.3600e-004	2.9717e-004

Milpitas Blvd. Bridge - Existing Use Ops Analysis - Santa Clara County, Annual

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

tblVehicleEF	OBUS	0.06	0.02
tblVehicleEF	OBUS	3.0000e-003	3.0000e-003
tblVehicleEF	OBUS	7.5260e-003	0.01
tblVehicleEF	OBUS	1.4400e-004	1.0855e-004
tblVehicleEF	OBUS	1.0620e-003	0.07
tblVehicleEF	OBUS	0.02	0.01
tblVehicleEF	OBUS	0.05	0.04
tblVehicleEF	OBUS	4.8700e-004	0.00
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.08	0.07
tblVehicleEF	OBUS	9.2400e-004	8.4613e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	1.3300e-004	1.1882e-004
tblVehicleEF	OBUS	1.0620e-003	0.07
tblVehicleEF	OBUS	0.02	0.01
tblVehicleEF	OBUS	0.06	0.05
tblVehicleEF	OBUS	4.8700e-004	0.00
tblVehicleEF	OBUS	0.02	0.05
tblVehicleEF	OBUS	0.05	0.08
tblVehicleEF	OBUS	0.08	0.08
tblVehicleEF	SBUS	0.07	0.08
tblVehicleEF	SBUS	4.4040e-003	0.09
tblVehicleEF	SBUS	6.3380e-003	5.2156e-003
tblVehicleEF	SBUS	2.93	1.82
tblVehicleEF	SBUS	0.37	0.72
tblVehicleEF	SBUS	0.86	0.67
tblVehicleEF	SBUS	337.48	181.81
tblVehicleEF	SBUS	970.50	941.81

Milpitas Blvd. Bridge - Existing Use Ops Analysis - Santa Clara County, Annual

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

tblVehicleEF	SBUS	5.06	3.93
tblVehicleEF	SBUS	0.04	0.02
tblVehicleEF	SBUS	0.12	0.11
tblVehicleEF	SBUS	6.4910e-003	4.8476e-003
tblVehicleEF	SBUS	2.71	1.09
tblVehicleEF	SBUS	3.09	1.57
tblVehicleEF	SBUS	1.18	0.52
tblVehicleEF	SBUS	2.0480e-003	7.4627e-004
tblVehicleEF	SBUS	0.74	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	8.5750e-003
tblVehicleEF	SBUS	6.8000e-005	4.5800e-005
tblVehicleEF	SBUS	1.9600e-003	7.1267e-004
tblVehicleEF	SBUS	0.32	0.02
tblVehicleEF	SBUS	2.6690e-003	2.6104e-003
tblVehicleEF	SBUS	0.02	8.1872e-003
tblVehicleEF	SBUS	6.2000e-005	4.2100e-005
tblVehicleEF	SBUS	8.7000e-004	0.04
tblVehicleEF	SBUS	8.3040e-003	9.3352e-003
tblVehicleEF	SBUS	0.32	0.20
tblVehicleEF	SBUS	4.1400e-004	0.00
tblVehicleEF	SBUS	0.06	0.04
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.04	0.03
tblVehicleEF	SBUS	3.2190e-003	1.6395e-003
tblVehicleEF	SBUS	9.2880e-003	8.7391e-003
tblVehicleEF	SBUS	5.0000e-005	3.8800e-005
tblVehicleEF	SBUS	8.7000e-004	0.04
tblVehicleEF	SBUS	8.3040e-003	9.3352e-003

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

tblVehicleEF	SBUS	0.46	0.32
tblVehicleEF	SBUS	4.1400e-004	0.00
tblVehicleEF	SBUS	0.07	0.13
tblVehicleEF	SBUS	0.01	0.03
tblVehicleEF	SBUS	0.04	0.03
tblVehicleEF	UBUS	1.86	0.63
tblVehicleEF	UBUS	2.1860e-003	2.5024e-003
tblVehicleEF	UBUS	14.11	7.38
tblVehicleEF	UBUS	0.14	0.53
tblVehicleEF	UBUS	1,668.67	969.99
tblVehicleEF	UBUS	1.40	3.03
tblVehicleEF	UBUS	0.28	0.15
tblVehicleEF	UBUS	1.2560e-003	4.5820e-003
tblVehicleEF	UBUS	0.71	0.26
tblVehicleEF	UBUS	0.02	0.03
tblVehicleEF	UBUS	0.07	0.15
tblVehicleEF	UBUS	0.03	0.06
tblVehicleEF	UBUS	5.1160e-003	4.8221e-003
tblVehicleEF	UBUS	1.5000e-005	1.2600e-005
tblVehicleEF	UBUS	0.03	0.05
tblVehicleEF	UBUS	8.3320e-003	0.01
tblVehicleEF	UBUS	4.8930e-003	4.6095e-003
tblVehicleEF	UBUS	1.4000e-005	1.1600e-005
tblVehicleEF	UBUS	6.1000e-005	7.0381e-003
tblVehicleEF	UBUS	8.1400e-004	2.0980e-003
tblVehicleEF	UBUS	3.6000e-005	0.00
tblVehicleEF	UBUS	0.03	0.05
tblVehicleEF	UBUS	1.7600e-004	7.8778e-003
tblVehicleEF	UBUS	9.2610e-003	8.3785e-003

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

tblVehicleEF	UBUS	0.01	7.3894e-003
tblVehicleEF	UBUS	1.4000e-005	2.9900e-005
tblVehicleEF	UBUS	6.1000e-005	7.0381e-003
tblVehicleEF	UBUS	8.1400e-004	2.0980e-003
tblVehicleEF	UBUS	3.6000e-005	0.00
tblVehicleEF	UBUS	1.90	0.69
tblVehicleEF	UBUS	1.7600e-004	7.8778e-003
tblVehicleEF	UBUS	0.01	9.1734e-003
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

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

Area	0.1951	1.0000e-005	1.6700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.2500e-003	3.2500e-003	1.0000e-005	0.0000	3.4600e-003
Energy	3.6100e-003	0.0328	0.0276	2.0000e-004		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	105.8925	105.8925	0.0120	2.0300e-003	106.7987
Mobile	0.1464	0.0942	0.9435	2.4300e-003	0.2466	1.4100e-003	0.2480	0.0615	1.3200e-003	0.0628	0.0000	224.2862	224.2862	0.0104	9.9200e-003	227.5007
Waste						0.0000	0.0000		0.0000	0.0000	7.7989	0.0000	7.7989	0.4609	0.0000	19.3215
Water						0.0000	0.0000		0.0000	0.0000	2.5977	5.1331	7.7308	9.7700e-003	5.7500e-003	9.6885
Total	**0.3451**	**0.1270**	**0.9727**	**2.6300e-003**	**0.2466**	**3.9100e-003**	**0.2505**	**0.0615**	**3.8200e-003**	**0.0653**	**10.3966**	**335.3150**	**345.7116**	**0.4931**	**0.0177**	**363.3128**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1951	1.0000e-005	1.6700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.2500e-003	3.2500e-003	1.0000e-005	0.0000	3.4600e-003
Energy	3.6100e-003	0.0328	0.0276	2.0000e-004		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	105.8925	105.8925	0.0120	2.0300e-003	106.7987
Mobile	0.1464	0.0942	0.9435	2.4300e-003	0.2466	1.4100e-003	0.2480	0.0615	1.3200e-003	0.0628	0.0000	224.2862	224.2862	0.0104	9.9200e-003	227.5007
Waste						0.0000	0.0000		0.0000	0.0000	7.7989	0.0000	7.7989	0.4609	0.0000	19.3215
Water						0.0000	0.0000		0.0000	0.0000	2.5977	5.1331	7.7308	9.7700e-003	5.7500e-003	9.6885
Total	**0.3451**	**0.1270**	**0.9727**	**2.6300e-003**	**0.2466**	**3.9100e-003**	**0.2505**	**0.0615**	**3.8200e-003**	**0.0653**	**10.3966**	**335.3150**	**345.7116**	**0.4931**	**0.0177**	**363.3128**

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

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

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1464	0.0942	0.9435	2.4300e-003	0.2466	1.4100e-003	0.2480	0.0615	1.3200e-003	0.0628	0.0000	224.2862	224.2862	0.0104	9.9200e-003	227.5007
Unmitigated	0.1464	0.0942	0.9435	2.4300e-003	0.2466	1.4100e-003	0.2480	0.0615	1.3200e-003	0.0628	0.0000	224.2862	224.2862	0.0104	9.9200e-003	227.5007

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	402.36	91.30	28.92	727,854	727,854
Parking Lot	0.00	0.00	0.00		
Total	402.36	91.30	28.92	727,854	727,854

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

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

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.514977	0.035448	0.239576	0.135703	0.024260	0.006170	0.009659	0.007844	0.001064	0.000396	0.021950	0.000681	0.002272
Parking Lot	0.514977	0.035448	0.239576	0.135703	0.024260	0.006170	0.009659	0.007844	0.001064	0.000396	0.021950	0.000681	0.002272

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	70.1829	70.1829	0.0114	1.3800e-003	70.8768
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	70.1829	70.1829	0.0114	1.3800e-003	70.8768
NaturalGas Mitigated	3.6100e-003	0.0328	0.0276	2.0000e-004		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	35.7096	35.7096	6.8000e-004	6.5000e-004	35.9219
NaturalGas Unmitigated	3.6100e-003	0.0328	0.0276	2.0000e-004		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	35.7096	35.7096	6.8000e-004	6.5000e-004	35.9219

5.2 Energy by Land Use - NaturalGas

Unmitigated

Milpitas Blvd. Bridge - Existing Use Ops Analysis - Santa Clara County, Annual

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

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	669173	3.6100e-003	0.0328	0.0276	2.0000e-004		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	35.7096	35.7096	6.8000e-004	6.5000e-004	35.9219
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**3.6100e-003**	**0.0328**	**0.0276**	**2.0000e-004**		**2.4900e-003**	**2.4900e-003**		**2.4900e-003**	**2.4900e-003**	**0.0000**	**35.7096**	**35.7096**	**6.8000e-004**	**6.5000e-004**	**35.9219**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	669173	3.6100e-003	0.0328	0.0276	2.0000e-004		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	35.7096	35.7096	6.8000e-004	6.5000e-004	35.9219
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**3.6100e-003**	**0.0328**	**0.0276**	**2.0000e-004**		**2.4900e-003**	**2.4900e-003**		**2.4900e-003**	**2.4900e-003**	**0.0000**	**35.7096**	**35.7096**	**6.8000e-004**	**6.5000e-004**	**35.9219**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e

Milpitas Blvd. Bridge - Existing Use Ops Analysis - Santa Clara County, Annual

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

Land Use	kWh/yr	MT/yr			
General Office Building	709241	65.6217	0.0106	1.2900e-003	66.2706
Parking Lot	49297.5	4.5612	7.4000e-004	9.0000e-005	4.6063
Total		**70.1829**	**0.0114**	**1.3800e-003**	**70.8768**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	709241	65.6217	0.0106	1.2900e-003	66.2706
Parking Lot	49297.5	4.5612	7.4000e-004	9.0000e-005	4.6063
Total		**70.1829**	**0.0114**	**1.3800e-003**	**70.8768**

6.0 Area Detail

6.1 Mitigation Measures Area

Milpitas Blvd. Bridge - Existing Use Ops Analysis - Santa Clara County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1951	1.0000e-005	1.6700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.2500e-003	3.2500e-003	1.0000e-005	0.0000	3.4600e-003
Unmitigated	0.1951	1.0000e-005	1.6700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.2500e-003	3.2500e-003	1.0000e-005	0.0000	3.4600e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0245					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1704					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.5000e-004	1.0000e-005	1.6700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.2500e-003	3.2500e-003	1.0000e-005	0.0000	3.4600e-003
Total	**0.1951**	**1.0000e-005**	**1.6700e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.2500e-003**	**3.2500e-003**	**1.0000e-005**	**0.0000**	**3.4600e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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

SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0245					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1704					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.5000e-004	1.0000e-005	1.6700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.2500e-003	3.2500e-003	1.0000e-005	0.0000	3.4600e-003
Total	**0.1951**	**1.0000e-005**	**1.6700e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.2500e-003**	**3.2500e-003**	**1.0000e-005**	**0.0000**	**3.4600e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.7308	9.7700e-003	5.7500e-003	9.6885
Unmitigated	7.7308	9.7700e-003	5.7500e-003	9.6885

7.2 Water by Land Use

Unmitigated

Milpitas Blvd. Bridge - Existing Use Ops Analysis - Santa Clara County, Annual

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

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	7.34218 / 4.50005	7.7308	9.7700e-003	5.7500e-003	9.6885
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**7.7308**	**9.7700e-003**	**5.7500e-003**	**9.6885**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	7.34218 / 4.50005	7.7308	9.7700e-003	5.7500e-003	9.6885
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**7.7308**	**9.7700e-003**	**5.7500e-003**	**9.6885**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

Milpitas Blvd. Bridge - Existing Use Ops Analysis - Santa Clara County, Annual

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

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	7.7989	0.4609	0.0000	19.3215
Unmitigated	7.7989	0.4609	0.0000	19.3215

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	38.42	7.7989	0.4609	0.0000	19.3215
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**7.7989**	**0.4609**	**0.0000**	**19.3215**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e

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

Land Use	tons	MT/yr			
General Office Building	38.42	7.7989	0.4609	0.0000	19.3215
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**7.7989**	**0.4609**	**0.0000**	**19.3215**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod EMFAC2021 Fleet Mix Input - 2030

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY
	0.514977	0.035448	0.239576	0.135703	0.02426	0.00617	0.009659	0.007844	0.001064	0.000396	0.02195

SBUS	MH
0.000681	0.002272

CalEEMod EMFAC2021 Emission Factors Input - 2030

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.004335	0.002508	0.015544	0.200689575	0.007521	0	0	0.081907	0
A	CH4_RUNEX	0.001251	0.003273	0.001878	0.002097	0.004028	0.004457	0.009465	0.087739612	0.010745	0.633168094	0.142987	0.08726	0.006074
A	CH4_STREX	0.045719	0.070684	0.060357	0.065129	0.016442	0.00872	0.006578	4.40093E-08	0.013432	0.002502449	0.157242	0.005216	0.022777
A	CO_IDLEX	0	0	0	0	0.182077	0.135546	0.628457	4.997868655	0.549826	0	0	1.823721	0
A	CO_RUNEX	0.484447	0.895501	0.639473	0.660784	0.544761	0.383737	0.155266	0.628349624	0.288528	7.378159276	11.04655	0.716417	0.371762
A	CO_STREX	2.08878	3.413929	2.729559	2.781248	2.051418	1.109837	0.71851	0.00087263	1.464305	0.531636543	7.830862	0.671301	1.918466
A	CO2_NBIO_IDLEX	0	0	0	0	7.808851	13.36322	143.3801	719.710734	89.80588	0	0	181.8136	0
A	CO2_NBIO_RUNEX	218.6415	296.0222	304.9904	364.0422	665.9344	713.025	1074.538	1395.928332	1245.372	969.9926525	185.5769	941.807	1656.25
A	CO2_NBIO_STREX	55.99265	76.24029	77.1602	91.4769	15.88489	8.544837	6.787068	0.009437452	12.01881	3.025945099	42.83228	3.929487	20.12804
A	NOX_IDLEX	0	0	0	0	0.036306	0.076255	0.72827	3.806064714	0.333548	0	0	1.088868	0
A	NOX_RUNEX	0.023158	0.066035	0.041164	0.048222	0.312391	0.495733	0.584719	1.446947564	0.825827	0.255958394	0.509869	1.567888	1.278466
A	NOX_STREX	0.178975	0.272625	0.247045	0.271696	0.32724	0.178285	1.220957	2.603954429	0.931305	0.025581732	0.103081	0.520702	0.298107
A	PM10_IDLEX	0	0	0	0	0.000666	0.001456	0.000655	0.001737607	0.000311	0	0	0.000746	0
A	PM10_PMBW	0.007078	0.009138	0.008838	0.008892	0.0744	0.086908	0.04333	0.082108579	0.049981	0.147119217	0.012	0.043749	0.04494
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.009343	0.010534	0.012	0.035145225	0.012	0.05700071	0.004	0.010442	0.013343
A	PM10_RUNEX	0.000838	0.00126	0.000989	0.000971	0.009189	0.01687	0.00542	0.023402177	0.012621	0.004822062	0.001997	0.008575	0.022807
A	PM10_STREX	0.001482	0.002074	0.001658	0.001608	0.000134	5.67E-05	8.23E-05	1.43954E-07	0.000118	1.26121E-05	0.003416	4.58E-05	0.000233
A	PM25_IDLEX	0	0	0	0	0.000637	0.001393	0.000626	0.001655588	0.000297	0	0	0.000713	0
A	PM25_PMBW	0.002477	0.003198	0.003093	0.003112	0.02604	0.030418	0.015165	0.028738003	0.017493	0.051491726	0.0042	0.015312	0.015729
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002336	0.002634	0.003	0.008786306	0.003	0.014250178	0.001	0.00261	0.003336
A	PM25_RUNEX	0.000771	0.001159	0.00091	0.000894	0.008761	0.016127	0.005178	0.022386582	0.012067	0.00460949	0.001864	0.008187	0.021783
A	PM25_STREX	0.001362	0.001907	0.001524	0.001478	0.000123	5.22E-05	7.56E-05	1.3236E-07	0.000109	1.15963E-05	0.003197	4.21E-05	0.000214
A	ROG_DIURN	0.227323	0.469769	0.248439	0.276762	0.087274	0.048494	0.014918	4.02275E-05	0.069383	0.007038146	3.680755	0.041692	20.29626
A	ROG_HTSK	0.060745	0.120653	0.063468	0.068938	0.020831	0.011136	0.00342	1.26947E-05	0.014014	0.002098044	3.555147	0.009335	4.900484
A	ROG_IDLEX	0	0	0	0	0.01758	0.01365	0.020875	0.311156106	0.039789	0	0	0.197824	0
A	ROG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	ROG_RUNEX	0.00434	0.013675	0.006865	0.008091	0.050519	0.082873	0.014952	0.014289903	0.031966	0.05310504	0.890508	0.040189	0.050568
A	ROG_RUNLS	0.170881	0.355945	0.18526	0.207423	0.123377	0.065349	0.028627	0.000113992	0.077263	0.007877766	3.783469	0.027699	0.119258
A	ROG_STREX	0.197184	0.337555	0.26551	0.301161	0.07823	0.041209	0.034167	2.38553E-07	0.071386	0.008378471	1.134366	0.029472	0.088942
A	SO2_IDLEX	0	0	0	0	7.6E-05	0.000128	0.00132	0.006214699	0.000846	0	0	0.001639	0
A	SO2_RUNEX	0.002161	0.002926	0.003015	0.003597	0.006498	0.00686	0.010167	0.012580529	0.011835	0.007389377	0.001835	0.008739	0.016224
A	SO2_STREX	0.000554	0.000754	0.000763	0.000904	0.000157	8.45E-05	6.71E-05	9.32988E-08	0.000119	2.99145E-05	0.000423	3.88E-05	0.000199
A	TOG_DIURN	0.227323	0.469769	0.248439	0.276762	0.087274	0.048494	0.014918	4.02275E-05	0.069383	0.007038146	0.080793	0.041692	20.29626
A	TOG_HTSK	0.060745	0.120653	0.063468	0.068938	0.020831	0.011136	0.00342	1.26947E-05	0.014014	0.002098044	3.555147	0.009335	4.900484
A	TOG_IDLEX	0	0	0	0	0.0248	0.018097	0.03926	0.541395418	0.052568	0	0	0.32342	0
A	TOG_RESTL	0	0	0	0	0	0	0	0	0	0	0	0	0
A	TOG_RUNEX	0.006329	0.019954	0.010004	0.011775	0.060583	0.095343	0.026358	0.103810529	0.046832	0.694289379	1.091848	0.133799	0.062589
A	TOG_RUNLS	0.170881	0.355945	0.18526	0.207423	0.123377	0.065349	0.028627	0.000113992	0.077263	0.007877766	3.783469	0.027699	0.119258
A	TOG_STREX	0.215892	0.36958	0.2907	0.329734	0.085652	0.045119	0.037409	2.61185E-07	0.078158	0.009173371	1.234067	0.032269	0.097381
A	N2O_IDLEX	0	0	0	0	0.000589	0.00168	0.022195	0.116327365	0.013129	0	0	0.023481	0
A	N2O_RUNEX	0.003165	0.00587	0.004501	0.005405	0.035467	0.074134	0.137514	0.223022009	0.151496	0.151061958	0.036967	0.112558	0.068485
A	N2O_STREX	0.025397	0.032408	0.031653	0.032172	0.028461	0.015119	0.00476	3.77164E-06	0.011347	0.00458201	0.006341	0.004848	0.033159

Attachment 3: Project Operations Emissions Calculations

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category	Gas VMT Fraction Within Category
Truck 1	0.029	0.495	0.505
Truck 2	0.017	0.937	0.048
Non-Truck	0.954	0.014	0.955

	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph
PM2_5 Ex									
Dsl									
NonTruck	0.000519025	0.000418211	0.000308436	0.00023232	0.00019271	0.00016993	0.000156988	0.000153	0.000156
Truck1	0.038241407	0.031165753	0.025617735	0.021153089	0.01752134	0.01457783	0.012237826	0.010452	0.009193
Truck2	0.023786596	0.019648679	0.013640291	0.009792214	0.00808297	0.00754693	0.007809315	0.00887	0.010731
Gas									
NonTruck	0.008380317	0.005287246	0.003518682	0.002469804	0.00182821	0.00142701	0.001174443	0.001019	0.000932
Truck1	0.001924741	0.001376549	0.001031064	0.000802919	0.00064765	0.00054133	0.0004707	0.000428	0.00041
Truck2	0.000337853	0.000212955	0.00014161	9.93411E-05	7.3516E-05	5.7391E-05	4.72597E-05	4.11E-05	3.76E-05
PM2.5 Running Exh	**0.010064905**	**0.006724381**	**0.004658179**	**0.003382706**	**0.00259352**	**0.00209121**	**0.001772294**	**0.001585**	**0.0015**
DPM Running Exha	**0.00125173**	**0.001031982**	**0.000814892**	**0.000657131**	**0.00056232**	**0.00050925**	**0.000485368**	**0.000488**	**0.000514**

	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph
PM10 Ex									
Dsl									
NonTruck	0.000542492	0.000437121	0.000322382	0.000242824	0.00020142	0.00017761	0.000164086	0.000159	0.000163
Truck1	0.039970514	0.03257493	0.026776055	0.022109537	0.01831357	0.01523698	0.012791166	0.010924	0.009608
Truck2	0.02486212	0.020537106	0.014257044	0.010234975	0.00844845	0.00788817	0.008162418	0.009271	0.011216
Gas									
NonTruck	0.00911353	0.005749826	0.003826522	0.002685873	0.00198815	0.00155184	0.00127718	0.001108	0.001014
Truck1	0.002093331	0.001497123	0.001121376	0.000873247	0.00070438	0.00058875	0.00051193	0.000466	0.000446
Truck2	0.000367446	0.000231608	0.000154013	0.000108043	7.9956E-05	6.2418E-05	5.13992E-05	4.46E-05	4.09E-05
PM10 Running Exh	**0.010860599**	**0.007243504**	**0.005012068**	**0.003636309**	**0.00278535**	**0.00224401**	**0.001900392**	**0.001698**	**0.001606**

TOG Ex									
Dsl									
NonTruck	0.004461989	0.003292667	0.001792823	0.000942595	0.00068376	0.00055872	0.000471583	0.00041	0.000369
Truck1	0.205483607	0.169186043	0.141168744	0.118711022	0.10027894	0.08498668	0.07231525	0.061962	0.053759
Truck2	0.184182681	0.119389443	0.060975557	0.033812869	0.0247627	0.01987114	0.016209849	0.013746	0.01245
Gas									
NonTruck	0.141082716	0.090050002	0.060605954	0.042991364	0.03212929	0.02528811	0.020955613	0.018279	0.016782
Truck1	0.088378875	0.059384219	0.041808141	0.030736591	0.02354925	0.01880399	0.01568774	0.013738	0.012697
Truck2	0.027109942	0.017170313	0.011473141	0.00808717	0.00601274	0.00471475	0.003898603	0.003399	0.003125
TOG Running Exha	**0.150963635**	**0.09799896**	**0.066066391**	**0.046959278**	**0.03541786**	**0.02808576**	**0.023335476**	**0.020317**	**0.018555**
DEOG Running Exh	**0.01394394**	**0.010050112**	**0.005409547**	**0.002736885**	**0.00189755**	**0.0014995**	**0.001234477**	**0.001057**	**0.000946**

ROG Ex									
Dsl									
NonTruck	0.003919424	0.002892289	0.001574822	0.00082798	0.00060062	0.00049078	0.000164086	0.000159	0.000163
Truck1	0.1804968	0.14861302	0.124002625	0.104275762	0.08808502	0.0746523	0.012791166	0.010924	0.009608
Truck2	0.161787437	0.104872574	0.053561383	0.029701475	0.02175174	0.01745496	0.008162418	0.009271	0.011216
Gas									
NonTruck	0.101016105	0.064543447	0.043484797	0.030878583	0.02310095	0.01820093	0.00127718	0.001108	0.001014
Truck1	0.060566761	0.040696487	0.028651458	0.021064036	0.01613849	0.01288653	0.00051193	0.000466	0.000446
Truck2	0.018578664	0.011766955	0.007862637	0.005542203	0.00412058	0.00323106	5.13992E-05	4.46E-05	4.09E-05
ROG Running Exha	**0.110165562**	**0.07180654**	**0.048458053**	**0.034482057**	**0.02607361**	**0.02072218**	**0.001900392**	**0.001698**	**0.001606**

NOx Ex									
Dsl									
NonTruck	0.032160113	0.024937447	0.01718601	0.013171581	0.01098323	0.00932308	0.008058634	0.007161	0.006616
Truck1	0.914759599	0.84654122	0.787788761	0.738478111	0.69858303	0.66807586	0.646922552	0.63509	0.632547
Truck2	7.818830478	5.725324901	3.832322392	2.989904998	2.34103156	1.83436415	1.439566792	1.156328	0.984465
Gas									
NonTruck	0.107715771	0.092773909	0.081406286	0.072742907	0.06617543	0.06127249	0.057734149	0.055355	0.054005
Truck1	0.11512043	0.10243921	0.092723784	0.08534641	0.07985114	0.07590242	0.073259005	0.071749	0.071255
Truck2	0.037648521	0.03282133	0.029083053	0.026191363	0.02397038	0.02229077	0.021059755	0.020211	0.019701
NOx Running Exha	**0.296868257**	**0.237705552**	**0.185235807**	**0.157126971**	**0.13638898**	**0.12048668**	**0.108482231**	**0.10014**	**0.095313**
N2O Running Exha	**0.019918404**	**0.016886315**	**0.013769858**	**0.012096669**	**0.01092927**	**0.01015331**	**0.009720915**	**0.009429**	**0.009275**

CO2 Ex									
Dsl									
NonTruck	21.50630339	18.11583637	14.68885888	12.43710238	10.9936729	9.94253859	9.209077349	8.716891	8.444368
Truck1	609.6112408	529.7498972	448.5301725	388.3443305	337.775786	295.862711	264.2276176	239.6603	222.9362

Truck2	2718.604633	2312.541153	1881.379886	1671.924741	1492.61697	1382.37876	1298.350579	1240.253	1207.877
Gas									
NonTruck	715.7602331	581.0496753	475.1804698	394.9835245	337.606657	299.563865	277.6860567	268.8041	269.749
Truck1	786.9437031	666.933895	565.132278	480.379805	411.633333	357.61791	317.1744891	289.144	272.3675
Truck2	181.746047	147.5378672	120.6542624	100.2903342	85.7216741	76.0628939	70.5090953	68.25538	68.49685
CO2 Running Exhau	**793.1583307**	**648.1290715**	**530.7661312**	**443.9999343**	**381.129336**	**339.013555**	**313.8292334**	**302.335**	**301.4587**

CH4 Ex									
Dsl									
NonTruck	0.000182049	0.000134341	7.3147E-05	3.84578E-05	2.7897E-05	2.2796E-05	1.92405E-05	1.67E-05	1.51E-05
Truck1	0.008383731	0.006902791	0.005759685	0.00484341	0.00409138	0.00346746	0.002950462	0.002528	0.002193
Truck2	0.007514607	0.004871059	0.002487788	0.001379557	0.00101031	0.00081074	0.000661358	0.000561	0.000508
Gas									
NonTruck	0.021166075	0.014311963	0.010131703	0.007506998	0.00582011	0.00472034	0.004004141	0.003552	0.003295
Truck1	0.011770358	0.008387415	0.006201341	0.004737477	0.00372964	0.00302515	0.002535486	0.00221	0.002023
Truck2	0.003334557	0.002244125	0.001581729	0.001167525	0.00090244	0.0007304	0.000618966	0.000549	0.00051
CH4 Running Exhau	**0.021135015**	**0.014346148**	**0.010151479**	**0.007519511**	**0.00583833**	**0.00473943**	**0.004019164**	**0.003561**	**0.003297**

PM2_5 BW									
Dsl									
NonTruck	0.000203525	0.00020867	0.000213489	0.000217072	0.00020642	0.00019978	0.000192868	0.000186	0.000175
Truck1	0.014224377	0.014224377	0.014224377	0.014224377	0.01422438	0.01422438	0.014224377	0.014224	0.014224
Truck2	0.03718473	0.03718473	0.036783206	0.036050602	0.03434067	0.03340799	0.028807297	0.025674	0.02254
Gas									
NonTruck	0.002362054	0.002919263	0.003476446	0.00403329	0.00436589	0.00448226	0.004598224	0.00414	0.003105
Truck1	0.014044657	0.014044657	0.014044657	0.014044657	0.01404466	0.01404466	0.014044657	0.014045	0.014045
Truck2	0.001035541	0.001035541	0.001035487	0.001020879	0.00083929	0.00074849	0.000700716	0.0007	0.0007
PM2.5 BW (grams/	**0.003917109**	**0.004453595**	**0.004982918**	**0.005504863**	**0.00577985**	**0.00586713**	**0.00589214**	**0.005395**	**0.004344**

PM10 BW									
Dsl									
NonTruck	0.0005815	0.000596199	0.000609969	0.000620206	0.00058978	0.00057079	0.00055105	0.000531	0.000499
Truck1	0.040641077	0.040641077	0.040641077	0.040641077	0.04064108	0.04064108	0.040641077	0.040641	0.040641
Truck2	0.106242087	0.106242087	0.105094875	0.10300172	0.0981162	0.09545141	0.082306562	0.073353	0.0644
Gas									
NonTruck	0.006748725	0.008340753	0.009932702	0.011523686	0.01247397	0.01280647	0.013137783	0.011828	0.008873
Truck1	0.040127592	0.040127592	0.040127592	0.040127592	0.04012759	0.04012759	0.040127592	0.040128	0.040128
Truck2	0.002958688	0.002958688	0.002958533	0.002916799	0.00239798	0.00213854	0.002002045	0.002001	0.002
PM10 BW (grams/	**0.011191739**	**0.012724556**	**0.014236907**	**0.015728179**	**0.01651385**	**0.01676323**	**0.016834685**	**0.015414**	**0.012412**

TOG Running Loss Emissions Factor (grams/veh-hour)	
Gas	
NonTruck	1.062045747
Truck1	0.069816921
Truck2	0.041590162
TOG Running Loss I	**1.173452831**
HFC Running Loss	**0.016012165**
CH4 Running Loss	**0.175260502**

ROG Running Loss Emissions Factor (grams/veh-hour)	
Gas	
NonTruck	1.062045747
Truck1	0.069816921
Truck2	0.041590162
ROG Running I	**1.173452831**

PM2_5 TW	
Dsl	
NonTruck	4.61623E-05
Truck1	0.001485
Truck2	0.006601054
Gas	
NonTruck	0.001907037
Truck1	0.00101
Truck2	0.000144154
PM2_5 TW	**0.002050376**

PM10 TW	
Dsl	
NonTruck	0.000184649
Truck1	0.00594
Truck2	0.026404216
Gas	
NonTruck	0.00762815
Truck1	0.00404
Truck2	0.000576617
PM10 TW	**0.008201504**

File Name:
EMFAC2021/CT-EMFAC2017:
Run Date: 10/21/2021 11:01
Area: Santa Clara (SF)
Analysis Year: 2024
Season: Annual

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Vehicle Category	VMT Fraction Across Category	Diesel VMT Within Cat	Gas VMT Fraction Within Category
Truck 1	0.029	0.495	0.505
Truck 2	0.017	0.937	0.048
Non-Truck	0.954	0.014	0.955

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Road Type:
Silt Loading Factor: CARB 0.32 g/m2
Precipitation Correction: CARB P = 64 days N = 365 days

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Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
PM2.5	0.010064905	0.006724	0.004658	0.003383	0.002594	0.002091	0.001772	0.001585	0.0015	0	0	0	0	0	0
PM10	0.010860599	0.007244	0.005012	0.003636	0.002785	0.002244	0.0019	0.001698	0.001606	0	0	0	0	0	0
NOx	0.296868257	0.237706	0.185236	0.157127	0.136389	0.120487	0.108482	0.10014	0.095313	0	0	0	0	0	0
CO															
HC															
TOG	0.150963635	0.097999	0.066066	0.046959	0.035418	0.028086	0.023335	0.020317	0.018555	0	0	0	0	0	0
ROG	0.110165562	0.071807	0.048458	0.034482	0.026074	0.020722	0.0019	0.001698	0.001606	0	0	0	0	0	0
1,3-Butadiene															
Acetaldehyde															
Acrolein															
Benzene															
Diesel PM	0.001251732	0.001032	0.000815	0.000657	0.000562	0.000509	0.000485	0.000488	0.000514	0	0	0	0	0	0
Ethylbenzene															
Formaldehyde															
Naphthalene															
POM															
DEOG	0.01394394	0.01005	0.00541	0.002737	0.001898	0.0015	0.001234	0.001057	0.000946	0	0	0	0	0	0
CO2	793.1583307	648.1291	530.7661	443.9999	381.1293	339.0136	313.8292	302.335	301.4587	0	0	0	0	0	0
N2O	0.019918404	0.016886	0.01377	0.012097	0.010929	0.010153	0.009721	0.009429	0.009275	0	0	0	0	0	0
CH4	0.021135015	0.014346	0.010151	0.00752	0.005838	0.004739	0.004019	0.003561	0.003297	0	0	0	0	0	0
BC															

Fleet Average Fuel Consumption (gallons/veh-mile)

Fuel Type	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
Gasoline	0.074234	0.060034	0.049124	0.040865	0.034934	0.031008	0.028719	0.027786	0.027897	0.028696	0.029898	0.031	0.031925	0.031925	0.031925
Diesel	0.007686	0.006432	0.004914	0.004206	0.003682	0.003262	0.002995	0.002791	0.002666	0.002665	0.002747	0.00288	0.003095	0.003095	0.003095

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Fleet Average Running Loss Emission Factors (grams/veh-hour)

Pollutant Name	Emission Factor
HC	
TOG	1.173452831
ROG	1.173452831
1,3-Butadiene	
Benzene	
Ethylbenzene	
Naphthalene	
CH4	0.175260502
HFC	0.016012165

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Fleet Average Tire Wear Factors (grams/veh-mile)

Pollutant Name	
PM2.5	0.002050376
PM10	0.008201504

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Fleet Average Brake Wear Factors (grams/veh-mile)

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
PM2.5	0.003917109	0.004454	0.004983	0.005505	0.00578	0.005867	0.005892	0.005395	0.004344	0	0	0	0	0	0
PM10	0.011191739	0.012725	0.014237	0.015728	0.016514	0.016763	0.016835	0.015414	0.012412	0	0	0	0	0	0

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Fleet Average Road Dust Factors (grams/veh-mile)

Pollutant Name	Emission Factor (Local Urban)
PM2.5	0.120114
PM10	0.800757

==========END==========

Road Link	Description	Direction	No. Lanes	Link Length (miles)	Link Width (ft)	Link Width (m)	Release Height (ft)	Release Height (m)	Initial Vertical Dimention (m)	Initial Vertical Dispersion (m)	Average Speed (mph)	Average Vehicles per Day
DPM_XING	DPM from the new Crossing	Both	2	0.07	34	10.36	11.15	3.4	6.8	3.16	25mph	700
XXX_XING	XXX from The New Crossing	Both	2	0.07	34	10.36	4.27	1.3	2.86	1.33	25mph	700
DPM_W	DPM from the new roadway west of the Crossing	Both	2	0.06	34	10.36	11.15	3.4	6.80	3.16	25mph	350
XXX_W	XXX from the new roadway west of the Crossing	Both	2	0.06	34	10.36	4.27	1.3	2.79	1.30	25mph	350
DPM_E	DPM from the new roadway east of the Crossing	Both	2	0.03	34	10.36	11.15	3.4	6.8	3.16	25mph	350
XXX_E	XXX from the new roadway east of the Crossing	Both	2	0.03	34	10.36	4.27	1.3	2.86	1.33	25mph	350

Emission Factors

	Speed Category	1	2	3
	Travel Speed (mph)	25		
Emisions per vehicle (g/VMT)	DPM	0.000562		
	PM2.5	0.002594		
	TOG Exhaust	0.03352		
	TOG Evap	0.046938		
	Fugitive PM2.5	0.127944		

			Bridge	**W/o Crossing**	**E/o Crossing**	**XXX**	**XXX**	**XXX**
Vehicle Type	Truck 1 (MDT)		20	10	10	0	0	
	Truck 2 (HDT)		12	6	6	0	0	
	Non-Truck		668	334	334	0	0	
Total	2024 ADT	-	700	350	350			
Directional Volume	NB	-						
	SB	-						

	ADT	Distance (mi)	VMT
Bridge	700	0.07	46.1923
W/o Crossing	350	0.06	22.11771
E/o Crossing	350	0.03	10.85
TOTAL		0.16	79.16001
Speed (MPH)	25		

Criteria	Exhaust (grams/day)	Non-Exhaust (grams/day)	Total (g/day)	lbs/day	ton/year
PM2.5	0.21	10.128	10.33	0.022781	0.0042
PM10	0.22	65.34	65.56	0.144546	0.02638
ROG	2.06	3.72	5.78	0.012742	0.002325
NOX	10.80		10.80	0.023802	0.004344
GHG				MT/day	MT/yr
CO2	30170		30170.20108	0.03017	11.01212
N2O	0.865		0.865160868	8.65E-07	0.000316
CH4	0.462	0.5549	1.017106901	1.02E-06	0.000371
HFCs		0.0507	0.050700923	5.07E-08	1.85E-05
CO2e	30440	86.4	30525.9	0.0305	11.14

2024 Hourly Traffic Volumes and DPM Emisssions - DPM from the new Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	8	0.0000001	8	0.0643577	45	4.6436E-07	16	0.05801478	41	4.18592E-07
1	0.00740349	5	5.34181E-08	9	0.0598818	42	4.32063E-07	17	0.05628001	39	4.06075E-07
2	0.00719554	5	5.19177E-08	10	0.0540699	38	3.90128E-07	18	0.05397567	38	3.89448E-07
3	0.0090397	6	6.52238E-08	11	0.0511832	36	3.693E-07	19	0.04834712	34	3.48837E-07
4	0.01740988	12	1.25617E-07	12	0.0526533	37	3.79907E-07	20	0.03893556	27	2.8093E-07
5	0.03764755	26	2.71637E-07	13	0.0561328	39	4.05013E-07	21	0.03342021	23	2.41135E-07
6	0.05280664	37	3.81014E-07	14	0.061969	43	4.47122E-07	22	0.02602722	18	1.87793E-07
7	0.06314643	44	0.000000456	15	0.0606367	42	4.37509E-07	23	0.0186155	13	1.34316E-07
									TOTAL	700	

2024 Hourly Traffic Volumes and DPM Emisssions - DPM from the new roadway west of the Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	4	0.00000004	8	0.0643577	23	2.22343E-07	16	0.05801478	20	2.00429E-07
1	0.00740349	3	2.55775E-08	9	0.0598818	21	2.06879E-07	17	0.05628001	20	1.94436E-07
2	0.00719554	3	2.48591E-08	10	0.0540699	19	1.86801E-07	18	0.05397567	19	1.86475E-07
3	0.0090397	3	3.12303E-08	11	0.0511832	18	1.76828E-07	19	0.04834712	17	1.67029E-07
4	0.01740988	6	6.01476E-08	12	0.0526533	18	1.81906E-07	20	0.03893556	14	1.34514E-07
5	0.03764755	13	1.30065E-07	13	0.0561328	20	1.93927E-07	21	0.03342021	12	1.1546E-07
6	0.05280664	18	1.82436E-07	14	0.061969	22	2.1409E-07	22	0.02602722	9	8.99187E-08
7	0.06314643	22	2.18158E-07	15	0.0606367	21	2.09487E-07	23	0.0186155	7	6.43128E-08
									TOTAL	350	

2024 Hourly Traffic Volumes and DPM Emisssions - DPM from the new roadway east of the Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	4	0.00000002	8	0.0643577	23	1.09072E-07	16	0.05801478	20	9.8322E-08
1	0.00740349	3	1.25472E-08	9	0.0598818	21	1.01486E-07	17	0.05628001	20	9.5382E-08
2	0.00719554	3	1.21948E-08	10	0.0540699	19	9.16363E-08	18	0.05397567	19	9.14766E-08
3	0.0090397	3	1.53203E-08	11	0.0511832	18	8.6744E-08	19	0.04834712	17	8.19375E-08
4	0.01740988	6	2.95058E-08	12	0.0526533	18	8.92355E-08	20	0.03893556	14	6.5987E-08
5	0.03764755	13	6.38041E-08	13	0.0561328	20	9.51324E-08	21	0.03342021	12	5.66397E-08
6	0.05280664	18	8.94954E-08	14	0.061969	22	1.05024E-07	22	0.02602722	9	4.41103E-08
7	0.06314643	22	1.07019E-07	15	0.0606367	21	1.02766E-07	23	0.0186155	7	3.15491E-08
									TOTAL	350	

2024 Hourly Traffic Volumes and Fugitive PM2.5 Emis XXX from The New Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	8	0.000018	8	0.0643577	45	0.000105655	16	0.05801478	41	9.52415E-05
1	0.00740349	5	1.215E-05	9	0.0598818	42	9.83066E-05	17	0.05628001	39	9.23936E-05
2	0.00719554	5	1.181E-05	10	0.0540699	38	8.87653E-05	18	0.05397567	38	8.86106E-05
3	0.0090397	6	1.484E-05	11	0.0511832	36	8.40263E-05	19	0.04834712	34	7.93704E-05
4	0.01740988	12	2.858E-05	12	0.0526533	37	8.64397E-05	20	0.03893556	27	6.39196E-05
5	0.03764755	26	6.181E-05	13	0.0561328	39	9.21519E-05	21	0.03342021	23	5.48652E-05
6	0.05280664	37	8.669E-05	14	0.061969	43	0.000101733	22	0.02602722	18	4.27283E-05
7	0.06314643	44	0.0001037	15	0.0606367	42	9.95458E-05	23	0.0186155	13	3.05606E-05
									TOTAL	700	

2024 Hourly Traffic Volumes and Fugitive PM2.5 Emis XXX from the new roadway west of the Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	4	0.000009	8	0.0643577	23	5.05893E-05	16	0.05801478	20	4.56034E-05
1	0.00740349	3	5.82E-06	9	0.0598818	21	4.7071E-05	17	0.05628001	20	4.42397E-05
2	0.00719554	3	5.656E-06	10	0.0540699	19	4.25024E-05	18	0.05397567	19	4.24284E-05
3	0.0090397	3	7.106E-06	11	0.0511832	18	4.02333E-05	19	0.04834712	17	3.8004E-05
4	0.01740988	6	1.369E-05	12	0.0526533	18	4.13889E-05	20	0.03893556	14	3.06059E-05
5	0.03764755	13	2.959E-05	13	0.0561328	20	4.4124E-05	21	0.03342021	12	2.62704E-05
6	0.05280664	18	4.151E-05	14	0.061969	22	4.87116E-05	22	0.02602722	9	2.04591E-05
7	0.06314643	22	4.964E-05	15	0.0606367	21	4.76643E-05	23	0.0186155	7	1.4633E-05
									TOTAL	350	

2024 Hourly Traffic Volumes and Fugitive PM2.5 Emis XXX from the new roadway east of the Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	4	0.000004	8	0.0643577	23	2.48169E-05	16	0.05801478	20	2.23711E-05
1	0.00740349	3	2.855E-06	9	0.0598818	21	2.3091E-05	17	0.05628001	20	2.17021E-05
2	0.00719554	3	2.775E-06	10	0.0540699	19	2.08499E-05	18	0.05397567	19	2.08135E-05
3	0.0090397	3	3.486E-06	11	0.0511832	18	1.97367E-05	19	0.04834712	17	1.86431E-05
4	0.01740988	6	6.713E-06	12	0.0526533	18	2.03036E-05	20	0.03893556	14	1.50139E-05
5	0.03764755	13	1.452E-05	13	0.0561328	20	2.16453E-05	21	0.03342021	12	1.28872E-05
6	0.05280664	18	2.036E-05	14	0.061969	22	2.38958E-05	22	0.02602722	9	1.00363E-05
7	0.06314643	22	2.435E-05	15	0.0606367	21	2.33821E-05	23	0.0186155	7	7.17832E-06
									TOTAL	350	

2024 Hourly Traffic Volumes and PM2.5 Emisssions - XXX from The New Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	8	0.0000004	8	0.0643577	45	2.14169E-06	16	0.05801478	41	1.93061E-06
1	0.00740349	5	2.46373E-07	9	0.0598818	42	1.99274E-06	17	0.05628001	39	1.87288E-06
2	0.00719554	5	2.39453E-07	10	0.0540699	38	1.79933E-06	18	0.05397567	38	1.7962E-06
3	0.0090397	6	3.00823E-07	11	0.0511832	36	1.70327E-06	19	0.04834712	34	1.60889E-06
4	0.01740988	12	5.79365E-07	12	0.0526533	37	1.75219E-06	20	0.03893556	27	1.29569E-06
5	0.03764755	26	1.25283E-06	13	0.0561328	39	1.86798E-06	21	0.03342021	23	1.11216E-06
6	0.05280664	37	1.7573E-06	14	0.061969	43	2.0622E-06	22	0.02602722	18	8.66132E-07
7	0.06314643	44	2.10138E-06	15	0.0606367	42	2.01786E-06	23	0.0186155	13	6.19485E-07
									TOTAL	700	

2024 Hourly Traffic Volumes and PM2.5 Emisssions - XXX from the new roadway west of the Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	4	0.0000002	8	0.0643577	23	1.02548E-06	16	0.05801478	20	9.24412E-07
1	0.00740349	3	1.17968E-07	9	0.0598818	21	9.54161E-07	17	0.05628001	20	8.9677E-07
2	0.00719554	3	1.14654E-07	10	0.0540699	19	8.61554E-07	18	0.05397567	19	8.60052E-07
3	0.0090397	3	1.44039E-07	11	0.0511832	18	8.15557E-07	19	0.04834712	17	7.70367E-07
4	0.01740988	6	2.7741E-07	12	0.0526533	18	8.38981E-07	20	0.03893556	14	6.20402E-07
5	0.03764755	13	5.99879E-07	13	0.0561328	20	8.94424E-07	21	0.03342021	12	5.3252E-07
6	0.05280664	18	8.41425E-07	14	0.061969	22	9.87419E-07	22	0.02602722	9	4.1472E-07
7	0.06314643	22	1.00618E-06	15	0.0606367	21	9.66189E-07	23	0.0186155	7	2.96621E-07
									TOTAL	350	

2024 Hourly Traffic Volumes and PM2.5 Emisssions - XXX from the new roadway east of the Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	4	0.0000001	8	0.0643577	23	5.03057E-07	16	0.05801478	20	4.53477E-07
1	0.00740349	3	5.78699E-08	9	0.0598818	21	4.6807E-07	17	0.05628001	20	4.39917E-07
2	0.00719554	3	5.62445E-08	10	0.0540699	19	4.22641E-07	18	0.05397567	19	4.21905E-07
3	0.0090397	3	7.06595E-08	11	0.0511832	18	4.00077E-07	19	0.04834712	17	3.77909E-07
4	0.01740988	6	1.36086E-07	12	0.0526533	18	4.11568E-07	20	0.03893556	14	3.04343E-07
5	0.03764755	13	2.94275E-07	13	0.0561328	20	4.38766E-07	21	0.03342021	12	2.61232E-07
6	0.05280664	18	4.12767E-07	14	0.061969	22	4.84385E-07	22	0.02602722	9	2.03444E-07
7	0.06314643	22	4.93589E-07	15	0.0606367	21	4.73971E-07	23	0.0186155	7	1.45509E-07
									TOTAL	350	

2024 Hourly Traffic Volumes and TOG Evaporative Emisssions - XXX from The New Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	8	0.000007	8	0.0643577	45	3.87608E-05	16	0.05801478	41	3.49407E-05
1	0.00740349	5	4.459E-06	9	0.0598818	42	3.60651E-05	17	0.05628001	39	3.38959E-05
2	0.00719554	5	4.334E-06	10	0.0540699	38	3.25648E-05	18	0.05397567	38	3.2508E-05
3	0.0090397	6	5.444E-06	11	0.0511832	36	3.08262E-05	19	0.04834712	34	2.91181E-05
4	0.01740988	12	1.049E-05	12	0.0526533	37	3.17116E-05	20	0.03893556	27	2.34498E-05
5	0.03764755	26	2.267E-05	13	0.0561328	39	3.38072E-05	21	0.03342021	23	2.01281E-05
6	0.05280664	37	3.18E-05	14	0.061969	43	3.73222E-05	22	0.02602722	18	1.56755E-05
7	0.06314643	44	3.803E-05	15	0.0606367	42	3.65198E-05	23	0.0186155	13	1.12116E-05
									TOTAL	700	

2024 Hourly Traffic Volumes and TOG Evaporative Emisssions - XXX from the new roadway west of the Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	4	0.000003	8	0.0643577	23	1.85594E-05	16	0.05801478	20	1.67302E-05
1	0.00740349	3	2.135E-06	9	0.0598818	21	1.72686E-05	17	0.05628001	20	1.623E-05
2	0.00719554	3	2.075E-06	10	0.0540699	19	1.55926E-05	18	0.05397567	19	1.55654E-05
3	0.0090397	3	2.607E-06	11	0.0511832	18	1.47601E-05	19	0.04834712	17	1.39423E-05
4	0.01740988	6	5.021E-06	12	0.0526533	18	1.51841E-05	20	0.03893556	14	1.12282E-05
5	0.03764755	13	1.086E-05	13	0.0561328	20	1.61875E-05	21	0.03342021	12	9.63768E-06
6	0.05280664	18	1.523E-05	14	0.061969	22	1.78705E-05	22	0.02602722	9	7.5057E-06
7	0.06314643	22	1.821E-05	15	0.0606367	21	1.74863E-05	23	0.0186155	7	5.36831E-06
									TOTAL	350	

2024 Hourly Traffic Volumes and TOG Evaporative Emisssions - XXX from the new roadway east of the Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	4	0.000002	8	0.0643577	23	9.10444E-06	16	0.05801478	20	8.20713E-06
1	0.00740349	3	1.047E-06	9	0.0598818	21	8.47125E-06	17	0.05628001	20	7.96172E-06
2	0.00719554	3	1.018E-06	10	0.0540699	19	7.64907E-06	18	0.05397567	19	7.63574E-06
3	0.0090397	3	1.279E-06	11	0.0511832	18	7.2407E-06	19	0.04834712	17	6.83949E-06
4	0.01740988	6	2.463E-06	12	0.0526533	18	7.44866E-06	20	0.03893556	14	5.50807E-06
5	0.03764755	13	5.326E-06	13	0.0561328	20	7.94089E-06	21	0.03342021	12	4.72783E-06
6	0.05280664	18	7.47E-06	14	0.061969	22	8.76652E-06	22	0.02602722	9	3.68197E-06
7	0.06314643	22	8.933E-06	15	0.0606367	21	8.57804E-06	23	0.0186155	7	2.63346E-06
									TOTAL	350	

2024 Hourly Traffic Volumes and TOG Exhaust Emisssi XXX from The New Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	8	0.000005	8	0.0643577	45	2.76806E-05	16	0.05801478	41	2.49525E-05
1	0.00740349	5	3.184E-06	9	0.0598818	42	2.57555E-05	17	0.05628001	39	2.42063E-05
2	0.00719554	5	3.095E-06	10	0.0540699	38	2.32558E-05	18	0.05397567	38	2.32152E-05
3	0.0090397	6	3.888E-06	11	0.0511832	36	2.20142E-05	19	0.04834712	34	2.07944E-05
4	0.01740988	12	7.488E-06	12	0.0526533	37	2.26465E-05	20	0.03893556	27	1.67464E-05
5	0.03764755	26	1.619E-05	13	0.0561328	39	2.4143E-05	21	0.03342021	23	1.43742E-05
6	0.05280664	37	2.271E-05	14	0.061969	43	2.66532E-05	22	0.02602722	18	1.11945E-05
7	0.06314643	44	2.716E-05	15	0.0606367	42	2.60802E-05	23	0.0186155	13	8.00663E-06
									TOTAL	700	

2024 Hourly Traffic Volumes and TOG Exhaust Emisssi XXX from the new roadway west of the Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	4	0.000002	8	0.0643577	23	1.3254E-05	16	0.05801478	20	1.19477E-05
1	0.00740349	3	1.525E-06	9	0.0598818	21	1.23322E-05	17	0.05628001	20	1.15904E-05
2	0.00719554	3	1.482E-06	10	0.0540699	19	1.11353E-05	18	0.05397567	19	1.11159E-05
3	0.0090397	3	1.862E-06	11	0.0511832	18	1.05408E-05	19	0.04834712	17	9.95672E-06
4	0.01740988	6	3.585E-06	12	0.0526533	18	1.08435E-05	20	0.03893556	14	8.01848E-06
5	0.03764755	13	7.753E-06	13	0.0561328	20	1.15601E-05	21	0.03342021	12	6.88264E-06
6	0.05280664	18	1.088E-05	14	0.061969	22	1.2762E-05	22	0.02602722	9	5.36011E-06
7	0.06314643	22	1.3E-05	15	0.0606367	21	1.24877E-05	23	0.0186155	7	3.83372E-06
									TOTAL	350	

2024 Hourly Traffic Volumes and TOG Exhaust Emisssi XXX from the new roadway east of the Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	4	0.000001	8	0.0643577	23	6.50183E-06	16	0.05801478	20	5.86103E-06
1	0.00740349	3	7.479E-07	9	0.0598818	21	6.04965E-06	17	0.05628001	20	5.68577E-06
2	0.00719554	3	7.269E-07	10	0.0540699	19	5.46249E-06	18	0.05397567	19	5.45297E-06
3	0.0090397	3	9.132E-07	11	0.0511832	18	5.17086E-06	19	0.04834712	17	4.88434E-06
4	0.01740988	6	1.759E-06	12	0.0526533	18	5.31938E-06	20	0.03893556	14	3.93352E-06
5	0.03764755	13	3.803E-06	13	0.0561328	20	5.6709E-06	21	0.03342021	12	3.37633E-06
6	0.05280664	18	5.335E-06	14	0.061969	22	6.26051E-06	22	0.02602722	9	2.62944E-06
7	0.06314643	22	6.379E-06	15	0.0606367	21	6.12591E-06	23	0.0186155	7	1.88066E-06
									TOTAL	350	

Attachment 4: Health Risk Calculations for Construction and Operations

Milpitas Blvd. Bridge and Roadway Extension Project

DPM Emissions and Modeling Emission Rates - Without Controls

Construction Year	Activity	Area Source	DPM Emissions (ton/year)	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Number of Sources	DPM Emission Rate ($g/s/m^2$)
2023	Construction	DPM_CONST	0.0454	90.8	0.02865	3.61E-03	169	2.13582E-05
2024	Construction	DPM_CONST	0.0638	127.6	0.0403	0.00508	169.0	3.004E-05

Construction Hours

hr/day =	12	(7am - 7pm)
days/yr =	Varies	
hours/year =	Varies	

DPM Emissions and Modeling Emission Rates - With AQ-1 & AQ-2

Construction Year	Activity	Area Source	DPM Emissions (ton/year)	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Number of Sources	DPM Emission Rate ($g/s/m^2$)
2023	Construction	DPM_CONST	0.0045	9.1	0.00286	3.61E-04	169	2.14E-06
2024	Construction	DPM_CONST	0.0064	12.8	0.0040	0.000508	169.0	3.004E-06

Construction Hours

hr/day =	12	(7am - 7pm)
days/yr =	Varies	
hours/year =	Varies	

Milpitas Blvd. Bridge and Roadway Extension Project

PM2.5 Fugitive Dust Emissions for Modeling - Without Controls

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2023	Construction	PM25_CONST	0.0447	89.4	0.02823	3.56E-03	14663.5	2.43E-07
2024	Construction	PM25_CONST	0.0686	137.3	0.0433	0.005460	14663.5	3.72E-07

Construction Hours

hr/day =	12	(7am - 7pm)
days/yr =	Varies	
hours/year =	Varies	

PM2.5 Fugitive Dust Emissions for Modeling - With AQ-1 & AQ-2

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2023	Construction	PM25_CONST	0.0139	27.8	0.00878	1.11E-03	14663.5	7.55E-08
2024	Construction	PM25_CONST	0.0214	42.7	0.0135	0.001699	14663.5	1.16E-07

Construction Hours

hr/day =	12	(7am - 7pm)
days/yr =	Varies	
hours/year =	Varies	

Milpitas Blvd. Bridge Project , Milpitas - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site Multi-Family Homes - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

		Exposure Information				Infant/Child	Adult			Adult		Maximum	
	Exposure		DPM Conc (ug/m3)		Age	Cancer	Modeled DPM Conc (ug/m3)		Age	Cancer			
Exposure	Duration				Sensitivity	Risk			Sensitivity	Risk		Fugitive	Total
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	HI	PM2.5	PM2.5
0	0.25	-0.25 - 0*	2023	0.0856	10	1.16							
1	1	0 - 1	2023	0.0856	10	14.06	2023	0.0856	1	0.25	0.017	0.4876	0.573
2	1	1 - 2	2024	0.1204	10	19.77	2024	0.1204	1	0.35	0.024	0.7479	0.868
3	1	2 - 3	2025	0.0000	3	0.00	2025	0.0000	1	0.00			
4	1	3 - 4	2026	0.0000	3	0.00	2026	0.0000	1	0.00			
5	1	4 - 5	2027	0.0000	3	0.00	2027	0.0000	1	0.00			
6	1	5 - 6	2028	0.0000	3	0.00	2028	0.0000	1	0.00			
7	1	6 - 7	2029	0.0000	3	0.00	2029	0.0000	1	0.00			
8	1	7 - 8	2030	0.0000	3	0.00	2030	0.0000	1	0.00			
9	1	8 - 9	2031	0.0000	3	0.00	2031	0.0000	1	0.00			
10	1	9 - 10	2032	0.0000	3	0.00	2032	0.0000	1	0.00			
11	1	10 - 11	2033	0.0000	3	0.00	2033	0.0000	1	0.00			
12	1	11 - 12	2034	0.0000	3	0.00	2034	0.0000	1	0.00			
13	1	12 - 13	2035	0.0000	3	0.00	2035	0.0000	1	0.00			
14	1	13 - 14	2036	0.0000	3	0.00	2036	0.0000	1	0.00			
15	1	14 - 15	2037	0.0000	3	0.00	2037	0.0000	1	0.00			
16	1	15 - 16	2038	0.0000	3	0.00	2038	0.0000	1	0.00			
17	1	16-17	2039	0.0000	1	0.00	2039	0.0000	1	0.00			
18	1	17-18	2040	0.0000	1	0.00	2040	0.0000	1	0.00			
19	1	18-19	2041	0.0000	1	0.00	2041	0.0000	1	0.00			
20	1	19-20	2042	0.0000	1	0.00	2042	0.0000	1	0.00			
21	1	20-21	2043	0.0000	1	0.00	2043	0.0000	1	0.00			
22	1	21-22	2044	0.0000	1	0.00	2044	0.0000	1	0.00			
23	1	22-23	2045	0.0000	1	0.00	2045	0.0000	1	0.00			
24	1	23-24	2046	0.0000	1	0.00	2046	0.0000	1	0.00			
25	1	24-25	2047	0.0000	1	0.00	2047	0.0000	1	0.00			
26	1	25-26	2048	0.0000	1	0.00	2048	0.0000	1	0.00			
27	1	26-27	2049	0.0000	1	0.00	2049	0.0000	1	0.00			
28	1	27-28	2050	0.0000	1	0.00	2050	0.0000	1	0.00			
29	1	28-29	2051	0.0000	1	0.00	2051	0.0000	1	0.00			
30	1	29-30	2052	0.0000	1	0.00	2052	0.0000	1	0.00			
Total Increased Cancer Risk						**34.99**				**0.59**			

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project , Milpitas - Construction Impacts - With AQ-1 and AQ-2 Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site Multi-Family Homes - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

		Exposure Information				Infant/Child	Adult			Adult			
			DPM Conc (ug/m3)		Age	Cancer	Modeled DPM Conc (ug/m3)		Age	Cancer		Maximum	
Exposure Year	Exposure Duration (years)	Age	Year	Annual	Sensitivity Factor	Risk (per million)	Year	Annual	Sensitivity Factor	Risk (per million)	HI	Fugitive PM2.5	Total PM2.5
0	0.25	-0.25 - 0*	2023	0.0086	10	0.12							
1	1	0 - 1	2023	0.0086	10	1.41	2023	0.0086	1	0.02	0.002	0.1517	0.160
2	1	1 - 2	2024	0.0120	10	1.98	2024	0.0120	1	0.03	0.002	0.2327	0.245
3	1	2 - 3	2025	0.0000	3	0.00	2025	0.0000	1	0.00			
4	1	3 - 4	2026	0.0000	3	0.00	2026	0.0000	1	0.00			
5	1	4 - 5	2027	0.0000	3	0.00	2027	0.0000	1	0.00			
6	1	5 - 6	2028	0.0000	3	0.00	2028	0.0000	1	0.00			
7	1	6 - 7	2029	0.0000	3	0.00	2029	0.0000	1	0.00			
8	1	7 - 8	2030	0.0000	3	0.00	2030	0.0000	1	0.00			
9	1	8 - 9	2031	0.0000	3	0.00	2031	0.0000	1	0.00			
10	1	9 - 10	2032	0.0000	3	0.00	2032	0.0000	1	0.00			
11	1	10 - 11	2033	0.0000	3	0.00	2033	0.0000	1	0.00			
12	1	11 - 12	2034	0.0000	3	0.00	2034	0.0000	1	0.00			
13	1	12 - 13	2035	0.0000	3	0.00	2035	0.0000	1	0.00			
14	1	13 - 14	2036	0.0000	3	0.00	2036	0.0000	1	0.00			
15	1	14 - 15	2037	0.0000	3	0.00	2037	0.0000	1	0.00			
16	1	15 - 16	2038	0.0000	3	0.00	2038	0.0000	1	0.00			
17	1	16-17	2039	0.0000	1	0.00	2039	0.0000	1	0.00			
18	1	17-18	2040	0.0000	1	0.00	2040	0.0000	1	0.00			
19	1	18-19	2041	0.0000	1	0.00	2041	0.0000	1	0.00			
20	1	19-20	2042	0.0000	1	0.00	2042	0.0000	1	0.00			
21	1	20-21	2043	0.0000	1	0.00	2043	0.0000	1	0.00			
22	1	21-22	2044	0.0000	1	0.00	2044	0.0000	1	0.00			
23	1	22-23	2045	0.0000	1	0.00	2045	0.0000	1	0.00			
24	1	23-24	2046	0.0000	1	0.00	2046	0.0000	1	0.00			
25	1	24-25	2047	0.0000	1	0.00	2047	0.0000	1	0.00			
26	1	25-26	2048	0.0000	1	0.00	2048	0.0000	1	0.00			
27	1	26-27	2049	0.0000	1	0.00	2049	0.0000	1	0.00			
28	1	27-28	2050	0.0000	1	0.00	2050	0.0000	1	0.00			
29	1	28-29	2051	0.0000	1	0.00	2051	0.0000	1	0.00			
30	1	29-30	2052	0.0000	1	0.00	2052	0.0000	1	0.00			
Total Increased Cancer Risk						**3.50**				**0.06**			

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project , Milpitas - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site Multi-Family Homes - 4.6 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

		Exposure Information				Infant/Child	Adult					Adult			
			DPM Conc (ug/m3)		Age	Cancer	Modeled DPM Conc (ug/m3)		Age	Cancer			Maximum	
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**		**HI**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2023	0.2024	10	2.75								
1	1	0 - 1	2023	0.2024	10	33.25	2023	0.2024	1	0.58		0.040	0.2536	0.456
2	1	1 - 2	2024	0.2847	10	46.76	2024	0.2847	1	0.82		0.057	0.3890	0.674
3	1	2 - 3	2025	0.0000	3	0.00	2025	0.0000	1	0.00				
4	1	3 - 4	2026	0.0000	3	0.00	2026	0.0000	1	0.00				
5	1	4 - 5	2027	0.0000	3	0.00	2027	0.0000	1	0.00				
6	1	5 - 6	2028	0.0000	3	0.00	2028	0.0000	1	0.00				
7	1	6 - 7	2029	0.0000	3	0.00	2029	0.0000	1	0.00				
8	1	7 - 8	2030	0.0000	3	0.00	2030	0.0000	1	0.00				
9	1	8 - 9	2031	0.0000	3	0.00	2031	0.0000	1	0.00				
10	1	9 - 10	2032	0.0000	3	0.00	2032	0.0000	1	0.00				
11	1	10 - 11	2033	0.0000	3	0.00	2033	0.0000	1	0.00				
12	1	11 - 12	2034	0.0000	3	0.00	2034	0.0000	1	0.00				
13	1	12 - 13	2035	0.0000	3	0.00	2035	0.0000	1	0.00				
14	1	13 - 14	2036	0.0000	3	0.00	2036	0.0000	1	0.00				
15	1	14 - 15	2037	0.0000	3	0.00	2037	0.0000	1	0.00				
16	1	15 - 16	2038	0.0000	3	0.00	2038	0.0000	1	0.00				
17	1	16-17	2039	0.0000	1	0.00	2039	0.0000	1	0.00				
18	1	17-18	2040	0.0000	1	0.00	2040	0.0000	1	0.00				
19	1	18-19	2041	0.0000	1	0.00	2041	0.0000	1	0.00				
20	1	19-20	2042	0.0000	1	0.00	2042	0.0000	1	0.00				
21	1	20-21	2043	0.0000	1	0.00	2043	0.0000	1	0.00				
22	1	21-22	2044	0.0000	1	0.00	2044	0.0000	1	0.00				
23	1	22-23	2045	0.0000	1	0.00	2045	0.0000	1	0.00				
24	1	23-24	2046	0.0000	1	0.00	2046	0.0000	1	0.00				
25	1	24-25	2047	0.0000	1	0.00	2047	0.0000	1	0.00				
26	1	25-26	2048	0.0000	1	0.00	2048	0.0000	1	0.00				
27	1	26-27	2049	0.0000	1	0.00	2049	0.0000	1	0.00				
28	1	27-28	2050	0.0000	1	0.00	2050	0.0000	1	0.00				
29	1	28-29	2051	0.0000	1	0.00	2051	0.0000	1	0.00				
30	1	29-30	2052	0.0000	1	0.00	2052	0.0000	1	0.00				
Total Increased Cancer Risk						**82.77**				**1.40**				

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project , Milpitas - Construction Impacts - With AQ-1 and AQ-2 Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site Multi-Family Homes - 4.6 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

		Exposure Information				Infant/Child	Adult			Adult			
	Exposure		DPM Conc (ug/m3)		Age	Cancer	Modeled DPM Conc (ug/m3)		Age	Cancer		Maximum	
Exposure	Duration				Sensitivity	Risk			Sensitivity	Risk			
Year	(years)	Age	Year	Annual	Factor	(per million)	Year	Annual	Factor	(per million)	HI	Fugitive PM2.5	Total PM2.5
0	0.25	-0.25 - 0*	2023	0.0202	10	0.28							
1	1	0 - 1	2023	0.0202	10	3.32	2023	0.0202	1	0.06	0.004	0.0789	0.099
2	1	1 - 2	2024	0.0285	10	4.68	2024	0.0285	1	0.08	0.006	0.1210	0.149
3	1	2 - 3	2025	0.0000	3	0.00	2025	0.0000	1	0.00			
4	1	3 - 4	2026	0.0000	3	0.00	2026	0.0000	1	0.00			
5	1	4 - 5	2027	0.0000	3	0.00	2027	0.0000	1	0.00			
6	1	5 - 6	2028	0.0000	3	0.00	2028	0.0000	1	0.00			
7	1	6 - 7	2029	0.0000	3	0.00	2029	0.0000	1	0.00			
8	1	7 - 8	2030	0.0000	3	0.00	2030	0.0000	1	0.00			
9	1	8 - 9	2031	0.0000	3	0.00	2031	0.0000	1	0.00			
10	1	9 - 10	2032	0.0000	3	0.00	2032	0.0000	1	0.00			
11	1	10 - 11	2033	0.0000	3	0.00	2033	0.0000	1	0.00			
12	1	11 - 12	2034	0.0000	3	0.00	2034	0.0000	1	0.00			
13	1	12 - 13	2035	0.0000	3	0.00	2035	0.0000	1	0.00			
14	1	13 - 14	2036	0.0000	3	0.00	2036	0.0000	1	0.00			
15	1	14 - 15	2037	0.0000	3	0.00	2037	0.0000	1	0.00			
16	1	15 - 16	2038	0.0000	3	0.00	2038	0.0000	1	0.00			
17	1	16-17	2039	0.0000	1	0.00	2039	0.0000	1	0.00			
18	1	17-18	2040	0.0000	1	0.00	2040	0.0000	1	0.00			
19	1	18-19	2041	0.0000	1	0.00	2041	0.0000	1	0.00			
20	1	19-20	2042	0.0000	1	0.00	2042	0.0000	1	0.00			
21	1	20-21	2043	0.0000	1	0.00	2043	0.0000	1	0.00			
22	1	21-22	2044	0.0000	1	0.00	2044	0.0000	1	0.00			
23	1	22-23	2045	0.0000	1	0.00	2045	0.0000	1	0.00			
24	1	23-24	2046	0.0000	1	0.00	2046	0.0000	1	0.00			
25	1	24-25	2047	0.0000	1	0.00	2047	0.0000	1	0.00			
26	1	25-26	2048	0.0000	1	0.00	2048	0.0000	1	0.00			
27	1	26-27	2049	0.0000	1	0.00	2049	0.0000	1	0.00			
28	1	27-28	2050	0.0000	1	0.00	2050	0.0000	1	0.00			
29	1	28-29	2051	0.0000	1	0.00	2051	0.0000	1	0.00			
30	1	29-30	2052	0.0000	1	0.00	2052	0.0000	1	0.00			
Total Increased Cancer Risk						**8.28**				**0.14**			

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project , Milpitas - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site Multi-Family Homes - 7.6 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

		Exposure Information				Infant/Child	Adult			Adult			
			DPM Conc (ug/m3)		Age	Cancer	Modeled DPM Conc (ug/m3)		Age	Cancer		Maximum	
Exposure Year	Exposure Duration (years)	Age	Year	Annual	Sensitivity Factor	Risk (per million)	Year	Annual	Sensitivity Factor	Risk (per million)		Fugitive PM2.5	Total PM2.5
0	0.25	-0.25 - 0*	2023	0.1717	10	2.34					HI		
1	1	0 - 1	2023	0.1717	10	28.21	2023	0.1717	1	0.49	0.034	0.1274	0.299
2	1	1 - 2	2024	0.2416	10	39.67	2024	0.2416	1	0.69	0.048	0.1954	0.437
3	1	2 - 3	2025	0.0000	3	0.00	2025	0.0000	1	0.00			
4	1	3 - 4	2026	0.0000	3	0.00	2026	0.0000	1	0.00			
5	1	4 - 5	2027	0.0000	3	0.00	2027	0.0000	1	0.00			
6	1	5 - 6	2028	0.0000	3	0.00	2028	0.0000	1	0.00			
7	1	6 - 7	2029	0.0000	3	0.00	2029	0.0000	1	0.00			
8	1	7 - 8	2030	0.0000	3	0.00	2030	0.0000	1	0.00			
9	1	8 - 9	2031	0.0000	3	0.00	2031	0.0000	1	0.00			
10	1	9 - 10	2032	0.0000	3	0.00	2032	0.0000	1	0.00			
11	1	10 - 11	2033	0.0000	3	0.00	2033	0.0000	1	0.00			
12	1	11 - 12	2034	0.0000	3	0.00	2034	0.0000	1	0.00			
13	1	12 - 13	2035	0.0000	3	0.00	2035	0.0000	1	0.00			
14	1	13 - 14	2036	0.0000	3	0.00	2036	0.0000	1	0.00			
15	1	14 - 15	2037	0.0000	3	0.00	2037	0.0000	1	0.00			
16	1	15 - 16	2038	0.0000	3	0.00	2038	0.0000	1	0.00			
17	1	16-17	2039	0.0000	1	0.00	2039	0.0000	1	0.00			
18	1	17-18	2040	0.0000	1	0.00	2040	0.0000	1	0.00			
19	1	18-19	2041	0.0000	1	0.00	2041	0.0000	1	0.00			
20	1	19-20	2042	0.0000	1	0.00	2042	0.0000	1	0.00			
21	1	20-21	2043	0.0000	1	0.00	2043	0.0000	1	0.00			
22	1	21-22	2044	0.0000	1	0.00	2044	0.0000	1	0.00			
23	1	22-23	2045	0.0000	1	0.00	2045	0.0000	1	0.00			
24	1	23-24	2046	0.0000	1	0.00	2046	0.0000	1	0.00			
25	1	24-25	2047	0.0000	1	0.00	2047	0.0000	1	0.00			
26	1	25-26	2048	0.0000	1	0.00	2048	0.0000	1	0.00			
27	1	26-27	2049	0.0000	1	0.00	2049	0.0000	1	0.00			
28	1	27-28	2050	0.0000	1	0.00	2050	0.0000	1	0.00			
29	1	28-29	2051	0.0000	1	0.00	2051	0.0000	1	0.00			
30	1	29-30	2052	0.0000	1	0.00	2052	0.0000	1	0.00			
Total Increased Cancer Risk						**70.22**				**1.19**			

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project , Milpitas - Construction Impacts - With AQ-1 and AQ-2 Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site Multi-Family Homes - 7.6 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

		Exposure Information				Infant/Child	Adult			Adult			
			DPM Conc (ug/m3)		Age	Cancer	Modeled DPM Conc (ug/m3)		Age	Cancer		Maximum	
Exposure Year	Exposure Duration (years)	Age	Year	Annual	Sensitivity Factor	Risk (per million)	Year	Annual	Sensitivity Factor	Risk (per million)		Fugitive PM2.5	Total PM2.5
0	0.25	-0.25 - 0*	2023	0.0172	10	0.23					HI		
1	1	0 - 1	2023	0.0172	10	2.82	2023	0.0172	1	0.05	0.003	0.0396	0.057
2	1	1 - 2	2024	0.0242	10	3.97	2024	0.0242	1	0.07	0.005	0.0608	0.085
3	1	2 - 3	2025	0.0000	3	0.00	2025	0.0000	1	0.00			
4	1	3 - 4	2026	0.0000	3	0.00	2026	0.0000	1	0.00			
5	1	4 - 5	2027	0.0000	3	0.00	2027	0.0000	1	0.00			
6	1	5 - 6	2028	0.0000	3	0.00	2028	0.0000	1	0.00			
7	1	6 - 7	2029	0.0000	3	0.00	2029	0.0000	1	0.00			
8	1	7 - 8	2030	0.0000	3	0.00	2030	0.0000	1	0.00			
9	1	8 - 9	2031	0.0000	3	0.00	2031	0.0000	1	0.00			
10	1	9 - 10	2032	0.0000	3	0.00	2032	0.0000	1	0.00			
11	1	10 - 11	2033	0.0000	3	0.00	2033	0.0000	1	0.00			
12	1	11 - 12	2034	0.0000	3	0.00	2034	0.0000	1	0.00			
13	1	12 - 13	2035	0.0000	3	0.00	2035	0.0000	1	0.00			
14	1	13 - 14	2036	0.0000	3	0.00	2036	0.0000	1	0.00			
15	1	14 - 15	2037	0.0000	3	0.00	2037	0.0000	1	0.00			
16	1	15 - 16	2038	0.0000	3	0.00	2038	0.0000	1	0.00			
17	1	16-17	2039	0.0000	1	0.00	2039	0.0000	1	0.00			
18	1	17-18	2040	0.0000	1	0.00	2040	0.0000	1	0.00			
19	1	18-19	2041	0.0000	1	0.00	2041	0.0000	1	0.00			
20	1	19-20	2042	0.0000	1	0.00	2042	0.0000	1	0.00			
21	1	20-21	2043	0.0000	1	0.00	2043	0.0000	1	0.00			
22	1	21-22	2044	0.0000	1	0.00	2044	0.0000	1	0.00			
23	1	22-23	2045	0.0000	1	0.00	2045	0.0000	1	0.00			
24	1	23-24	2046	0.0000	1	0.00	2046	0.0000	1	0.00			
25	1	24-25	2047	0.0000	1	0.00	2047	0.0000	1	0.00			
26	1	25-26	2048	0.0000	1	0.00	2048	0.0000	1	0.00			
27	1	26-27	2049	0.0000	1	0.00	2049	0.0000	1	0.00			
28	1	27-28	2050	0.0000	1	0.00	2050	0.0000	1	0.00			
29	1	28-29	2051	0.0000	1	0.00	2051	0.0000	1	0.00			
30	1	29-30	2052	0.0000	1	0.00	2052	0.0000	1	0.00			
Total Increased Cancer Risk						**7.02**				**0.12**			

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project , Milpitas - Operations Impacts
DPM Cancer Risk and PM2.5 Calculations at MEI
Impacts at Off-Site Multi-Family Homes - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)[1]
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air (µg/m^3)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age --> Parameter	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
ASF =	10	10	3	1
DPM CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
TOG Exhaust CPF =	6.28E-03	6.28E-03	6.28E-03	6.28E-03
TOG Evaporative CPF =	3.70E-04	3.70E-04	3.70E-04	3.70E-04
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Project Cancer Risk by Year - Maximum Impact Receptor Location

Infant/Child Exposure Information					TAC Concentrations (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	TOTAL	Adult Exposure Only									
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Exposure Year**	**Age Sensitivity Factor**	**DPM Cancer Risk (per million)**	**Exhaust TOG Cancer Risk (per million)**	**Evaporative TOG Cancer Risk (per million)**	**TOTAL Cancer Risk (per million)**		**Maximum**		
																			Fugitive	**Exhaust**	**Total**
0	0.25	-0.25 - 0*	2024	10	0.0001	0.0039	0.0054	0.001	0.0003	0.0000	0.0010	0						**HI**	**PM2.5**	**PM2.5**	**PM2.5**
1	1	0 - 1	2024	10	0.0001	0.0039	0.0054	0.01	0.0036	0.0003	0.0121	1	1	0.00014	0.00006	0.00001	0.00021	0.000	0.0147	0.0003	0.02
2	1	1 - 2	2025	10	0.0001	0.0039	0.0054	0.01	0.0036	0.0003	0.0121	2	1	0.00014	0.00006	0.00001	0.00021	0.000	0.0147	0.0003	0.02
3	1	2 - 3	2026	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	3	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.0003	0.02
4	1	3 - 4	2027	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	4	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.0003	0.02
5	1	4 - 5	2028	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	5	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
6	1	5 - 6	2029	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	6	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
7	1	6 - 7	2030	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	7	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
8	1	7 - 8	2031	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	8	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
9	1	8 - 9	2032	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	9	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
10	1	9 - 10	2033	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	10	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
11	1	10 - 11	2034	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	11	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
12	1	11 - 12	2035	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	12	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
13	1	12 - 13	2036	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	13	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
14	1	13 - 14	2037	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	14	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
15	1	14 - 15	2038	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	15	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
16	1	15 - 16	2039	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	16	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
17	1	16-17	2040	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	17	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
18	1	17-18	2041	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	18	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
19	1	18-19	2042	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	19	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
20	1	19-20	2043	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	20	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
21	1	20-21	2044	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	21	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
22	1	21-22	2045	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	22	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
23	1	22-23	2046	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	23	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
24	1	23-24	2047	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	24	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
25	1	24-25	2048	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	25	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
26	1	25-26	2049	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	26	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
27	1	26-27	2050	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	27	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
28	1	27-28	2051	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	28	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
29	1	28-29	2052	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	29	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
30	1	29-30	2053	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	30	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
						Total Increased Cancer Risk		**0.04**	**0.02**	**0.001**	**0.055**	**Total Increased Adult Risk**		**0.00**	**0.0**	**0.0**	**0.01**				

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project, Milpitas - Operations Impacts
DPM Cancer Risk and PM2.5 Calculations
Impacts at Off-Site Multi-Family Homes - 4.6 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age --> Parameter	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
ASF =	10	10	3	1
DPM CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
TOG Exhaust CPF =	6.28E-03	6.28E-03	6.28E-03	6.28E-03
TOG Evaporative CPF =	3.70E-04	3.70E-04	3.70E-04	3.70E-04
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Project Cancer Risk by Year - Maximum Impact Receptor Location

Infant/Child Exposure Information					TAC Concentrations (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	TOTAL	Adult Exposure Only								
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Exposure Year**	**Age Sensitivity Factor**	**DPM Cancer Risk (per million)**	**Exhaust TOG Cancer Risk (per million)**	**Evaporative TOG Cancer Risk (per million)**	**TOTAL Cancer Risk (per million)**	**HI**	**Maximum Fugitive PM2.5**	**Maximum Exhaust PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2024	10	0.0000	0.00315	0.00442	0.001	0.0002	0.00002	0.001	0								
1	1	0 - 1	2024	10	0.00004	0.00315	0.00442	0.007	0.003	0.0002	0.010	1	1	0.0001	0.000052	0.000004	0.000171	0.00001	0.0120	0.0002	0.01
2	1	1 - 2	2025	10	0.00004	0.00315	0.00442	0.007	0.003	0.0002	0.010	2	1	0.0001	0.000052	0.000004	0.000171	0.00001	0.0120	0.0002	0.01
3	1	2 - 3	2026	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	3	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
4	1	3 - 4	2027	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	4	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
5	1	4 - 5	2028	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	5	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
6	1	5 - 6	2029	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	6	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
7	1	6 - 7	2030	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	7	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
8	1	7 - 8	2031	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	8	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
9	1	8 - 9	2032	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	9	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
10	1	9 - 10	2033	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	10	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
11	1	10 - 11	2034	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	11	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
12	1	11 - 12	2035	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	12	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
13	1	12 - 13	2036	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	13	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
14	1	13 - 14	2037	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	14	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
15	1	14 - 15	2038	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	15	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
16	1	15 - 16	2039	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	16	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
17	1	16-17	2040	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	17	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
18	1	17-18	2041	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	18	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
19	1	18-19	2042	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	19	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
20	1	19-20	2043	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	20	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
21	1	20-21	2044	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	21	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
22	1	21-22	2045	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	22	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
23	1	22-23	2046	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	23	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
24	1	23-24	2047	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	24	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
25	1	24-25	2048	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	25	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
26	1	25-26	2049	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	26	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
27	1	26-27	2050	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	27	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
28	1	27-28	2051	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	28	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
29	1	28-29	2052	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	29	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
30	1	29-30	2053	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	30	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
							Total Increased Cancer Risk	**0.030**	**0.01**	**0.001**	**0.044**			**Total Increased Adult Risk**							
														0.003	**0.002**	**0.0001**	**0.01**				

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project, Milpitas - Total Project Impacts
DPM Cancer Risk and PM2.5 Calculations
Impacts at Off-Site Multi-Family Homes - 7.6 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age --> Parameter	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
ASF =	10	10	3	1
DPM CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
TOG Exhaust CPF =	6.28E-03	6.28E-03	6.28E-03	6.28E-03
TOG Evaporative CPF =	3.70E-04	3.70E-04	3.70E-04	3.70E-04
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Project Cancer Risk by Year - Maximum Impact Receptor Location

Infant/Child Exposure Information					TAC Concentrations (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	TOTAL	Adult Exposure Only									
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Exposure Year**	**Age Sensitivity Factor**	**DPM Cancer Risk (per million)**	**Exhaust TOG Cancer Risk (per million)**	**Evaporative TOG Cancer Risk (per million)**	**TOTAL Cancer Risk (per million)**	**HI**	**Maximum Fugitive PM2.5**	**Maximum Exhaust PM2.5**	**Maximum Total PM2.5**
0	0.25	-0.25 - 0*	2024	10	0.00003	0.0020	0.00	0.0004	0.0002	0.0000	0.00	0									
1	1	0 - 1	2024	10	0.00003	0.0020	0.00	0.0049	0.0019	0.0002	0.01	1	1	0.0001	0.00003	0.000003	0.0001	0.000	0.008	0.0002	0.01
2	1	1 - 2	2025	10	0.00003	0.0020	0.00	0.0049	0.0019	0.0002	0.01	2	1	0.0001	0.00003	0.000003	0.0001	0.000	0.008	0.0002	0.01
3	1	2 - 3	2026	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	3	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.0002	0.01
4	1	3 - 4	2027	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	4	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.0002	0.01
5	1	4 - 5	2028	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	5	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
6	1	5 - 6	2029	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	6	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
7	1	6 - 7	2030	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	7	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
8	1	7 - 8	2031	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	8	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
9	1	8 - 9	2032	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	9	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
10	1	9 - 10	2033	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	10	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
11	1	10 - 11	2034	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	11	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
12	1	11 - 12	2035	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	12	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
13	1	12 - 13	2036	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	13	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
14	1	13 - 14	2037	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	14	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
15	1	14 - 15	2038	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	15	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
16	1	15 - 16	2039	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	16	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
17	1	16-17	2040	1	0.00003	0.0020	0.0028	0.0001	0.0000	0.000003	0.0001	17	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
18	1	17-18	2041	1	0.00003	0.0020	0.0028	0.0001	0.0000	0.000003	0.0001	18	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
19	1	18-19	2042	1	0.00003	0.0020	0.0028	0.0001	0.0000	0.000003	0.0001	19	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
20	1	19-20	2043	1	0.00003	0.0020	0.0028	0.0001	0.0000	0.000003	0.0001	20	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
21	1	20-21	2044	1	0.00003	0.0020	0.0028	0.0001	0.0000	0.000003	0.0001	21	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
22	1	21-22	2045	1	0.00003	0.0020	0.0028	0.0001	0.0000	0.000003	0.0001	22	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
23	1	22-23	2046	1	0.00003	0.0020	0.0028	0.0001	0.0000	0.000003	0.0001	23	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
24	1	23-24	2047	1	0.00003	0.0020	0.0028	0.0001	0.0000	0.000003	0.0001	24	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
25	1	24-25	2048	1	0.00003	0.0020	0.0028	0.0001	0.0000	0.000003	0.0001	25	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
26	1	25-26	2049	1	0.00003	0.0020	0.0028	0.0001	0.0000	0.000003	0.0001	26	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
27	1	26-27	2050	1	0.00003	0.0020	0.0028	0.0001	0.0000	0.000003	0.0001	27	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
28	1	27-28	2051	1	0.00003	0.0020	0.0028	0.0001	0.0000	0.000003	0.0001	28	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
29	1	28-29	2052	1	0.00003	0.0020	0.0028	0.0001	0.0000	0.000003	0.0001	29	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
30	1	29-30	2053	1	0.00003	0.0020	0.0028	0.0001	0.0000	0.000003	0.0001	30	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
							Total Increased Cancer Risk	**0.02**	**0.01**	**0.001**	**0.03**			**Total Increased Adult Risk**	**0.003**	**0.001**	**0.0001**	**0.004**			

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project , Milpitas - Total Project Impacts - Without Mitigation
DPM Cancer Risk and PM2.5 Calculations
Impacts at Off-Site Multi-Family Homes - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)[1]
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air (µg/m^3)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age --> Parameter	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
ASF =	10	10	3	1
DPM CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
TOG Exhaust CPF =	6.28E-03	6.28E-03	6.28E-03	6.28E-03
TOG Evaporative CPF =	3.70E-04	3.70E-04	3.70E-04	3.70E-04
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Project Cancer Risk by Year - MEI Receptor Location

Infant/Child Exposure Information					TAC Concentrations (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	TOTAL	Adult Exposure Only									
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Exposure Year**	**Age Sensitivity Factor**	**DPM Cancer Risk (per million)**	**Exhaust TOG Cancer Risk (per million)**	**Evaporative TOG Cancer Risk (per million)**	**TOTAL Cancer Risk (per million)**		**Maximum**		
																		HI	**Fugitive PM2.5**	**Exhaust PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2023	10	0.0856	0.00	0.00	1.16	0.00	0.00	1.16	0									
1	1	0 - 1	2023	10	0.0856	0.00	0.00	14.06	0.00	0.00	14.06	1	1	0.2457	0.0000	0.0000	0.25	0.017	0.4876	0.0000	0.57
2	1	1 - 2	2024	10	0.1204	0.00	0.00	19.77	0.00	0.00	19.77	2	1	0.3456	0.0000	0.0000	0.35	0.024	0.7479	0.0000	0.87
3	1	2 - 3	2025	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	3	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.0003	0.02
4	1	3 - 4	2026	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	4	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.0003	0.02
5	1	4 - 5	2027	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	5	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
6	1	5 - 6	2028	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	6	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
7	1	6 - 7	2029	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	7	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
8	1	7 - 8	2030	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	8	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
9	1	8 - 9	2031	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	9	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
10	1	9 - 10	2032	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	10	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
11	1	10 - 11	2033	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	11	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
12	1	11 - 12	2034	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	12	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
13	1	12 - 13	2035	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	13	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
14	1	13 - 14	2036	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	14	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
15	1	14 - 15	2037	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	15	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
16	1	15 - 16	2038	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	16	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
17	1	16-17	2039	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	17	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
18	1	17-18	2040	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	18	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
19	1	18-19	2041	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	19	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
20	1	19-20	2042	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	20	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
21	1	20-21	2043	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	21	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
22	1	21-22	2044	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	22	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
23	1	22-23	2045	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	23	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
24	1	23-24	2046	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	24	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
25	1	24-25	2047	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	25	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
26	1	25-26	2048	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	26	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
27	1	26-27	2049	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	27	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
28	1	27-28	2050	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	28	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
29	1	28-29	2051	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	29	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
30	1	29-30	2052	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	30	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
							Total Increased Cancer Risk	**35.01**	**0.01**	**0.001**	**35.02**			**Total Increased Adult Risk**	**0.60**	**0.002**	**0.0001**	**0.60**			

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project , Milpitas - Total Project Impacts - With AQ-1 and AQ-2 Mitigation
DPM Cancer Risk and PM2.5 Calculations
Impacts at Off-Site Multi-Family Homes - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age --> Parameter	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
ASF =	10	10	3	1
DPM CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
TOG Exhaust CPF =	6.28E-03	6.28E-03	6.28E-03	6.28E-03
TOG Evaporative CPF =	3.70E-04	3.70E-04	3.70E-04	3.70E-04
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Project Cancer Risk by Year - MEI Receptor Location

Infant/Child Exposure Information					TAC Concentrations (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	TOTAL	Adult Exposure Only										
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Exposure Year**	**Age Sensitivity Factor**	**DPM Cancer Risk (per million)**	**Exhaust TOG Cancer Risk (per million)**	**Evaporative TOG Cancer Risk (per million)**	**TOTAL Cancer Risk (per million)**	**HI**	**Maximum Fugitive PM2.5**	**Maximum Exhaust PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2023	10	0.0086	0.00	0.00	0.12	0.00	0.00	0.12	0										
1	1	0 - 1	2023	10	0.0086	0.00	0.00	1.41	0.00	0.00	1.41	1	1	0.0246	0.00	0.00	0.02	0.002	0.1517	0.0000	0.16
2	1	1 - 2	2024	10	0.0120	0.00	0.00	1.98	0.00	0.00	1.98	2	1	0.0346	0.00	0.00	0.03	0.002	0.2327	0.0000	0.24
3	1	2 - 3	2025	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	3	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.0003	0.02
4	1	3 - 4	2026	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	4	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.0003	0.02
5	1	4 - 5	2027	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	5	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
6	1	5 - 6	2028	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	6	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
7	1	6 - 7	2029	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	7	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
8	1	7 - 8	2030	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	8	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
9	1	8 - 9	2031	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	9	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
10	1	9 - 10	2032	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	10	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
11	1	10 - 11	2033	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	11	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
12	1	11 - 12	2034	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	12	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
13	1	12 - 13	2035	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	13	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
14	1	13 - 14	2036	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	14	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
15	1	14 - 15	2037	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	15	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
16	1	15 - 16	2038	3	0.0001	0.0039	0.0054	0.001	0.001	0.00005	0.002	16	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
17	1	16-17	2039	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	17	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
18	1	17-18	2040	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	18	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
19	1	18-19	2041	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	19	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
20	1	19-20	2042	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	20	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
21	1	20-21	2043	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	21	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
22	1	21-22	2044	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	22	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
23	1	22-23	2045	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	23	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
24	1	23-24	2046	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	24	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
25	1	24-25	2047	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	25	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
26	1	25-26	2048	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	26	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
27	1	26-27	2049	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	27	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
28	1	27-28	2050	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	28	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
29	1	28-29	2051	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	29	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
30	1	29-30	2052	1	0.0001	0.0039	0.0054	0.0001	0.0001	0.00001	0.0002	30	1	0.0001	0.0001	0.00001	0.0002	0.00001	0.015	0.000	0.02
							Total Increased Cancer Risk	**3.519**	**0.01**	**0.001**	**3.529**		**Total Increased Adult Risk**	**0.06**	**0.002**	**0.0001**	**0.07**				

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project, Milpitas - Total Project Impacts - Without Mitigation
DPM Cancer Risk and PM2.5 Calculations
Impacts at Off-Site Multi-Family Homes - 4.6 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age --> Parameter	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
ASF =	10	10	3	1
DPM CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
TOG Exhaust CPF =	6.28E-03	6.28E-03	6.28E-03	6.28E-03
TOG Evaporative CPF =	3.70E-04	3.70E-04	3.70E-04	3.70E-04
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Project Cancer Risk by Year - MEI Receptor Location

Infant/Child Exposure Information					TAC Concentrations (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	TOTAL	Adult Exposure Only										
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Exposure Year**	**Age Sensitivity Factor**	**DPM Cancer Risk (per million)**	**Exhaust TOG Cancer Risk (per million)**	**Evaporative TOG Cancer Risk (per million)**	**TOTAL Cancer Risk (per million)**	**HI**	**Maximum Fugitive PM2.5**	**Maximum Exhaust PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2023	10	0.2024	0.00	0.00	2.75	0.00	0.00	2.75	0									
1	1	0 - 1	2023	10	0.2024	0.00	0.00	33.25	0.00	0.00	33.25	1	1	0.5812	0.00	0.000000	0.58	0.040	0.2536	0.0000	0.46
2	1	1 - 2	2024	10	0.2847	0.00	0.00	46.76	0.00	0.00	46.76	2	1	0.8174	0.00	0.000000	0.82	0.057	0.3890	0.0000	0.67
3	1	2 - 3	2025	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	3	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
4	1	3 - 4	2026	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	4	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
5	1	4 - 5	2027	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	5	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
6	1	5 - 6	2028	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	6	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
7	1	6 - 7	2029	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	7	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
8	1	7 - 8	2030	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	8	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
9	1	8 - 9	2031	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	9	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
10	1	9 - 10	2032	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	10	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
11	1	10 - 11	2033	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	11	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
12	1	11 - 12	2034	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	12	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
13	1	12 - 13	2035	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	13	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
14	1	13 - 14	2036	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	14	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
15	1	14 - 15	2037	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	15	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
16	1	15 - 16	2038	3	0.00004	0.0032	0.0044	0.001	0.000	0.00004	0.002	16	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
17	1	16-17	2039	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	17	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
18	1	17-18	2040	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	18	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
19	1	18-19	2041	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	19	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
20	1	19-20	2042	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	20	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
21	1	20-21	2043	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	21	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
22	1	21-22	2044	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	22	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
23	1	22-23	2045	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	23	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
24	1	23-24	2046	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	24	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
25	1	24-25	2047	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	25	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
26	1	25-26	2048	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	26	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
27	1	26-27	2049	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	27	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
28	1	27-28	2050	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	28	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
29	1	28-29	2051	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	29	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
30	1	29-30	2052	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	30	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.000	0.01
						Total Increased Cancer Risk		**82.782**	**0.01**	**0.001**	**82.790**	**Total Increased Adult Risk**		**1.40**	**0.001**	**0.0001**	**1.40**				

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project, Milpitas - Total Project Impacts - With AQ-1 and AQ-2 Mitigation
DPM Cancer Risk and PM2.5 Calculations
Impacts at Off-Site Multi-Family Homes - 4.6 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age --> Parameter	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
ASF =	10	10	3	1
DPM CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
TOG Exhaust CPF =	6.28E-03	6.28E-03	6.28E-03	6.28E-03
TOG Evaporative CPF =	3.70E-04	3.70E-04	3.70E-04	3.70E-04
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Project Cancer Risk by Year - MEI Receptor Location

Infant/Child Exposure Information					TAC Concentrations (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	TOTAL	Adult Exposure Only										
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Exposure Year**	**Age Sensitivity Factor**	**DPM Cancer Risk (per million)**	**Exhaust TOG Cancer Risk (per million)**	**Evaporative TOG Cancer Risk (per million)**	**TOTAL Cancer Risk (per million)**	**HI**	**Maximum Fugitive PM2.5**	**Maximum Exhaust PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2023	10	0.0202	0.00	0.00	0.28	0.00	0.00	0.28	0									
1	1	0 - 1	2023	10	0.0202	0.00	0.00	3.32	0.00	0.00	3.32	1	1	0.0581	0.00	0.00	0.06	0.004	0.0789	0.0000	0.10
2	1	1 - 2	2024	10	0.0285	0.00	0.00	4.68	0.00	0.00	4.68	2	1	0.0817	0.00	0.00	0.08	0.006	0.1210	0.0000	0.15
3	1	2 - 3	2025	3	0.00004	0.0032	0.0044	0.001	0.0005	0.00004	0.002	3	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
4	1	3 - 4	2026	3	0.00004	0.0032	0.0044	0.001	0.0005	0.00004	0.002	4	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
5	1	4 - 5	2027	3	0.00004	0.0032	0.0044	0.001	0.0005	0.00004	0.002	5	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
6	1	5 - 6	2028	3	0.00004	0.0032	0.0044	0.001	0.0005	0.00004	0.002	6	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
7	1	6 - 7	2029	3	0.00004	0.0032	0.0044	0.001	0.0005	0.00004	0.002	7	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
8	1	7 - 8	2030	3	0.00004	0.0032	0.0044	0.001	0.0005	0.00004	0.002	8	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
9	1	8 - 9	2031	3	0.00004	0.0032	0.0044	0.001	0.0005	0.00004	0.002	9	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
10	1	9 - 10	2032	3	0.00004	0.0032	0.0044	0.001	0.0005	0.00004	0.002	10	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
11	1	10 - 11	2033	3	0.00004	0.0032	0.0044	0.001	0.0005	0.00004	0.002	11	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
12	1	11 - 12	2034	3	0.00004	0.0032	0.0044	0.001	0.0005	0.00004	0.002	12	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
13	1	12 - 13	2035	3	0.00004	0.0032	0.0044	0.001	0.0005	0.00004	0.002	13	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
14	1	13 - 14	2036	3	0.00004	0.0032	0.0044	0.001	0.0005	0.00004	0.002	14	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
15	1	14 - 15	2037	3	0.00004	0.0032	0.0044	0.001	0.0005	0.00004	0.002	15	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
16	1	15 - 16	2038	3	0.00004	0.0032	0.0044	0.001	0.0005	0.00004	0.002	16	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
17	1	16-17	2039	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	17	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
18	1	17-18	2040	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	18	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
19	1	18-19	2041	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	19	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
20	1	19-20	2042	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	20	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
21	1	20-21	2043	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	21	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
22	1	21-22	2044	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	22	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
23	1	22-23	2045	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	23	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
24	1	23-24	2046	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	24	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
25	1	24-25	2047	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	25	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
26	1	25-26	2048	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	26	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
27	1	26-27	2049	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	27	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
28	1	27-28	2050	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	28	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
29	1	28-29	2051	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	29	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
30	1	29-30	2052	1	0.00004	0.0032	0.0044	0.0001	0.0001	0.000004	0.0002	30	1	0.0001	0.0001	0.000004	0.0002	0.000008	0.012	0.0002	0.01
							Total Increased Cancer Risk	**8.29**	**0.01**	**0.001**	**8.30**			**Total Increased Adult Risk**	**0.14**	**0.001**	**0.0001**	**0.14**			

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project, Milpitas - Total Project Impacts - Without Mitigation
DPM Cancer Risk and PM2.5 Calculations
Impacts at Off-Site Multi-Family Homes - 7.6 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age --> Parameter	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
ASF =	10	10	3	1
DPM CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
TOG Exhaust CPF =	6.28E-03	6.28E-03	6.28E-03	6.28E-03
TOG Evaporative CPF =	3.70E-04	3.70E-04	3.70E-04	3.70E-04
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Project Cancer Risk by Year - MEI Receptor Location

Infant/Child Exposure Information					TAC Concentrations (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	TOTAL	Adult Exposure Only										
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Exposure Year**	**Age Sensitivity Factor**	**DPM Cancer Risk (per million)**	**Exhaust TOG Cancer Risk (per million)**	**Evaporative TOG Cancer Risk (per million)**	**TOTAL Cancer Risk (per million)**	**HI**	**Maximum Fugitive PM2.5**	**Maximum Exhaust PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2023	10	0.1717	0.00	0.00	2.34	0.00	0.00	2.34	0									
1	1	0 - 1	2023	10	0.1717	0.00	0.00	28.21	0.00	0.00	28.21	1	1	0.4931	0.00	0.00	0.49	0.034	0.1274	0.0000	0.30
2	1	1 - 2	2024	10	0.2416	0.00	0.00	39.67	0.00	0.00	39.67	2	1	0.6935	0.00	0.00	0.69	0.048	0.1954	0.0000	0.44
3	1	2 - 3	2025	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	3	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.0002	0.01
4	1	3 - 4	2026	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	4	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.0002	0.01
5	1	4 - 5	2027	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	5	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
6	1	5 - 6	2028	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	6	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
7	1	6 - 7	2029	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	7	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
8	1	7 - 8	2030	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	8	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
9	1	8 - 9	2031	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	9	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
10	1	9 - 10	2032	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	10	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
11	1	10 - 11	2033	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	11	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
12	1	11 - 12	2034	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	12	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
13	1	12 - 13	2035	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	13	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
14	1	13 - 14	2036	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	14	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
15	1	14 - 15	2037	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	15	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
16	1	15 - 16	2038	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	16	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
17	1	16-17	2039	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	17	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
18	1	17-18	2040	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	18	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
19	1	18-19	2041	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	19	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
20	1	19-20	2042	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	20	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
21	1	20-21	2043	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	21	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
22	1	21-22	2044	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	22	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
23	1	22-23	2045	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	23	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
24	1	23-24	2046	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	24	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
25	1	24-25	2047	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	25	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
26	1	25-26	2048	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	26	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
27	1	26-27	2049	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	27	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
28	1	27-28	2050	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	28	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
29	1	28-29	2051	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	29	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
30	1	29-30	2052	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	30	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
							Total Increased Cancer Risk	**70.23**	**0.005**	**0.0004**	**70.23**			**Total Increased Adult Risk**	**1.19**	**0.0009**	**0.0001**	**1.19**				

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project, Milpitas - Total Project Impacts - With AQ-1 and AQ-2 Mitigation
DPM Cancer Risk and PM2.5 Calculations
Impacts at Off-Site Multi-Family Homes - 7.6 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child			Adult
Age --> Parameter	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
ASF =	10	10	3	1
DPM CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00
TOG Exhaust CPF =	6.28E-03	6.28E-03	6.28E-03	6.28E-03
TOG Evaporative CPF =	3.70E-04	3.70E-04	3.70E-04	3.70E-04
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Project Cancer Risk by Year - MEI Receptor Location

Infant/Child Exposure Information					TAC Concentrations (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	TOTAL	Adult Exposure Only										
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Cancer Risk (per million)**	**Exposure Year**	**Age Sensitivity Factor**	**DPM Cancer Risk (per million)**	**Exhaust TOG Cancer Risk (per million)**	**Evaporative TOG Cancer Risk (per million)**	**TOTAL Cancer Risk (per million)**	**HI**	**Maximum Fugitive PM2.5**	**Maximum Exhaust PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2023	10	0.0172	0.00	0.00	0.23	0.00	0.00	0.23	0									
1	1	0 - 1	2023	10	0.0172	0.00	0.00	2.82	0.00	0.00	2.82	1	1	0.0493	0.00	0.00	0.05	0.003	0.0396	0.0000	0.06
2	1	1 - 2	2024	10	0.0242	0.00	0.00	3.97	0.00	0.00	3.97	2	1	0.0693	0.00	0.00	0.07	0.005	0.0608	0.0000	0.08
3	1	2 - 3	2025	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	3	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.0002	0.01
4	1	3 - 4	2026	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	4	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.0002	0.01
5	1	4 - 5	2027	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	5	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
6	1	5 - 6	2028	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	6	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
7	1	6 - 7	2029	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	7	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
8	1	7 - 8	2030	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	8	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
9	1	8 - 9	2031	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	9	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
10	1	9 - 10	2032	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	10	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
11	1	10 - 11	2033	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	11	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
12	1	11 - 12	2034	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	12	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
13	1	12 - 13	2035	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	13	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
14	1	13 - 14	2036	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	14	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
15	1	14 - 15	2037	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	15	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
16	1	15 - 16	2038	3	0.00003	0.0020	0.0028	0.001	0.0003	0.00002	0.001	16	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
17	1	16-17	2039	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	17	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
18	1	17-18	2040	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	18	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
19	1	18-19	2041	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	19	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
20	1	19-20	2042	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	20	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
21	1	20-21	2043	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	21	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
22	1	21-22	2044	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	22	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
23	1	22-23	2045	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	23	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
24	1	23-24	2046	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	24	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
25	1	24-25	2047	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	25	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
26	1	25-26	2048	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	26	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
27	1	26-27	2049	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	27	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
28	1	27-28	2050	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	28	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
29	1	28-29	2051	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	29	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
30	1	29-30	2052	1	0.00003	0.0020	0.0028	0.0001	0.00003	0.000003	0.0001	30	1	0.0001	0.00003	0.000003	0.0001	0.000006	0.008	0.000	0.01
							Total Increased Cancer Risk	**7.03**	**0.0046**	**0.0004**	**7.04**			**Total Increased Adult Risk**	**0.12**	**0.0009**	**0.00008**	**0.12**			

* Third trimester of pregnancy

Attachment 5: Major Roadway and Stationary Source TAC Emissions.

File Name:
EMFAC2021/CT-EMFAC2017:
Run Date: 10/21/2021 11:01
Area: Santa Clara (SF)
Analysis Year: 2024
Season: Annual

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Vehicle Category	VMT Fraction Across Category	Diesel VMT Within Cat	Gas VMT Fraction Within Category
Truck 1	0.029	0.495	0.505
Truck 2	0.017	0.937	0.048
Non-Truck	0.954	0.014	0.955

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Road Type: Major/Collector
Silt Loading Factor: CARB 0.032 g/m2
Precipitation Correction: CARB P = 64 days N = 365 days

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Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
PM2.5	0.010064905	0.006724	0.004658	0.003383	0.002594	0.002091	0.001772	0.001585	0.0015	0	0	0	0	0	0
PM10	0.010860599	0.007244	0.005012	0.003636	0.002785	0.002244	0.0019	0.001698	0.001606	0	0	0	0	0	0
NOx	0.296868257	0.237706	0.185236	0.157127	0.136389	0.120487	0.108482	0.10014	0.095313	0	0	0	0	0	0
CO															
HC															
TOG	0.150963635	0.097999	0.066066	0.046959	0.035418	0.028086	0.023335	0.020317	0.018555	0	0	0	0	0	0
ROG	0.110165562	0.071807	0.048458	0.034482	0.026074	0.020722	0.0019	0.001698	0.001606	0	0	0	0	0	0
1,3-Butadiene															
Acetaldehyde															
Acrolein															
Benzene															
Diesel PM	0.001251732	0.001032	0.000815	0.000657	0.000562	0.000509	0.000485	0.000488	0.000514	0	0	0	0	0	0
Ethylbenzene															
Formaldehyde															
Naphthalene															
POM															
DEOG	0.01394394	0.01005	0.00541	0.002737	0.001898	0.0015	0.001234	0.001057	0.000946	0	0	0	0	0	0
CO2	793.1583307	648.1291	530.7661	443.9999	381.1293	339.0136	313.8292	302.335	301.4587	0	0	0	0	0	0
N2O	0.019918404	0.016886	0.01377	0.012097	0.010929	0.010153	0.009721	0.009429	0.009275	0	0	0	0	0	0
CH4	0.021135015	0.014346	0.010151	0.00752	0.005838	0.004739	0.004019	0.003561	0.003297	0	0	0	0	0	0
BC															

Fleet Average Fuel Consumption (gallons/veh-mile)

Fuel Type	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
Gasoline	0.074234	0.060034	0.049124	0.040865	0.034934	0.031008	0.028719	0.027786	0.027897	0.028696	0.029898	0.031	0.031925	0.031925	0.031925
Diesel	0.007686	0.006432	0.004914	0.004206	0.003682	0.003262	0.002995	0.002791	0.002666	0.002665	0.002747	0.00288	0.003095	0.003095	0.003095

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Fleet Average Running Loss Emission Factors (grams/veh-hour)

Pollutant Name	Emission Factor
HC	
TOG	1.173452831
ROG	1.173452831
1,3-Butadiene	
Benzene	
Ethylbenzene	
Naphthalene	
CH4	0.175260502
HFC	0.016012165

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Fleet Average Tire Wear Factors (grams/veh-mile)

Pollutant Name	
PM2.5	0.002050376
PM10	0.008201504

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Fleet Average Brake Wear Factors (grams/veh-mile)

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
PM2.5	0.003917109	0.004454	0.004983	0.005505	0.00578	0.005867	0.005892	0.005395	0.004344	0	0	0	0	0	0
PM10	0.011191739	0.012725	0.014237	0.015728	0.016514	0.016763	0.016835	0.015414	0.012412	0	0	0	0	0	0

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Fleet Average Road Dust Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.014777
PM10	0.098515

==========END==========

Road Link	Description	Direction	No. Lanes	Link Length (miles)	Link Width (ft)	Link Width (m)	Release Height (ft)	Release Height (m)	Initial Vertical Dimention (m)	Initial Vertical Dispersion (m)	Average Speed (mph)	Average Vehicles per Day
DPM_MonPkw	DPM from Montague Parkway	Both	6	0.45	87	26.52	11.15	3.4	6.8	3.16	45 mph off Peak, 40 mph AM and PM peak	33,000
XXX_MonPkw	XXX from Montague Parkway	Both	6	0.45	87	26.52	4.27	1.3	2.79	1.33	45 mph off Peak, 40 mph AM and PM peak	33,000
DPM_NW_Cap	DPM from E. Capitol NW of Milpitas Blvd.	Both	6	0.20	140	42.67	11.15	3.4	6.80	3.16	40 mph off Peak, 35 mph AM and PM peak	20,100
XXX_NW_Cap	XXX from E. Capitol NW of Milpitas Blvd.	Both	6	0.20	140	42.67	4.27	1.3	2.79	1.30	40 mph off Peak, 35 mph AM and PM peak	20,100
DPM_SE_Cap	DPM from E. Capitol SE of Milpitas Blvd.	Both	5	0.22	96	29.26	11.15	3.4	6.8	3.16	40 mph off Peak, 35 mph AM and PM peak	12,000
XXX_SE_Cap	XXX from the new roadway east of the Crossing	Both	5	0.22	96	29.26	4.27	1.3	2.79	1.33	40 mph off Peak, 35 mph AM and PM peak	12,000

Emission Factors

	Speed Category	1	2	3
	Travel Speed (mph)	35	40	45
Emisions per vehicle (g/VMT)	DPM	0.0004854	0.0004881	0.000514
	PM2.5	0.0017723	0.0015847	0.001500
	TOG Exhaust	0.022101	0.0192595	0.017609
	TOG Evap	0.0335272	0.0293363	0.026077
	Fugitive PM2.5	0.0227195	0.02222	0.02117

			Montague Parkway	**Capitol NW of Milpitas Blvd.**	**Capitol SE of Milpitas**	**XXX**	**XXX**	**XXX**
Vehicle Type	Truck 1 (MDT)		957	583	348	0	0	
	Truck 2 (HDT)		561	342	204	0	0	
	Non-Truck		31,482	19,175	11,448	0	0	
Total	2024 ADT	-	33,000	20,100	12,000			

2024 Hourly Traffic Volumes and DPM Emisssions -

Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	358	0.0000232
1	0.00740349	244	1.58131E-05
2	0.00719554	237	1.5369E-05
3	0.0090397	298	1.93079E-05
4	0.01740988	575	3.71858E-05
5	0.03764755	1242	8.04115E-05
6	0.05280664	1743	0.00011279
7	0.06314643	2084	0.000128022

DPM from Montague Parkway

Hour	Fraction Per Hour	VPH	g/s
8	0.0643577	2124	1.3048E-04
9	0.0598818	1976	0.000127902
10	0.0540699	1784	0.000115488
11	0.0511832	1689	0.000109322
12	0.0526533	1738	0.000112462
13	0.0561328	1852	0.000119894
14	0.061969	2045	0.000125635
15	0.0606367	2001	0.000122934

Hour	Fraction Per Hour	VPH	g/s
16	0.05801478	1914	0.000123914
17	0.05628001	1857	0.000120209
18	0.05397567	1781	0.000115287
19	0.04834712	1595	0.000103265
20	0.03893556	1285	8.31626E-05
21	0.03342021	1103	7.13823E-05
22	0.02602722	859	5.55916E-05
23	0.0186155	614	3.97609E-05
	TOTAL	33,000	

2024 Hourly Traffic Volumes and DPM Emisssions -

Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	218	0.00000585
1	0.00740349	149	3.99128E-06
2	0.00719554	145	3.87918E-06
3	0.0090397	182	4.87338E-06
4	0.01740988	350	9.38581E-06
5	0.03764755	757	2.02961E-05
6	0.05280664	1061	2.84685E-05
7	0.06314643	1269	3.38554E-05

DPM from E. Capitol NW of Milpitas Blvd.

Hour	Fraction Per Hour	VPH	g/s
8	0.0643577	1294	3.45048E-05
9	0.0598818	1204	3.22828E-05
10	0.0540699	1087	2.91495E-05
11	0.0511832	1029	2.75933E-05
12	0.0526533	1058	2.83858E-05
13	0.0561328	1128	3.02616E-05
14	0.061969	1246	3.32241E-05
15	0.0606367	1219	3.25098E-05

Hour	Fraction Per Hour	VPH	g/s
16	0.05801478	1166	3.12762E-05
17	0.05628001	1131	3.0341E-05
18	0.05397567	1085	2.90987E-05
19	0.04834712	972	2.60643E-05
20	0.03893556	783	2.09905E-05
21	0.03342021	672	1.80171E-05
22	0.02602722	523	1.40315E-05
23	0.0186155	374	1.00358E-05
	TOTAL	20,100	

2024 Hourly Traffic Volumes and DPM Emisssions -

Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	130	0.00000394
1	0.00740349	89	2.68826E-06
2	0.00719554	86	2.61275E-06
3	0.0090397	108	3.28238E-06
4	0.01740988	209	6.32165E-06
5	0.03764755	452	1.36701E-05
6	0.05280664	634	1.91744E-05
7	0.06314643	758	2.28027E-05

DPM from E. Capitol SE of Milpitas Blvd.

Hour	Fraction Per Hour	VPH	g/s
8	0.0643577	772	2.32401E-05
9	0.0598818	719	2.17435E-05
10	0.0540699	649	1.96331E-05
11	0.0511832	614	1.8585E-05
12	0.0526533	632	1.91188E-05
13	0.0561328	674	2.03822E-05
14	0.061969	744	2.23775E-05
15	0.0606367	728	2.18964E-05

Hour	Fraction Per Hour	VPH	g/s
16	0.05801478	696	2.10656E-05
17	0.05628001	675	2.04357E-05
18	0.05397567	648	1.95989E-05
19	0.04834712	580	1.75552E-05
20	0.03893556	467	1.41378E-05
21	0.03342021	401	1.21351E-05
22	0.02602722	312	9.45066E-06
23	0.0186155	223	6.75941E-06
	TOTAL	12,000	

2024 Hourly Traffic Volumes and Fugitive PM2.5 Emis XXX from Montague Parkway

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	358	0.000954	8	0.0643577	2124	0.005940955	16	0.05801478	1914	0.005102237
1	0.00740349	244	0.0006511	9	0.0598818	1976	0.005266436	17	0.05628001	1857	0.004949669
2	0.00719554	237	0.0006328	10	0.0540699	1784	0.004755296	18	0.05397567	1781	0.004747009
3	0.0090397	298	0.000795	11	0.0511832	1689	0.00450142	19	0.04834712	1595	0.004251994
4	0.01740988	575	0.0015312	12	0.0526533	1738	0.004630709	20	0.03893556	1285	0.003424273
5	0.03764755	1242	0.003311	13	0.0561328	1852	0.00493672	21	0.03342021	1103	0.002939214
6	0.05280664	1743	0.0046442	14	0.061969	2045	0.005720452	22	0.02602722	859	0.002289021
7	0.06314643	2084	0.0058291	15	0.0606367	2001	0.005597462	23	0.0186155	614	0.001637181
									TOTAL	33,000	

2024 Hourly Traffic Volumes and Fugitive PM2.5 Emis XXX from E. Capitol NW of Milpitas Blvd.

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	218	0.000266	8	0.0643577	1294	0.001615129	16	0.05801478	1166	0.001424077
1	0.00740349	149	0.0001817	9	0.0598818	1204	0.001469906	17	0.05628001	1131	0.001381494
2	0.00719554	145	0.0001766	10	0.0540699	1087	0.001327242	18	0.05397567	1085	0.001324929
3	0.0090397	182	0.0002219	11	0.0511832	1029	0.001256384	19	0.04834712	972	0.001186767
4	0.01740988	350	0.0004274	12	0.0526533	1058	0.001292469	20	0.03893556	783	0.000955743
5	0.03764755	757	0.0009241	13	0.0561328	1128	0.001377879	21	0.03342021	672	0.000820359
6	0.05280664	1061	0.0012962	14	0.061969	1246	0.001555182	22	0.02602722	523	0.000638885
7	0.06314643	1269	0.0015847	15	0.0606367	1219	0.001521746	23	0.0186155	374	0.000456951
									TOTAL	20,100	

2024 Hourly Traffic Volumes and Fugitive PM2.5 Emis XXX from the new roadway east of the Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	130	0.000179	8	0.0643577	772	0.001087841	16	0.05801478	696	0.000959162
1	0.00740349	89	0.0001224	9	0.0598818	719	0.000990029	17	0.05628001	675	0.000930481
2	0.00719554	86	0.000119	10	0.0540699	649	0.000893941	18	0.05397567	648	0.000892383
3	0.0090397	108	0.0001495	11	0.0511832	614	0.000846215	19	0.04834712	580	0.000799326
4	0.01740988	209	0.0002878	12	0.0526533	632	0.00087052	20	0.03893556	467	0.000643724
5	0.03764755	452	0.0006224	13	0.0561328	674	0.000928046	21	0.03342021	401	0.000552538
6	0.05280664	634	0.0008731	14	0.061969	744	0.001047465	22	0.02602722	312	0.000430309
7	0.06314643	758	0.0010674	15	0.0606367	728	0.001024945	23	0.0186155	223	0.000307771
									TOTAL	12,000	

2024 Hourly Traffic Volumes and PM2.5 Emisssions - XXX from Montague Parkway

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	358	0.0000676	8	0.0643577	2124	0.00042367	16	0.05801478	1914	0.000361393
1	0.00740349	244	4.61187E-05	9	0.0598818	1976	0.000373023	17	0.05628001	1857	0.000350586
2	0.00719554	237	4.48234E-05	10	0.0540699	1784	0.000336819	18	0.05397567	1781	0.000336232
3	0.0090397	298	5.63112E-05	11	0.0511832	1689	0.000318837	19	0.04834712	1595	0.00030117
4	0.01740988	575	0.000108452	12	0.0526533	1738	0.000327994	20	0.03893556	1285	0.000242542
5	0.03764755	1242	0.000234519	13	0.0561328	1852	0.000349669	21	0.03342021	1103	0.000208185
6	0.05280664	1743	0.00032895	14	0.061969	2045	0.000407945	22	0.02602722	859	0.000162132
7	0.06314643	2084	0.000415696	15	0.0606367	2001	0.000399174	23	0.0186155	614	0.000115962
									TOTAL	33,000	

2024 Hourly Traffic Volumes and PM2.5 Emisssions - XXX from E. Capitol NW of Milpitas Blvd.

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	218	0.0000190	8	0.0643577	1294	0.000125992	16	0.05801478	1166	0.000101556
1	0.00740349	149	1.29599E-05	9	0.0598818	1204	0.000104824	17	0.05628001	1131	9.8519E-05
2	0.00719554	145	1.25959E-05	10	0.0540699	1087	9.46502E-05	18	0.05397567	1085	9.44853E-05
3	0.0090397	182	1.58241E-05	11	0.0511832	1029	8.9597E-05	19	0.04834712	972	8.46324E-05
4	0.01740988	350	3.04763E-05	12	0.0526533	1058	9.21704E-05	20	0.03893556	783	6.81573E-05
5	0.03764755	757	6.59026E-05	13	0.0561328	1128	9.82613E-05	21	0.03342021	672	5.85026E-05
6	0.05280664	1061	9.24389E-05	14	0.061969	1246	0.000121316	22	0.02602722	523	4.55611E-05
7	0.06314643	1269	0.000123621	15	0.0606367	1219	0.000118708	23	0.0186155	374	3.25867E-05
									TOTAL	20,100	

2024 Hourly Traffic Volumes and PM2.5 Emisssions - XXX from the new roadway east of the Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	130	0.0000128	8	0.0643577	772	8.48598E-05	16	0.05801478	696	6.84011E-05
1	0.00740349	89	8.72893E-06	9	0.0598818	719	7.06024E-05	17	0.05628001	675	6.63558E-05
2	0.00719554	86	8.48376E-06	10	0.0540699	649	6.375E-05	18	0.05397567	648	6.36389E-05
3	0.0090397	108	1.06581E-05	11	0.0511832	614	6.03465E-05	19	0.04834712	580	5.70027E-05
4	0.01740988	209	2.05268E-05	12	0.0526533	632	6.20797E-05	20	0.03893556	467	4.59062E-05
5	0.03764755	452	4.43876E-05	13	0.0561328	674	6.61822E-05	21	0.03342021	401	3.94034E-05
6	0.05280664	634	6.22606E-05	14	0.061969	744	8.17102E-05	22	0.02602722	312	3.06868E-05
7	0.06314643	758	8.32627E-05	15	0.0606367	728	7.99534E-05	23	0.0186155	223	2.19482E-05
									TOTAL	12,000	

2024 Hourly Traffic Volumes and TOG Evaporative Emisssions - XXX from Montague Parkway

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	358	0.001175	8	0.0643577	2124	0.007842866	16	0.05801478	1914	0.006284352
1	0.00740349	244	0.000802	9	0.0598818	1976	0.006486594	17	0.05628001	1857	0.006096436
2	0.00719554	237	0.0007794	10	0.0540699	1784	0.00585703	18	0.05397567	1781	0.005846822
3	0.0090397	298	0.0009792	11	0.0511832	1689	0.005544334	19	0.04834712	1595	0.00523712
4	0.01740988	575	0.0018859	12	0.0526533	1738	0.005703577	20	0.03893556	1285	0.004217628
5	0.03764755	1242	0.0040781	13	0.0561328	1852	0.006080487	21	0.03342021	1103	0.003620187
6	0.05280664	1743	0.0057202	14	0.061969	2045	0.007551772	22	0.02602722	859	0.002819354
7	0.06314643	2084	0.0076953	15	0.0606367	2001	0.00738941	23	0.0186155	614	0.002016492
									TOTAL	33,000	

2024 Hourly Traffic Volumes and TOG Evaporative Emisssions - XXX from E. Capitol NW of Milpitas Blvd.

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	218	0.000352	8	0.0643577	1294	0.002383448	16	0.05801478	1166	0.001879974
1	0.00740349	149	0.0002399	9	0.0598818	1204	0.001940475	17	0.05628001	1131	0.001823759
2	0.00719554	145	0.0002332	10	0.0540699	1087	0.00175214	18	0.05397567	1085	0.001749087
3	0.0090397	182	0.0002929	11	0.0511832	1029	0.001658597	19	0.04834712	972	0.001566693
4	0.01740988	350	0.0005642	12	0.0526533	1058	0.001706235	20	0.03893556	783	0.001261711
5	0.03764755	757	0.00122	13	0.0561328	1128	0.001818988	21	0.03342021	672	0.001082985
6	0.05280664	1061	0.0017112	14	0.061969	1246	0.002294984	22	0.02602722	523	0.000843414
7	0.06314643	1269	0.0023386	15	0.0606367	1219	0.002245642	23	0.0186155	374	0.000603237
									TOTAL	20,100	

2024 Hourly Traffic Volumes and TOG Evaporative Emisssions - XXX from the new roadway east of the Crossing

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	130	0.000237	8	0.0643577	772	0.001605329	16	0.05801478	696	0.001266224
1	0.00740349	89	0.0001616	9	0.0598818	719	0.001306973	17	0.05628001	675	0.001228361
2	0.00719554	86	0.000157	10	0.0540699	649	0.001180123	18	0.05397567	648	0.001178066
3	0.0090397	108	0.0001973	11	0.0511832	614	0.001117119	19	0.04834712	580	0.001055219
4	0.01740988	209	0.00038	12	0.0526533	632	0.001149204	20	0.03893556	467	0.000849803
5	0.03764755	452	0.0008217	13	0.0561328	674	0.001225147	21	0.03342021	401	0.000729425
6	0.05280664	634	0.0011526	14	0.061969	744	0.001545746	22	0.02602722	312	0.000568067
7	0.06314643	758	0.0015751	15	0.0606367	728	0.001512513	23	0.0186155	223	0.0004063
									TOTAL	12,000	

2024 Hourly Traffic Volumes and TOG Exhaust Emisssi XXX from Montague Parkway

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	358	0.000794	8	0.0643577	2124	0.005148907	16	0.05801478	1914	0.004243688
1	0.00740349	244	0.0005416	9	0.0598818	1976	0.004380257	17	0.05628001	1857	0.004116792
2	0.00719554	237	0.0005263	10	0.0540699	1784	0.003955126	18	0.05397567	1781	0.003948233
3	0.0090397	298	0.0006612	11	0.0511832	1689	0.003743969	19	0.04834712	1595	0.003536515
4	0.01740988	575	0.0012735	12	0.0526533	1738	0.003851503	20	0.03893556	1285	0.002848074
5	0.03764755	1242	0.0027539	13	0.0561328	1852	0.004106022	21	0.03342021	1103	0.002444635
6	0.05280664	1743	0.0038627	14	0.061969	2045	0.004957802	22	0.02602722	859	0.001903849
7	0.06314643	2084	0.005052	15	0.0606367	2001	0.004851209	23	0.0186155	614	0.001361694
									TOTAL	33,000	

2024 Hourly Traffic Volumes and TOG Exhaust Emisssi XXX from E. Capitol NW of Milpitas Blvd.

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	218	0.000231	8	0.0643577	1294	0.001571158	16	0.05801478	1166	0.001234219
1	0.00740349	149	0.0001575	9	0.0598818	1204	0.001273938	17	0.05628001	1131	0.001197313
2	0.00719554	145	0.0001531	10	0.0540699	1087	0.001150295	18	0.05397567	1085	0.00114829
3	0.0090397	182	0.0001923	11	0.0511832	1029	0.001088883	19	0.04834712	972	0.001028547
4	0.01740988	350	0.0003704	12	0.0526533	1058	0.001120157	20	0.03893556	783	0.000828324
5	0.03764755	757	0.0008009	13	0.0561328	1128	0.001194181	21	0.03342021	672	0.000710989
6	0.05280664	1061	0.0011234	14	0.061969	1246	0.001318342	22	0.02602722	523	0.000553709
7	0.06314643	1269	0.0015416	15	0.0606367	1219	0.001289998	23	0.0186155	374	0.00039603
									TOTAL	20,100	

2024 Hourly Traffic Volumes and TOG Exhaust Emisssi XXX from the new roadway east of the Crossing

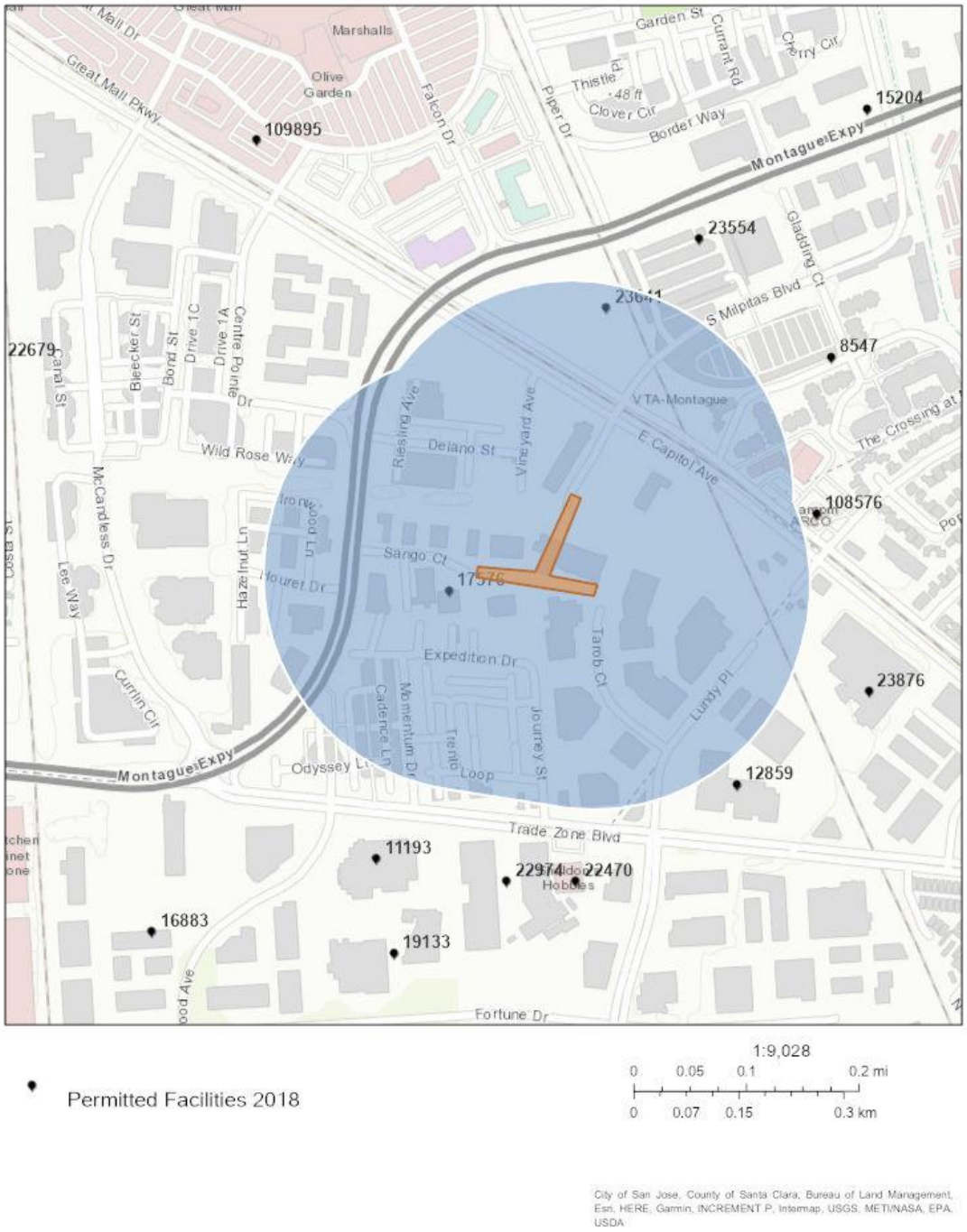
Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01085042	130	0.000155	8	0.0643577	772	0.001058226	16	0.05801478	696	0.000831286
1	0.00740349	89	0.0001061	9	0.0598818	719	0.000858039	17	0.05628001	675	0.000806429
2	0.00719554	86	0.0001031	10	0.0540699	649	0.000774761	18	0.05397567	648	0.00077341
3	0.0090397	108	0.0001295	11	0.0511832	614	0.000733398	19	0.04834712	580	0.00069276
4	0.01740988	209	0.0002495	12	0.0526533	632	0.000754462	20	0.03893556	467	0.000557903
5	0.03764755	452	0.0005394	13	0.0561328	674	0.000804319	21	0.03342021	401	0.000478874
6	0.05280664	634	0.0007567	14	0.061969	744	0.001018949	22	0.02602722	312	0.000372941
7	0.06314643	758	0.0010383	15	0.0606367	728	0.000997042	23	0.0186155	223	0.000266739
									TOTAL	12,000	

Stationary Source Risk & Hazards Screening Report

Area of Interest (AOI) Information

Area : 4,953,033.69 ft²

Oct 21 2021 14:06:33 Pacific Daylight Time



Summary

Name	Count	Area(ft²)	Length(ft)
Permitted Facilities 2018	2	N/A	N/A

Permitted Facilities 2018

#	FACID	Name	Address	City	St
1	17576	Olson Brothers Body Shop	328 Sango Ct	Milpitas	CA
2	23641	Santa Clara Valley Transportation	555 E Capitol Avenue	Milpitas	CA

#	Zip	County	Cancer	Hazard	PM_25	Type	Count
1	95035	Santa Clara	0.000	0.000	0.000	Contact BAAQMD	1
2	95035	Santa Clara	3.930	0.010	0.000	Generators	1

Note: The estimated risk and hazard impacts from these sources would be expected to be substantially lower when site specific Health Risk Screening Assessments are conducted.

The screening level map is not recommended for evaluating sensitive land uses such as schools, senior centers, day cares, and health facilities.

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Plant#	Plant Name	Address	City	St	Zip	County	UTM_E (km	UTM_N (km	Cancer_20	Hazard_20	PM2.5_201	Type
17576	Olson Brotl	328 Sango	Milpitas	CA	95035	Santa Clara	597892.1	4140529		0.002		Auto Body Coating Operation
24653	BART	555 E Capit	Milpitas	CA	95035	Santa Clara	598112	4140935	3.9297	0.0139	0.0048	(1) Generator
25042	2334 LUND	2334 Lund	San Jose	CA	95131	Santa Clara	598307	4140258	9.38	0.02	0.01	(6) Generators
108576	ARCO Facili	2104 N Cap	San Jose	CA	95132	Santa Clara	598416.4	4140644	10.0044	0.044		Gas Dispensing Facility

Attachment 6: Cumulative Community Health Risk Impacts Calculations

Milpitas Blvd. Bridge Project , Milpitas , CA - Impacts from Roadways
AERMOD Risk Modeling Parameters at MEI
2nd Floor Receptors

Emissions Years	2024
Receptor Information	
Number of Receptors	
Receptor Height (in m) =	4.6 (2nd Floor)
Receptor Distances =	Nearby Residential Locations
Meteorological Conditions	
BAAQMD SJC Met Data	2013 - 2017
Land Use Classification	urban
Wind Speed =	variable
Wind Direction =	variable

Montague Expressway - Offsite Residential Concentration at MEI - Floor 2

	TAC Concentrations (µg/m^3)		
Analysis Years	**DPM**	**Exhaust TOG**	**Evaporative TOG**
2024	0.00067	0.02483	0.03689

	PM2.5 Concentrations (µg/m^3)		
Analysis Years	**Total PM2.5**	**Fugitive PM2.5**	**Vehicle PM2.5**
2024	0.03183	0.02972	0.00211

E. Capitol Avenue - Offsite Residential Concentration at MEI - Floor 2

	TAC Concentrations (µg/m^3)		
Analysis Years	**DPM**	**Exhaust TOG**	**Evaporative TOG**
2024	0.00014	0.00584	0.00892

	PM2.5 Concentrations (µg/m^3)		
Analysis Years	**Total PM2.5**	**Fugitive PM2.5**	**Vehicle PM2.5**
2024	0.00716	0.00668	0.00048

Milpitas Blvd. Bridge Project , Milpitas , CA - Impacts from Montague Expressway
Cancer Risk and PM2.5 Calculations at MEI
4.6 meter receptor height - Floor 2

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Cancer Risk by Year - MEI Receptor Location

Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	
0	0.25	-0.25 - 0*	2024	10	0.0007	0.0248	0.0369	0.009	0.002	0.0002	0.01
1	1	0 - 1	2024	10	0.0007	0.0248	0.0369	0.110	0.023	0.0020	0.14
2	1	1 - 2	2025	10	0.0007	0.0248	0.0369	0.110	0.023	0.0020	0.14
3	1	2 - 3	2026	3	0.0007	0.0248	0.0369	0.017	0.004	0.0003	0.02
4	1	3 - 4	2027	3	0.0007	0.0248	0.0369	0.017	0.004	0.0003	0.02
5	1	4 - 5	2028	3	0.0007	0.0248	0.0369	0.017	0.004	0.0003	0.02
6	1	5 - 6	2029	3	0.0007	0.0248	0.0369	0.017	0.004	0.0003	0.02
7	1	6 - 7	2030	3	0.0007	0.0248	0.0369	0.017	0.004	0.0003	0.02
8	1	7 - 8	2031	3	0.0007	0.0248	0.0369	0.017	0.004	0.0003	0.02
9	1	8 - 9	2032	3	0.0007	0.0248	0.0369	0.017	0.004	0.0003	0.02
10	1	9 - 10	2033	3	0.0007	0.0248	0.0369	0.017	0.004	0.0003	0.02
11	1	10 - 11	2034	3	0.0007	0.0248	0.0369	0.017	0.004	0.0003	0.02
12	1	11 - 12	2035	3	0.0007	0.0248	0.0369	0.017	0.004	0.0003	0.02
13	1	12 - 13	2036	3	0.0007	0.0248	0.0369	0.017	0.004	0.0003	0.02
14	1	13 - 14	2037	3	0.0007	0.0248	0.0369	0.017	0.004	0.0003	0.02
15	1	14 - 15	2038	3	0.0007	0.0248	0.0369	0.017	0.004	0.0003	0.02
16	1	15 - 16	2039	3	0.0007	0.0248	0.0369	0.017	0.004	0.0003	0.02
17	1	16-17	2040	1	0.0007	0.0248	0.0369	0.002	0.0004	0.00004	0.002
18	1	17-18	2041	1	0.0007	0.0248	0.0369	0.002	0.0004	0.00004	0.002
19	1	18-19	2042	1	0.0007	0.0248	0.0369	0.002	0.0004	0.00004	0.002
20	1	19-20	2043	1	0.0007	0.0248	0.0369	0.002	0.0004	0.00004	0.002
21	1	20-21	2044	1	0.0007	0.0248	0.0369	0.002	0.0004	0.00004	0.002
22	1	21-22	2045	1	0.0007	0.0248	0.0369	0.002	0.0004	0.00004	0.002
23	1	22-23	2046	1	0.0007	0.0248	0.0369	0.002	0.0004	0.00004	0.002
24	1	23-24	2047	1	0.0007	0.0248	0.0369	0.002	0.0004	0.00004	0.002
25	1	24-25	2048	1	0.0007	0.0248	0.0369	0.002	0.0004	0.00004	0.002
26	1	25-26	2049	1	0.0007	0.0248	0.0369	0.002	0.0004	0.00004	0.002
27	1	26-27	2050	1	0.0007	0.0248	0.0369	0.002	0.0004	0.00004	0.002
28	1	27-28	2051	1	0.0007	0.0248	0.0369	0.002	0.0004	0.00004	0.002
29	1	28-29	2052	1	0.0007	0.0248	0.0369	0.002	0.0004	0.00004	0.002
30	1	29-30	2053	1	0.0007	0.0248	0.0369	0.002	0.0004	0.00004	0.002
Total Increased Cancer Risk								0.50	0.106	0.009	**0.61**

Maximum	
Hazard Index	**Total PM2.5 (µg/m3)**
0.0001	0.032
0.0001	0.032
0.0001	0.032
0.0001	0.032

* Third trimester of pregnancy

Milpitas Blvd. Bridge Project , Milpitas , CA - Impacts from E. Capitol Avenue
Cancer Risk and PM2.5 Calculations at MEI
4.6 meter receptor height - Floor 2

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Cancer Potency Factors $(mg/kg\text{-}day)^{-1}$

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Values

	Infant/Child			Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 16**	**16 - 30**
Parameter				
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Cancer Risk by Year - MEI Receptor Location

Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	
0	0.25	-0.25 - 0*	2024	10	0.0001	0.0058	0.0089	0.002	0.000	0.0000	0.00
1	1	0 - 1	2024	10	0.0001	0.0058	0.0089	0.023	0.005	0.0005	0.03
2	1	1 - 2	2025	10	0.0001	0.0058	0.0089	0.023	0.005	0.0005	0.03
3	1	2 - 3	2026	3	0.0001	0.0058	0.0089	0.004	0.001	0.0001	0.005
4	1	3 - 4	2027	3	0.0001	0.0058	0.0089	0.004	0.001	0.0001	0.005
5	1	4 - 5	2028	3	0.0001	0.0058	0.0089	0.004	0.001	0.0001	0.005
6	1	5 - 6	2029	3	0.0001	0.0058	0.0089	0.004	0.001	0.0001	0.005
7	1	6 - 7	2030	3	0.0001	0.0058	0.0089	0.004	0.001	0.0001	0.005
8	1	7 - 8	2031	3	0.0001	0.0058	0.0089	0.004	0.001	0.0001	0.005
9	1	8 - 9	2032	3	0.0001	0.0058	0.0089	0.004	0.001	0.0001	0.005
10	1	9 - 10	2033	3	0.0001	0.0058	0.0089	0.004	0.001	0.0001	0.005
11	1	10 - 11	2034	3	0.0001	0.0058	0.0089	0.004	0.001	0.0001	0.005
12	1	11 - 12	2035	3	0.0001	0.0058	0.0089	0.004	0.001	0.0001	0.005
13	1	12 - 13	2036	3	0.0001	0.0058	0.0089	0.004	0.001	0.0001	0.005
14	1	13 - 14	2037	3	0.0001	0.0058	0.0089	0.004	0.001	0.0001	0.005
15	1	14 - 15	2038	3	0.0001	0.0058	0.0089	0.004	0.001	0.0001	0.005
16	1	15 - 16	2039	3	0.0001	0.0058	0.0089	0.004	0.001	0.0001	0.005
17	1	16-17	2040	1	0.0001	0.0058	0.0089	0.0004	0.0001	0.00001	0.001
18	1	17-18	2041	1	0.0001	0.0058	0.0089	0.0004	0.0001	0.00001	0.001
19	1	18-19	2042	1	0.0001	0.0058	0.0089	0.0004	0.0001	0.00001	0.001
20	1	19-20	2043	1	0.0001	0.0058	0.0089	0.0004	0.0001	0.00001	0.001
21	1	20-21	2044	1	0.0001	0.0058	0.0089	0.0004	0.0001	0.00001	0.001
22	1	21-22	2045	1	0.0001	0.0058	0.0089	0.0004	0.0001	0.00001	0.001
23	1	22-23	2046	1	0.0001	0.0058	0.0089	0.0004	0.0001	0.00001	0.001
24	1	23-24	2047	1	0.0001	0.0058	0.0089	0.0004	0.0001	0.00001	0.001
25	1	24-25	2048	1	0.0001	0.0058	0.0089	0.0004	0.0001	0.00001	0.001
26	1	25-26	2049	1	0.0001	0.0058	0.0089	0.0004	0.0001	0.00001	0.001
27	1	26-27	2050	1	0.0001	0.0058	0.0089	0.0004	0.0001	0.00001	0.001
28	1	27-28	2051	1	0.0001	0.0058	0.0089	0.0004	0.0001	0.00001	0.001
29	1	28-29	2052	1	0.0001	0.0058	0.0089	0.0004	0.0001	0.00001	0.001
30	1	29-30	2053	1	0.0001	0.0058	0.0089	0.0004	0.0001	0.00001	0.001
Total Increased Cancer Risk								0.10	0.025	0.002	**0.13**

Maximum	
Hazard Index	**Total PM2.5 (µg/m3)**
0.00003	0.007
0.00003	0.007
0.00003	0.007
0.00003	0.007

* Third trimester of pregnancy

Bay Area Air Quality Management District

Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD

This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

Click here for guidance on conducting risk & hazard screening, including roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.

Click here for District's Recommended Methods for Screening and Modeling Local Risks and Hazards document.

Table A: Requester Contact Information

Date of Request	
Contact Name	
Affiliation	
Phone	
Email	
Project Name	Milpitas Bridge
Address	
City	Milpitas
County	Santa Clara
Type (residential, commercial, mixed use, industrial, etc.)	NA
Project Size (# of units or building square feet)	NA
Comments: New Roadway Connection	

For Air District assistance, the following steps must be completed:

1. Complete all the contact and project information requested in Table A. Incomplete forms will not be processed. Please include a project site map.

2. Download and install the free program Google Earth, **http://www.google.com/earth/download/ge/,** and then download the county specific Google Earth stationary source application files from the District's website, **http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.** The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.

3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.

4. Identify stationary sources within at least a 10[illegible] project site. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google Earth add[illegible]x to confirm the source's address location. Please report any mapping errors to the District.

5. List the stationary source information in Table B blue section only.

6. Note that a small percentage of the stationary sources have Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (Map B on right). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.

7. Email this completed form to District staff. District staff will provide the most recent risk, hazard, and PM2.5 data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

Note that a public records request received for the same stationary source information will cancel the processing of your SSIF request.

Submit forms, maps, and questions to Areana Flores at 415-749-4616, or aflores@baaqmd.gov

Table B: Google Earth data

Project Site

Distance from Receptor (feet) or MEI[1]	Plant No.	Facility Name	Address	Cancer Risk[2]	Hazard Risk[2]	$PM_{2.5}$[2]	Source No.[3]	Type of Source[4]	Fuel Code[5]	Status/Comments	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
	17576	Olson Brothers Body Shop	328 Sango Ct		0.002			Auto Body Coating Operation			0.62	0.0	0.001	0.000
												0.0	0.000	0.0000
												0.0000	0.0000	0.000
												0.0	0.000	0.00
												0.00	0.00000	0.00
												0.000	0.0000	0.00
												0.00	0.000	0.00

MEI

Distance from Receptor (feet) or MEI[1]	FACID (Plant No.)	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
1439		0.19	0.00	0.00038	0.000
			0.0000	0.00000	0.0000
			0.0000	0.00000	0.0000
			0.00	0.00	0.00
			0.00	0.00	0.00
			0.00	0.000	0.000
			0.00	0.00	0.00

Footnotes:

1. Maximally exposed individual

2. These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.
3. Each plant may have multiple permits and sources.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. Fuel codes: 98 = diesel, 189 = Natural Gas.
6. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.
7. The date that the HRSA was completed.
8. Engineer who completed the HRSA. For District purposes only.
9. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
10. The HRSA "Chronic Health" number represents the Hazard Index.
11. Further information about common sources:
    a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
    b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard index of 0.003 or less. To
    c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
    d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but instead should reflect the
    e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Mulitplier worksheet.
    f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
    g. This spray booth is considered to be insignificant.

Date last updated:
03/13/2018

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

429 E. Cotati Avenue
Cotati, California 94931

Tel: 707-794-0400 *Fax: 707-794-0405*
www.illingworthrodkin.com *illro@illingworthrodkin.com*

M E M O

Date: November 20, 2023

To: Natalie Noyes, AICP
Senior Project Manager
David J. Powers & Associates, Inc.
1871 The Alameda, Suite 200
San José, CA 95126
nnoyes@davidjpowers.com

From: James Reyff
Illingworth & Rodkin, Inc.

SUBJECT: S. Milpitas Boulevard Vehicular Bridge at Penitencia Creek, Milpitas, CA – Update to the Air Quality Impact Analysis Job#21-084

The air quality and greenhouse gas (GHG) assessment for this project was prepared in late 2021.[1] After preparation of the assessment, there were updates to the Bay Area Air Quality Management District (BAAQMD) California Environmental Quality Act (CEQA) Air Quality Guidelines[2] and the CalEEMod model. This memo describes these updates and explains and how they affect the air quality analysis prepared by Illingworth & Rodkin, Inc.'s (I&R).

Changes to the BAAQMD Guidelines

BAAQMD published updates to their CEQA Guidelines in April of 2023. These updates were mostly a matter of including current practices for assessing impacts that are currently practiced by most consultants performing these types of assessments. An example would be the recommended use of CalEEMod for predicting construction and operational emissions, where the previous 2010 and 2017 guidelines recommended URBMIS. The air quality and GHG assessment completed for this project in 2021used methods to predict impacts that are consistent with the new guidelines.

Updates to CalEEMod

The air quality and GHG assessment completed for this project in 2021used CalEEMod version 2020.4.0. Version 2022.1 was released in May 2022 and was recommended for use by BAAQMD

[1] Illingworth & Rodkin, Inc, *S. Milpitas Boulevard Vehicle Bridge Air Quality Assessment*, November 10, 2021.
[2] See BAAQMD: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines

in 2023. Note that CalEEMod is routinely updated as newer, more accurate, information becomes available. In fact, there have been 34 updates to Version 2022.1model since its release. The primary difference between the two versions of CalEEMod is that the newer version uses the latest mobile emission factors that are based on the EMFAC2021 model. The older version of CalEEMod uses EMFAC2017 emission factors. However, I&R modified CalEEMod version 2020.4.0 to use the EMFAC2021 emission factors for the air quality and GHG assessment completed for the project. Also, the new CalEEMod incorporates the latest version of the Roadway Construction Emissions Model (RCEM) that was used to model the roadway construction emissions. The portion of the model that was incorporated into CalEEMod is the same as the version used for the air quality assessment.

Therefore, the air quality modeling is consistent with the new version of CalEEMod. There may be some minor differences due to slight modification of other factors; however, the new model will predict results similar to the air quality assessment. Certainly, any differences would be quite small and would not lead to new significant impacts.

APPENDIX B
Biological Report by H.T. Harvey & Associates, dated 2023

H. T. HARVEY & ASSOCIATES

Ecological Consultants

50 years of field notes, exploration, and excellence

South Milpitas Boulevard Bridge Project
Biological Resources Report

Project #4544-01

Prepared for:

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1736 Franklin Street, Suite 300
Oakland, CA 94612

Prepared by:

H. T. Harvey & Associates

December 8, 2023

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List of Preparers

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Section 1. Introduction

This report describes the biological resources present in the area of the South Milpitas Boulevard Bridge Project, as well as the potential biological impacts of the proposed project and measures necessary to reduce or mitigate those impacts to less-than-significant levels under the California Environmental Quality Act (CEQA). This assessment is based upon the project plans provided to H. T. Harvey & Associates by David J. Powers & Associates through November 2023.

1.1 Project Location

The proposed bridge, located within the City of Milpitas (Figures 1 and 2), would extend South Milpitas Boulevard across Penitencia East Channel, at which point South Milpitas Boulevard would connect with a new connector street to be completed between Tarob Court and Sango Court. The study area for this report spans Penitencia East Channel and the future Tarob Court Connection. The project also includes construction of ramps at either end of the bridge to allow continued access to the existing maintenance roads along the channel (Figure 3). The study area is bounded by dense residential development to the north and office development to the south. The project site is located on the *Milpitas, California*, and U.S. Geological Survey (USGS) quadrangle.

1.2 Background

On June 3, 2008, the Milpitas City Council approved the Transit Area Specific Plan (TASP). The TASP allows redevelopment of an approximately 437-acre area in the southern portion of the City around the proposed Milpitas Bay Area Rapid Transit (BART) station and the Santa Clara Valley Transportation Authority (VTA) Light Rail system. The proposed project would improve vehicular, bicycle, and pedestrian connectivity consistent with the goals and policies identified in the TASP.

1.3 Project Overview

The South Milpitas Boulevard Bridge project proposes to construct a bridge across Penitencia East Channel. The proposed bridge would serve vehicles, pedestrians, and cyclists and would connect South Milpitas Boulevard on the north side of the channel with Tarob Court and Sango Court on the south side of the channel. The proposed project would require demolition of the existing vacant office building located at 1831-1841 Tarob Court (APN 086-36-030) which is owned by the City of Milpitas.

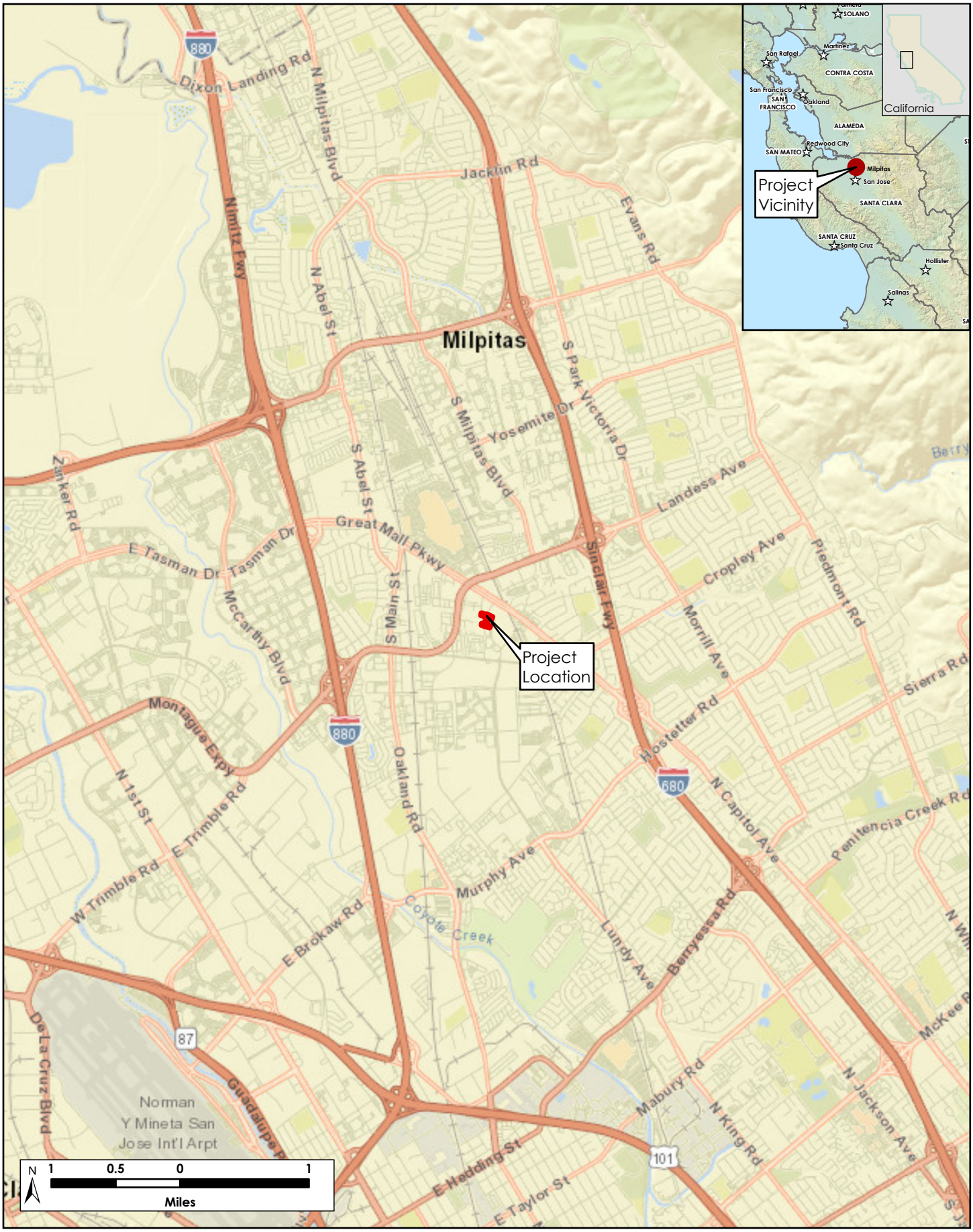

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Figure 1. Vicinity Map
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December 2023

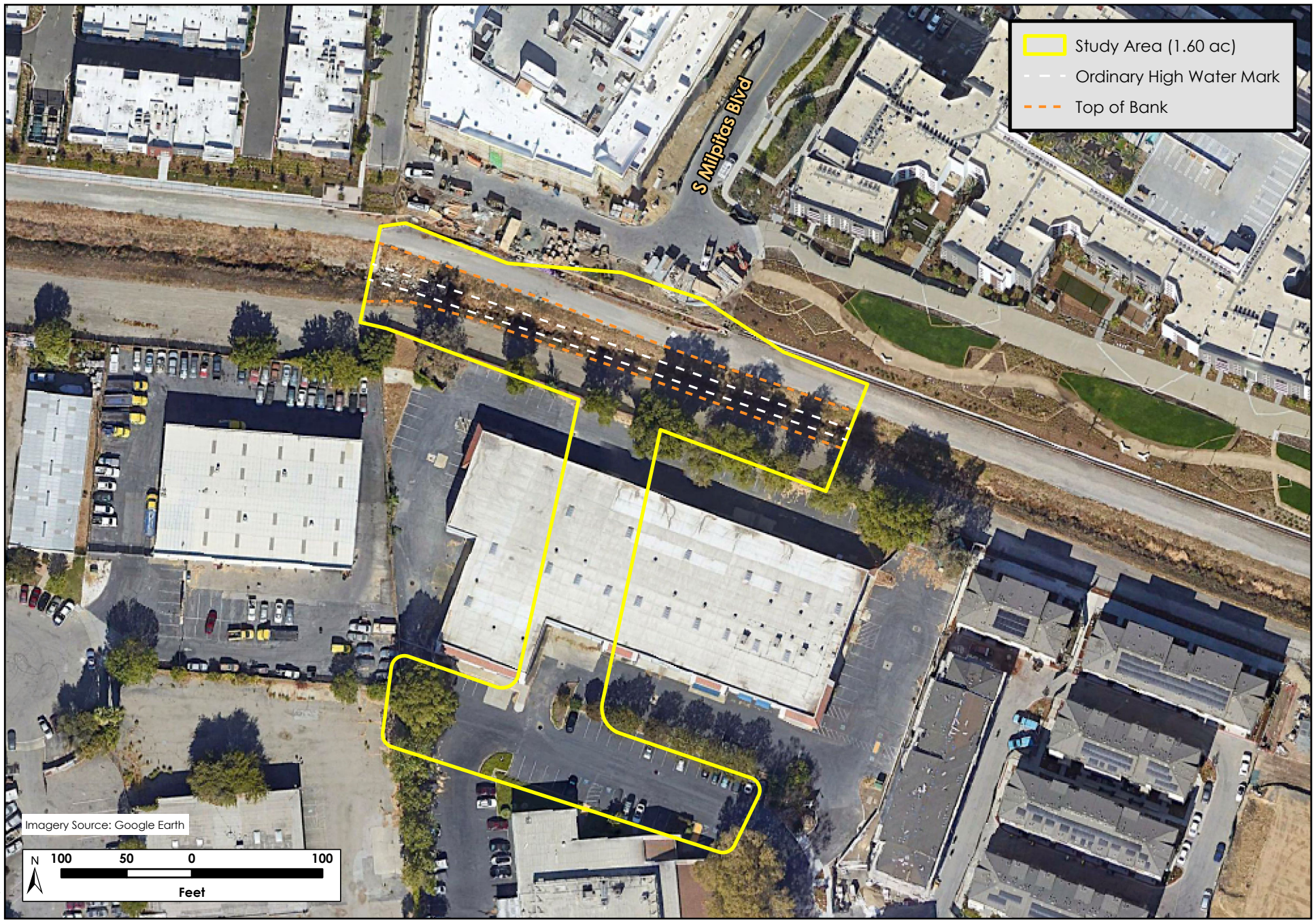

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Figure 2. Study Area
South Milpitas Boulevard Bridge Biological Resources Report (4544-01)
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Figure 3. Proposed Project

South Milpitas Boulevard Bridge Biological Resources Report (4544-01)
December 2023

1.4 Project Description

1.4.1 Bridge

The proposed bridge would be approximately 40 feet long and 48 feet wide. The bridge would include 11-foot vehicle lanes, six-foot bicycle lanes, and six-foot sidewalks in each direction. The railing of the bridge would consist of vertical parallel steel plates mounted on concrete barriers. The steel plates would range in height from 3 to 12 feet and would be illuminated from below, and serve as decorative elements. Additionally, potable water and recycled water lines would be attached to the bridge.

The bridge would be clear-span, meaning that no permanent structures or fill would be placed within the bed or banks of Penitencia East Channel. All abutments and support structures associated with the proposed bridge would occur outside the tops of the banks of Penitencia East Channel. Temporary access into the creek channel may be necessary during construction of the bridge. The bridge would be supported by cast-in-place reinforced concrete abutments supported by cast-in-drilled-hole piers. There would be a total of 14 piers, seven for each abutment. Each of the piers would be 24 inches in diameter and would be drilled to a depth of 60 feet below the ground surface.

The proposed project would also require demolition of the existing office building located at 1831-1841 Tarob Court and removal and replacement of approximately 20 ornamental trees, including a number of protected trees. Replacement of protected trees would occur per the Milpitas Tree Protection Ordinance.

1.4.2 Circulation

The project would extend South Milpitas Boulevard approximately 250 feet from its current termination point to a new intersection and construct a new connector street between the termination points of Tarob Court and Sango Court. The connecting roadways would have a 54-foot right of way that includes 11-foot-wide travel lanes for both vehicles and bicycles going in each direction, an 8-foot-wide vehicle parking aisle on one side of the street, and 7-foot-wide planting strip and 5-foot-wide sidewalks on both sides of the street.

South Milpitas Boulevard between East Capitol Avenue and the Sango Court/Tarbo Court roadway connection would be residential streets with a speed limit of 25 miles per hour. Both the South Milpitas Boulevard/Tarob Court/Sango Court intersection and South Milpitas Boulevard/Vineyard Avenue intersection would be stop sign controlled.

The proposed project would also construct connections to the existing Valley Water maintenance roads, which are located on both sides of Penitencia East Channel, above the tops of banks.

1.4.3 Construction

In addition to construction of the proposed bridge and roadway connection, the project would also require demolition of the existing office building located at 1831-1841 Tarob Court. Project construction would take approximately 18 months to complete. Construction of the bridge would take place in a single dry season from

June 15 to October 15, as required by Valley Water. Temporary access into the creek channel may be necessary during construction of the bridge, potentially requiring dewatering or diversion of the creek if water is present when construction occurs. Falsework may need to be placed in the creek bed during construction.

Demolition of the existing building and construction of the proposed roadway connection is anticipated to occur simultaneously with the bridge construction, estimated between Spring 2024 and Fall 2025. Construction work would occur between 7:00 a.m. and 7:00 p.m., Monday through Sunday, excluding holidays consistent with the City's Municipal Code Section V-213-3(b). No temporary roadway closures are anticipated during project construction.

As required under the National Pollutant Discharge Elimination System (NPDES) Construction General Permit and Regional Water Quality Control Board (RWQCB) Municipal Regional Stormwater Permit (MRP), the proposed project would implement water quality control measures during and after project construction activities to protect Penitencia East Channel and other receiving waters downstream of the project site.

Section 2. Methods

2.1 Background Review

Prior to conducting field work, H. T. Harvey & Associates ecologists reviewed project plans; aerial images (Google LLC 2023); a USGS topographic map; the California Department of Fish and Wildlife's (CDFW's) California Natural Diversity Database (CNDDB) (2023); and other relevant reports, scientific literature, and technical databases. We also perused records of birds reported in nearby areas on eBird (Cornell Lab of Ornithology 2020).

In addition, for plants, we reviewed all species on current California Native Plant Society (CNPS) California Rare Plant Rank (CRPR) 1A, 1B, 2A, 2B, 3 and 4 lists occurring in the project region, which is defined as the *Milpitas, California* USGS 7.5-minute quadrangle and surrounding eight quadrangles (*Newark, Niles, La Costa Valley, Mountain View, Calaveras Reservoir, Cupertino, San Jose West,* and *San Jose East*). In addition, we queried the CNDDB (2023) for natural communities of special concern that occur within the project region. Maps and aerial images of the project site were obtained from several sources and reviewed. These sources included the USGS, National Wetlands Inventory (NWI 2023), and Google Earth (Google LLC 2023).

2.2 Site Visits

Reconnaissance-level field surveys of the project site were conducted by H. T. Harvey & Associates senior botanist/wetland ecologist Katie Gallagher, M.S. on July 1 and October 6, 2021. Senior wildlife ecologist Steve Rottenborn, Ph.D., and wildlife biologist Jazmine Jensen, B.A. visited the site on July 9, 2021. The purpose of these surveys was to provide an impact assessment specific to the proposed redevelopment of the project site as described above. Specifically, surveys were conducted to (1) assess existing biotic habitats and plant and animal communities on the project site, (2) assess the project site for its potential to support special-status species and their habitats, and (3) identify potential jurisdictional habitats, such as waters of the U.S./state and riparian habitat.

Section 3. Regulatory Setting

Biological resources within the project site are regulated by a number of federal, state, and local laws and ordinances, as described below.

3.1 Federal Regulations

3.1.1 Clean Water Act

The Clean Water Act (CWA) functions to maintain and restore the physical, chemical, and biological integrity of Waters of the U.S., which include, but are not limited to, tributaries to traditionally navigable waters currently or historically used for interstate or foreign commerce, and adjacent wetlands. Historically, in non-tidal waters, U. S. Army Corps of Engineers (USACE) jurisdiction under Section 404 of the CWA extends to the Ordinary High Water Mark (OHWM), which is defined in Title 33, Code of Federal Regulations, Part 328.3. If there are wetlands adjacent to channelized features, the limits of USACE jurisdiction extend beyond the OHWM to the outer edges of the wetlands. A May 25, 2023 U.S. Supreme Court decision in *Sackett v. Environmental Protection Agency* limited the definition of jurisdictional wetlands and other waters that are considered waters of the U.S. to those wetlands and other waters having a continuous surface connection with traditional navigable waters or their relatively permanent tributaries.

Construction activities within jurisdictional waters are regulated by the USACE. The placement of fill into such waters must comply with permit requirements of the USACE. No USACE permit will be effective in the absence of Section 401 Water Quality Certification. The State Water Resources Control Board (SWRCB) is the state agency (together with the Regional Water Quality Control Boards [RWQCBs]) charged with implementing water quality certification in California.

Project Applicability: Penitencia East Channel is considered waters of the U.S. based on the presence of OHWMs on opposing banks, regular flow, intermittent hydrology in most years, and direct hydrologic connectivity to other navigable waters (Coyote Creek and eventually San Francisco Bay). The channel bottom was determined to support three-parameter wetlands (USACE 2008) in some locations, based on the presence of hydrophytic vegetation and hydric soils, and indirect observations of hydrology (i.e., surface soil cracks, inundation on aerial imagery, etc.). Therefore, depending on actual construction techniques for the bridge and the level of access and temporary fills that may be needed to be placed within the channel for construction of the bridge, a Section 404 permit from the USACE may be necessary to authorize the project's proposed impacts on wetlands and other waters.

3.1.2 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) protects federally listed wildlife species from harm or *take*, which is broadly defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to

engage in any such conduct." *Take* can also include habitat modification or degradation that directly results in death or injury of a listed wildlife species. An activity can be defined as *take* even if it is unintentional or accidental. Listed plant species are provided less protection than listed wildlife species. Listed plant species are legally protected from take under FESA only if they occur on federal lands.

The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) have jurisdiction over federally listed, threatened, and endangered species under FESA. The USFWS also maintains lists of proposed and candidate species. Species on these lists are not legally protected under FESA but may become listed in the near future and are often included in their review of a project.

Project Applicability: No federally listed plant or animal species occur on the project site. The northwestern pond turtle (*Actinemys marmorata*), proposed for federal listing, could potentially occur in the project area, though the project site does not provide high-quality habitat, and the species could occur only as a very infrequent dispersant, if it occurs at all. The monarch butterfly (*Danaus plexippus*), a candidate for federal listing, is expected to occur in the project area as an occasional migrant. Although adults may occasionally forage for nectar on flowering plants in the project vicinity, no milkweed (*Asclepias* sp.), which serves as the species' larval host plant, was observed or is expected to occur in the project area. Therefore, monarchs would not breed in the project area. If either the northwestern pond turtle or monarch butterfly is listed prior to project initiation, and if take of the species may occur, consultation between the USACE and USFWS would occur during Section 404 permitting.

3.1.3 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act governs all fishery management activities that occur in federal waters within the United States' 200-nautical-mile limit. The Act establishes eight Regional Fishery Management Councils responsible for the preparation of fishery management plans (FMPs) to achieve the optimum yield from U.S. fisheries in their regions. These councils, with assistance from NMFS, establish Essential Fish Habitat (EFH) in FMPs for all managed species. Federal agencies that fund, permit, or implement activities that may adversely affect EFH are required to consult with the NMFS regarding potential adverse effects of their actions on EFH, and respond in writing to recommendations by the NMFS.

Project Applicability: No EFH is present on the project site, as the channel on the project site is intermittent and dry most of the year and thus does not provide suitable habitat for FMP-managed fish species.

3.1.4 Federal Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA), 16 U.S.C. Section703, prohibits killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. The MBTA protects whole birds, parts of birds, and bird eggs and nests; and prohibits the possession of all nests of protected bird species whether they are active or inactive. An active nest is defined as having eggs or young, as described by the Department of the Interior in its April 16, 2003 Migratory Bird Permit Memorandum. Nest starts (nests that are under construction and do not yet contain eggs) are not protected from destruction.

Project Applicability: All native bird species that occur on the project site are protected under the MBTA.

3.2 State Regulations

3.2.1 Porter-Cologne Water Quality Control Act

The SWRCB works in coordination with the nine RWQCBs to preserve, protect, enhance, and restore water quality. Each RWQCB makes decisions related to water quality for its region, and may approve, with or without conditions, or deny projects that could affect waters of the state. Their authority comes from the CWA and Porter-Cologne. Porter-Cologne broadly defines waters of the state as "any surface water or groundwater, including saline waters, within the boundaries of the state." Because Porter-Cologne applies to any water, whereas the CWA applies only to certain waters, California's jurisdictional reach overlaps and may exceed the boundaries of waters of the U.S. For example, Water Quality Order No. 2004-0004-DWQ states that "shallow" waters of the state include headwaters, wetlands, and riparian areas. Moreover, the San Francisco Bay Region RWQCB's Assistant Executive Director has stated that, in practice, the RWQCBs claim jurisdiction over riparian areas. Where riparian habitat is not present, such as may be the case at headwaters, jurisdiction is taken to the top of bank.

On April 2, 2019, the SWRCB adopted the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. In these new guidelines, riparian habitats are not specifically described as waters of the state but instead as important buffer habitats to streams that do conform to the State Wetland Definition. The Procedures describe riparian habitat buffers as important resources that may both be included in required mitigation packages for permits for impacts to waters of the state, as well as areas requiring permit authorization from the RWQCBs to impact.

Pursuant to the CWA, projects that are regulated by the USACE must also obtain a Section 401 Water Quality Certification permit from the RWQCB. This certification ensures that a proposed project will uphold state water quality standards. Because California's jurisdiction to regulate its water resources is much broader than that of the federal government, proposed impacts on waters of the state require Water Quality Certification even if the area occurs outside of USACE jurisdiction. Moreover, the RWQCB may impose mitigation requirements even if the USACE does not. Under the Porter-Cologne, the SWRCB and the nine regional boards also have the responsibility of granting CWA National Pollutant Discharge Elimination System (NPDES) permits and Waste Discharge Requirements for certain point-source and non-point discharges to waters. These regulations limit impacts on aquatic and riparian habitats from a variety of urban sources.

Project Applicability: Waters of the state include all potential waters of the U.S., including the portions of Penitencia East Channel. The RWQCB will also consider the riparian vegetation rooted below top of bank and areas of the riparian banks above the OHWM and below top of bank to be important buffers to waters of the state associated with the channel. Therefore, we expect that a Section 401 water quality certification (or Waste Discharge Requirement under the Porter-Cologne Act if no Section 404 permit is needed) from the RWQCB

would be necessary to authorize the project's proposed impacts on wetlands and riparian buffers regulated by the RWQCB.

3.2.2 California Endangered Species Act

The California Endangered Species Act (CESA; California Fish and Game Code, Chapter 1.5, Sections 2050-2116) prohibits the take of any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with CESA, the CDFW has jurisdiction over state-listed species (Fish and Game Code 2070). The CDFW regulates activities that may result in take of individuals (i.e., "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill"). Habitat degradation or modification is not expressly included in the definition of take under the California Fish and Game Code. The CDFW, however, has interpreted take to include the "killing of a member of a species which is the proximate result of habitat modification."

Project Applicability: No suitable habitat for any state-listed plant or animal species occurs in the project site, and thus no state-listed plants or animals are expected to occur in the project area.

3.2.3 California Environmental Quality Act

CEQA is a state law that requires state and local agencies to document and consider the environmental implications of their actions and to refrain from approving projects with significant environmental effects if there are feasible alternatives or mitigation measures that can substantially lessen or avoid those effects. CEQA requires the full disclosure of the environmental effects of agency actions, such as approval of a general plan update or the projects covered by that plan, on resources such as air quality, water quality, cultural resources, and biological resources. The State Resources Agency promulgated guidelines for implementing CEQA are known as the State CEQA Guidelines.

Section 15380(b) of the State CEQA Guidelines provides that a species not listed on the federal or state lists of protected species may be considered rare if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definitions in FESA and CESA and the section of the California Fish and Game Code dealing with rare or endangered plants and animals. This section was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on a species that has not yet been listed by either the USFWS or CDFW or species that are locally or regionally rare.

The CDFW has produced three lists (amphibians and reptiles, birds, and mammals) of "species of special concern" that serve as "watch lists". Species on these lists are of limited distribution or the extent of their habitats has been reduced substantially, such that threat to their populations may be imminent. Thus, their populations should be monitored. They may receive special attention during environmental review as potential rare species, but do not have specific statutory protection. All potentially rare or sensitive species, or habitats capable of supporting rare species, are considered for environmental review per the CEQA Section 15380(b).

The CNPS, a non-governmental conservation organization, has developed CRPRs for plant species of concern in California in the Inventory of Rare and Endangered Plants (CNPS 2020). The CRPRs include lichens, vascular, and non-vascular plants, and are defined as follows:

- CRPR 1A Plants considered extinct.
- CRPR 1B Plants rare, threatened, or endangered in California and elsewhere.
- CRPR 2A Plants considered extinct in California but more common elsewhere.
- CRPR 2B Plants rare, threatened, or endangered in California but more common elsewhere.
- CRPR 3 Plants about which more information is needed - review list.
- CRPR 4 Plants of limited distribution-watch list.

The CRPRs are further described by the following threat code extensions:

- .1—seriously endangered in California;
- .2—fairly endangered in California;
- .3—not very endangered in California.

Although the CNPS is not a regulatory agency and plants on these lists have no formal regulatory protection, plants appearing as CRPR 1B or 2 are, in general, considered to meet CEQA's Section 15380 criteria, and adverse effects on these species may be considered significant. Impacts on plants that are listed by the CNPS as CRPR 3 or 4 are also considered during CEQA review, although because these species are typically not as rare as those of CRPR 1B or 2, impacts on them are less frequently considered significant.

Compliance with CEQA Guidelines Section 15065(a) requires consideration of natural communities of special concern, in addition to plant and wildlife species. Vegetation types of "special concern" are tracked in Rarefind (CNDDB 2023). Further, the CDFW ranks sensitive vegetation alliances based on their global (G) and state (S) rankings analogous to those provided in the CNDDB. Global rankings (G1–G5) of natural communities reflect the overall condition (rarity and endangerment) of a habitat throughout its range, whereas S rankings reflect the condition of a habitat within California. If an alliance is marked as a G1–G3, all the associations within it would also be of high priority. The CDFW provides the Vegetation Classification and Mapping Program's currently accepted list of vegetation alliances and associations (CDFW 2023).

Project Applicability: All potential impacts on biological resources will be considered during CEQA review of the project in the context of this Biological Resources Report.

3.2.4 California Fish and Game Code

Ephemeral and intermittent streams, rivers, creeks, dry washes, sloughs, blue line streams on USGS maps, and watercourses with subsurface flows fall under CDFW jurisdiction. Canals, aqueducts, irrigation ditches, and

other means of water conveyance may also be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. A *stream* is defined in Title 14, California Code of Regulations Section 1.72, as "a body of water that follows at least periodically or intermittently through a bed or channel having banks and that supports fish and other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." Using this definition, CDFW extends its jurisdiction to encompass riparian habitats that function as a part of a watercourse. California Fish and Game Code Section 2786 defines *riparian habitat* as "lands which contain habitat which grows close to and which depends upon soil moisture from a nearby freshwater source." The lateral extent of a stream and associated riparian habitat that would fall under the jurisdiction of CDFW can be measured in several ways, depending on the particular situation and the type of fish or wildlife at risk. At minimum, CDFW would claim jurisdiction over a stream's bed and bank. Where riparian habitat is present, the outer edge of riparian vegetation is generally used as the line of demarcation between riparian and upland habitats.

Pursuant to California Fish and Game Code Section 1603, CDFW regulates any project proposed by any person that will "substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds." California Fish and Game Code Section 1602 requires an entity to notify CDFW of any proposed activity that may modify a river, stream, or lake. If CDFW determines that proposed activities may substantially adversely affect fish and wildlife resources, a Lake and Streambed Alteration Agreement (LSAA) must be prepared. The LSAA sets reasonable conditions necessary to protect fish and wildlife, and must comply with CEQA. The applicant may then proceed with the activity in accordance with the final LSAA.

Certain sections of the California Fish and Game Code describe regulations pertaining to protection of certain wildlife species. For example, Code Section 2000 prohibits take of any bird, mammal, fish, reptile, or amphibian except as provided by other sections of the code.

The California Fish and Game Code Sections 3503, 3513, and 3800 (and other sections and subsections) protect native birds, including their nests and eggs, from all forms of take. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered *take* by the CDFW. Raptors (e.g., eagles, hawks, and owls) and their nests are specifically protected in California under Code Section 3503.5. Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

Bats and other non-game mammals are protected by California Fish and Game Code Section 4150, which states that all non-game mammals or parts thereof may not be taken or possessed except as provided otherwise in the code or in accordance with regulations adopted by the commission. Activities resulting in mortality of non-game mammals (e.g., destruction of an occupied nonbreeding bat roost, resulting in the death of bats), or disturbance that causes the loss of a maternity colony of bats (resulting in the death of young), may be considered *take* by the CDFW.

Project Applicability: CDFW jurisdiction under Section 1602 of the California Fish and Game Code would include the bed and banks of Penitencia East Channel up to the tops of the banks. No additional riparian habitat (outside the tops of the creek banks) is present.

Most native bird, mammal, and other wildlife species that occur in the study area and in the immediate vicinity are protected by the California Fish and Game Code.

3.3 Local Regulations

The project is located within the limits of the City of Milpitas. Applicable City ordinances and policies are discussed below.

3.3.1 City of Milpitas Tree Ordinance

The City of Milpitas, in Section 2-7.01 of the Municipal Code, requires a permit to remove or prune a tree on specified property types once it reaches a certain size in circumference. A permit is required to remove a tree of any size on residential, commercial/industrial, zoning/subdivision and vacant lots. A protected tree is:

1. All trees which have a fifty-six-inch (56") or greater circumference of any trunk measured 4 ½ feet from the ground and located on developed residential property.

2. All trees which have a thirty-seven-inch (37") or greater circumference of any trunk measured 4 ½ feet from the ground and located on developed commercial or industrial property.

3. All trees which have a thirty-seven-inch (37") or greater circumference of any trunk measured 4 ½ feet from the ground, when removal relates to any transaction for which zoning approval or subdivision approval is required.

4. Any tree existing at the time of a zoning or subdivision approval and was a specific subject of such approval or otherwise covered by subsection (b) above.

5. All trees which have a thirty-seven-inch (37") or greater circumference of any trunk measured 4 ½ feet from the ground and located on a vacant, undeveloped or underdeveloped property.

6. All heritage trees or groves of trees as defined in Section 2-2.10.

To remove any trees that meet the above conditions, a tree removal permit must be secured from the City of Milpitas.

Project Applicability: All trees within the study area are located in what could likely be classified as vacant, undeveloped, or underdeveloped property, rendering the protection threshold to be 37 inches. The project intends to remove several trees, including a number of ordinance-sized trees, in the study area. The project will

obtain a tree removal permit through the City's planning and building department and comply with the City's tree replacement guidelines and policies for any trees that need to be removed.

Section 4. Environmental Setting

4.1 General Project Area Description

The study area is located in Milpitas in Santa Clara County, California. Based on the 30-year climate normals from 1980 through 2010, the project site receives approximately 16 inches of annual precipitation and has a mean temperature range of 49.6°– 70.9°F (PRISM Climate Group 2023). Elevations on the project site range from approximately 43 feet to 47 feet above sea level. The site is underlain by one soil unit: Urbanland-Clear Lake complex, 0 to 2% slopes (NRCS 2023). The soil unit is typically found on basin floors, and is composed of alluvium derived from metamorphic and sedimentary rock (NRCS 2023).

The Penitencia East Channel is mapped in the NWI (2023) as a temporarily flooded, excavated (man-made), intermittent stream. This stormwater conveyance feature is a trapezoidal channel maintained by Valley Water for flood protection, water resource management, and stream stewardship. The channel is a part of the Lower Penitencia Watershed, and flows into Lower Penitencia Creek approximately 380 feet east of McCandless Drive.

The highest point in the study area is the ground level of multifamily housing to the north of the channel. A retaining wall facilitates the elevation drop from the housing level to the existing Valley Water Maintenance Road. The channel edge of the road is the top of bank for the channel. The channel banks are graded soil and were recently mowed. The top third of the bank is very moderately sloped, then it transitions to a roughly 2:1 slope until it reaches the OHWM. From the OHWM to the channel bottom, the bank is a 3–4-foot vertical drop. Just downstream and outside of the Study Area, an outlet conveys perennial urban runoff into riprap and open water. Throughout the study area (i.e., upstream of this outlet), no surface water was observed during our site visits.

4.2 Biotic Habitats

Reconnaissance-level surveys identified three habitat types or land uses in the study area: developed/landscaped; riparian annual grassland, and intermittent stream/freshwater marsh. This habitat is described in detail below, and the distribution of these habitats is provided in Figure 4. Plant species observed during the reconnaissance-level survey are listed in Appendix A.

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Figure 4. Habitats and Impacts Map

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4.2.1 Developed/Landscaped

Photo 1. Developed/landscaped habitat on the project site.

Vegetation. The majority of the project site consists of developed and landscaped habitat in the form of asphalt parking areas and the existing building on the south side of the creek,. gravel and asphalt access roads, ornamental trees, and landscaping. Landscaping in the study area includes mostly mature ornamental trees along the fenceline south of Penitencia East Channel and in the Tarob Court Connection area, and recently installed landscaping associated with the adjacent multifamily housing. Fences border the north and south boundary of the study area and include a retaining wall along the north boundary. The most prevalent ornamental tree species includes shamel ash (*Fraxinus uhdei*) and eucalyptus (*Eucalyptus* sp.). Various annual weeds grow sparsely within the pavement cracks and gravel.

Wildlife. The developed/landscaped habitat on the proposed project footprint is of relatively low value to wildlife due to the general lack of vegetation and the predominance of non-native species where vegetation is present. California towhees (*Melozone crissalis*), lesser goldfinches (*Spinus psaltria*), and American crows (*Corvus brachyrhynchos*) were all observed using the graveled access roads and adjacent landscaping during the reconnaissance survey. The row of non-native ornamental shrubs bordering the northern access road on the project site, and the row of ornamental trees bordering the southern access road, provide nesting and foraging opportunities for some urban-adapted species. House finches (*Haemorhous mexicanus*), Anna's hummingbirds (*Calypte anna*), bushtits (*Psaltriparus minimus*), and California towhees were all observed foraging in the ornamental shrubs and trees during the reconnaissance survey. Anna's hummingbirds, bushtits, and house finches may all nest in these ornamental shrubs. Additional species such as the white-crowned sparrow (*Zonotrichia leucophrys*), golden-crowned sparrow (*Zonotrichia atricapilla*), and Lincoln's sparrow (*Melospiza lincolnii)* could potentially forage in these habitats during migration or winter. Few species of reptiles and amphibians occur in the developed/landscaped habitat on the project site due to its disturbed nature and low habitat heterogeneity. Nevertheless, reptiles such as the western fence lizard (*Sceloporus occidentalis*) may occur in this habitat. Common urban-adapted mammal species that may occur on the project site include the native raccoon (*Procyon lotor*) as well as the non-native house mouse (*Mus musculus*), Norway rat (*Rattus norvegicus*), and black rat (*Rattus rattus*).

No old nests of raptors were observed on the site, or in surrounding areas, during the reconnaissance survey. Further, an examination of the trees and buildings on and adjacent to the site failed to find any large cavities that might provide suitable habitat for a large roosting or maternity colony of bats.

In general, the habitats identified in the study area provide habitat for certain common, urban-adapted wildlife species typically associated with urban development. The study area, which does not contain sensitive habitat, and which is embedded within a developed landscape characterized by extensive commercial and residential development, is isolated from extant regional wildlife populations and does not provide habitat for species that require high-quality, contiguous habitat.

4.2.2 Riparian Annual Grassland

Vegetation. This habitat type occurs between the top of bank along the edge of the Valley Water access roads and the OHWM. The channel banks consist entirely of ruderal grass and herb species. The dominant species include wild oats (*Avena fatua*), Italian thistle (*Carduus pycnocephalus*), prickly lettuce (*Lactuca serriola*), wild radish (*Raphanus sativa*), bristly ox-tongue (*Helminthotheca echioides*), and cheeseweed (*Malva parviflora*). Other species that are less common include ripgut brome (*Bromus diandrus*), field bindweed (*Convolvulus arvensis*), smilo grass (*Stipa millacea*), milkvetch (*Vicia sativa*), salsify (*Tragopogon* sp.), and Bermuda grass (*Cynodon dactylon*). The slopes appeared to be recently mowed during our site visit, and no bare soil was visible through the herb and annual grass thatch.

Wildlife. Common, urban-adapted bird species found elsewhere in the study area likely also occur in the ruderal grassland levee slope, although this habitat has limited value for wildlife due to the absence of trees and shrubs and its isolation from large, contiguous tracts of other grassland. Two feral domestic cats (*Felis catus*) were observed in this habitat; the presence of these non-native predators may further reduce the value of the habitat for wildlife. No evidence of burrowing mammals, such as California ground squirrels (*Otospermophilus beecheyi*) or valley pocket gophers (*Thomomys bottae*), was observed. Lesser goldfinches, California towhees, and song sparrows (*Melospiza melodia*) were all observed foraging in the ruderal grassland. The rock pigeon (*Columba livia*), a non-native species, likely also forages in this habitat.

4.2.3 Intermittent Stream/Freshwater Marsh

Vegetation. This habitat type occurs between the OHWM and the channel bottom. This reach of the channel supports a seasonally high groundwater table and seasonal flows during the wet season. An outlet immediately downstream of the study area conveyed perennial urban runoff, but the channel bottom in the study area was dry during both site visits. The portion between the OHWM and the toe of the slope is a vertical face throughout the Study Area and supports loamy eroded soils and ruderal transitional species, such as Italian ryegrass (*Festuca perennis*) and smilo grass. The substrate on the channel bottom consists of loose coarse sand that has likely accumulated during storm events in some areas, while in other areas it consists of bare loamy soil with surface cracks and only light leaf litter scattered about. In the portions of the channel bottom with accumulated sand on the surface, diminutive upland species were observed to be rooted shallowly in the sand; these included small seed sandmat (*Euphorbia polycarpa*), sharp-leaved kickxia (*Kickxia elatine*), oval-leaf knotweed (*Polygonum aviculare*), and variable burclover (*Medicago polymorpha*). Visible hydric soil indicators begin about 10-12 cm below the surface of the sand. In the portions where surface cracks are exposed, indicators of hydric soils were observed about 2 cm below the surface. The hydric soils were moist but not wet during our site visit. Drift deposits were observed in several spots throughout the study area.

The vegetation rooted deeper than the accumulated sand substrate in the channel bottom consists almost entirely of hydrophytic species, and we therefore considered areas dominated by this vegetation to comprise freshwater marsh habitat. A wide variety of species were observed in these areas, including water plantain (*Alisma lanceolatum*), barnyard grass (*Echinochloa crus-galli*), tall cyperus (*Cyperus eragrostis*), tall willowherb (*Epilobium brachycarpum*), loosestrife (*Lythrum* sp.), spotted smartweed (*Persicaria maculosa*), curly dock (*Rumex crispus*), white sweetclover (*Melilotus albus*), speedwell (*Veronica* sp.), rabbitfoot grass (*Polypogon monspieliensis*), cattails (*Typha dominguensis*), and Bermuda grass. Saplings of date palm (*Phoenix canariensis*) and Fremont cottonwood (*Populus fremontii*) were the only species observed that were not an herb or grass.

Thus, the channel bottom from the toe of slope to the toe of slope meets the requirements of a three-parameter wetland. In general, the freshwater marsh habitat comprised roughly 80% of this habitat type and intermittent stream (i.e., bare sand or soil) comprised roughly 20%.

Wildlife. The stream habitat in the project area is intermittent and dry, but turns perennial downstream to the west, outside the project boundary. The perennial stream found in the west channel provides foraging habitat for some wetland and aquatic bird species, such as mallards (*Anas platyrhynchos*), great egrets (*Ardea alba*), snowy egrets (*Egretta thula*), and black phoebes (*Sayornis nigricans*), as well as some migrants such as Wilson's snipe (*Gallinago delicata*). The perennial stream habitat may also serve as habitat for amphibians such as Pacific tree frogs (*Pseudacris regilla*) and a variety of common fish species. However, the intermittent reach of stream on the project site is much drier. Although the aforementioned species could potentially forage in the on-site reach when it conveys water, they are expected to occur only temporarily, when flow is present, and likely in low numbers.

Section 5. Special-Status Species and Sensitive Habitats

CEQA requires assessment of the effects of a project on species that are protected by state, federal, or local governments as "threatened, rare, or endangered"; such species are typically described as "special-status species". For the purpose of the environmental review of the project, special-status species have been defined as described below. Impacts on these species are regulated by some of the federal, state, and local laws and ordinances described in Section 3 above.

For purposes of this analysis, "special-status" plants are considered plant species that meet one or more of the following criteria:

- Listed under FESA as threatened, endangered, proposed threatened, proposed endangered, or a candidate species.
- Listed under CESA as threatened, endangered, rare, or a candidate species.
- Listed by the CNPS as CRPR 1A, 1B, 2, 3, or 4.

For purposes of this analysis, "special-status" animals are considered animal species that meet one or more of the following criteria:

- Listed under FESA as threatened, endangered, proposed threatened, proposed endangered, or a candidate species.
- Listed under CESA as threatened, endangered, or a candidate threatened or endangered species.
- Designated by the CDFW as a California species of special concern.
- Listed in the California Fish and Game Code as fully protected species (fully protected birds are provided in Section 3511, mammals in Section 4700, reptiles and amphibians in Section 5050, and fish in Section 5515).

Information concerning threatened, endangered, and other special-status species that potentially occur on the project site was collected from several sources and reviewed by H. T. Harvey & Associates biologists as described in Section 2.1 above. Figure 5 depicts CNDDB records of special-status plant species in the general vicinity of the project site and Figure 6 depicts CNDDB records of special-status animal species. These generalized maps show areas where special-status species are known to occur or have occurred historically.

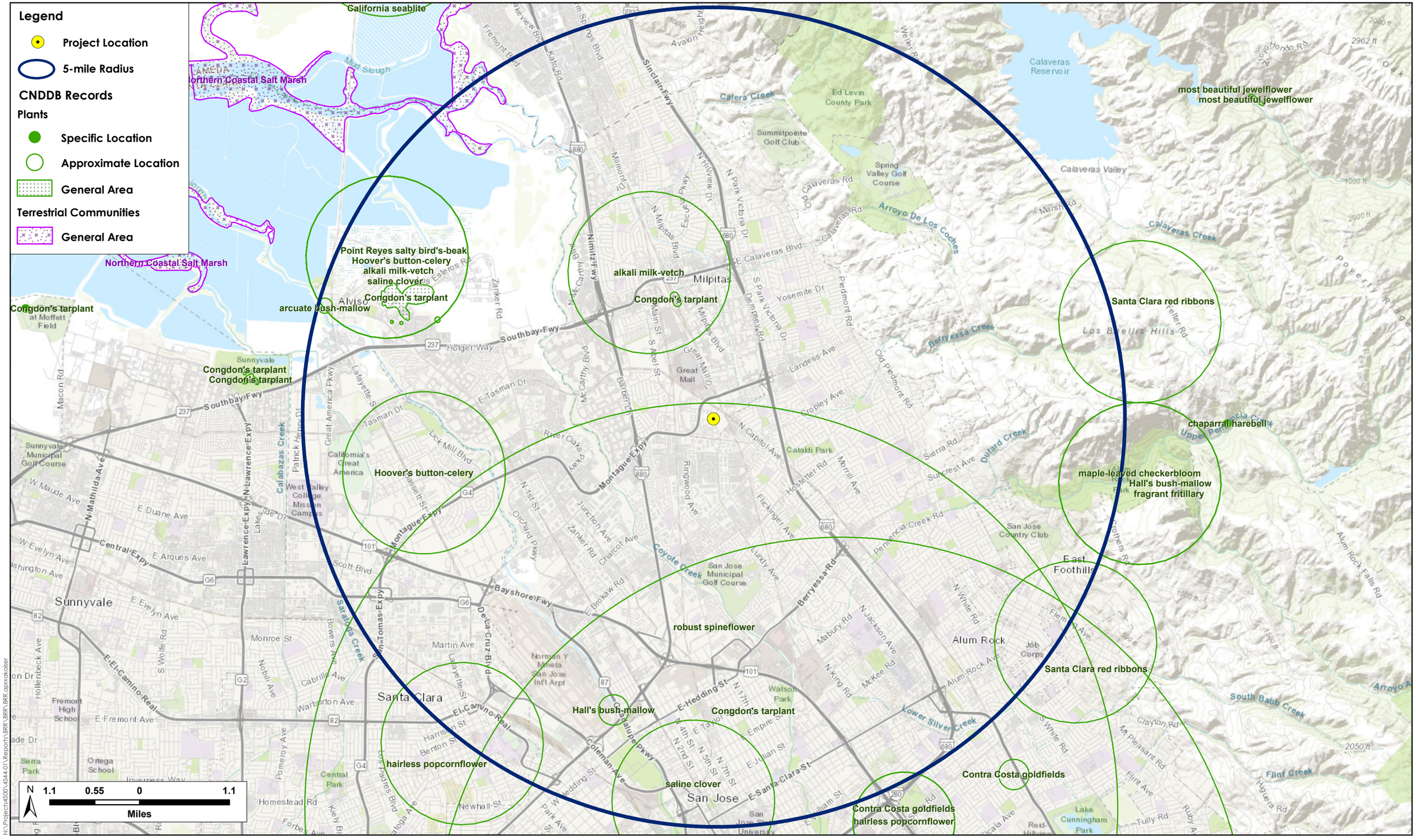

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Figure 5. CNDDB-Mapped Records of Special-Status Plants
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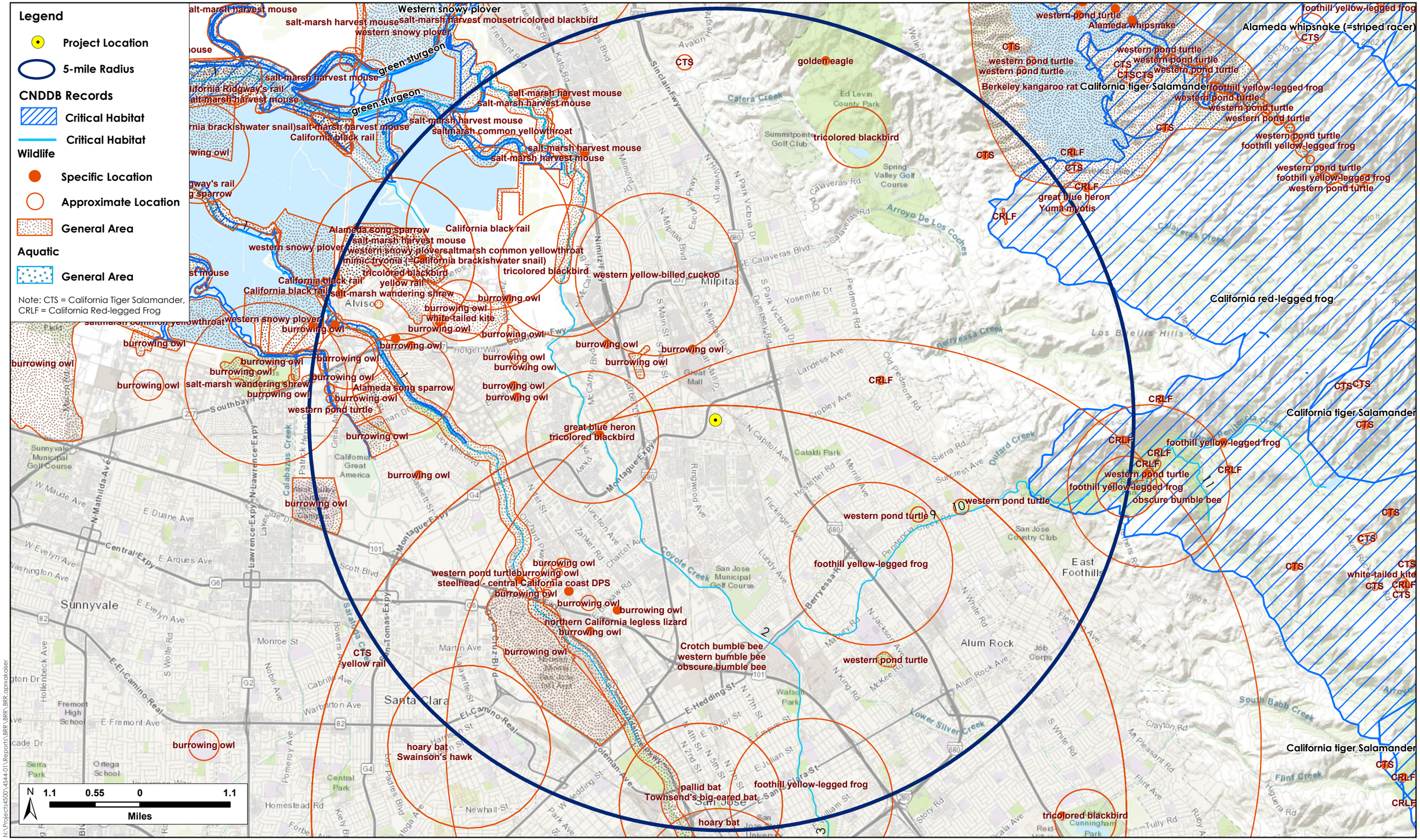

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Figure 6. CNDDB-Mapped Records of Special-Status Animals
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5.1 Special-Status Plant Species

The CNPS (2023) and CNDDB (2023) identify 54 special-status plant species as potentially occurring in at least one of the nine USGS quadrangles containing or surrounding the study area. All of these species were determined to be absent from the study area for at least one of the following reasons: (1) lack of suitable habitat types; (2) absence of specific microhabitat or edaphic requirements, such as serpentine soils; (3) the elevation range of the species is outside of the range within the study area; and/or (4) the species is considered extirpated from the site vicinity. Due to the current and historic land use of the study area, as well as the surrounding developed land use, no suitable habitat is present in the study area and we can rule out potential for any special-status plant species to occur.

5.2 Special-Status Animal Species

The legal status and likelihood of occurrence on the project site of special-status animals known to occur, or potentially occurring, in the surrounding region are presented in Table 1, and Figure 6 depicts the CNDDB-mapped locations of special-status animals in the project vicinity. Analysis of the documented habitat requirements and occurrence records associated with the species in Table 1 considered allowed us to reject nearly all of the species as having no reasonable potential to occur in or immediately adjacent to the project footprint for at least one of the following reasons: (1) lack of suitable habitat types; (2) absence of specific microhabitat or edaphic requirements, such as serpentine soils; (3) the location of the project site within a developed landscape characterized by extensive commercial and residential development; (4) the lack of connectivity to higher-quality habitat; and/or (5) extirpation of the species from the vicinity.

Special-status fish species present in the South Bay and some of its tributaries include two federally threatened species, the green sturgeon (*Acipenser medirostris*) and the Central California Coast steelhead (*Oncorhynchus mykiss*), along with the longfin smelt (*Spirinchus thaleichthys*), listed as threatened under the California Endangered Species Act (CESA), and the Central Valley fall-run Chinook salmon (*Oncorhynchus tshawytscha*), a California Species of Special Concern (CSSC). However, none of these special-status fish species are expected to occur in the project study area because the channel is not tidally influenced, is intermittent, and is too shallow to support habitat for any of these species. Moreover, there is no spawning habitat or higher-quality habitat for any of these species upstream of the project study area.

Likewise, the absence of salt marsh and the isolation of the study area from South Bay marshes precludes the presence of four special-status species known to occur in salt marsh habitat–the federally and state endangered salt marsh harvest mouse (*Reithrodontomys raviventris*); the federally and state endangered California Ridgway's rail (*Rallus obsoletus obsoletus*); the state threatened California black rail (*Laterallus jamaicensis coturniculus*); and the salt marsh wandering shrew (*Sorex vagrans halicoetes*), a CSSC.

Three special status amphibian species – the California red-legged frog (*Rana draytonii*), which is federally threatened and also a CSSC; the foothill yellow-legged frog (*Rana boylii*), which is federally listed as threatened and state-listed as endangered; and the California tiger salamander (*Ambystoma californiense*), which is both

Table 1. Special-status Animal Species, Their Status, and Potential Occurrence on the Project Site

Name	*Status	Habitat	Potential for Occurrence on the Project Site
Federal or State Endangered, Threatened, or Candidate Species			
Crotch's bumble bee (*Bombus crotchii*)	SC	Open grassland and scrub habitats with abundant flowers providing nectar and pollen and with subterranean nest sites (such as animal burrows).	**Absent.** Concern over possible population declines and range contractions led CDFW (2019) to consider this species a candidate for listing under CESA. However, since 2019, there have been documented occurrences of 70-80 individuals from nearly 20 locations in Santa Clara County (Bumble Bee Watch 2023, iNaturalist 2023, S. Rottenborn, pers. obs.), indicating that the species is still extant, and fairly widespread (albeit in low numbers in most locations) in the county. The project site does not provide high-quality habitat for this species due to the low densities of flowering plants and absence of high-quality nest sites such as small mammal burrows. Given the extensively urbanized surroundings of the project site and absence of high-quality habitat, this species is not expected to occur on the site at all. Determined to be absent.
Monarch butterfly (*Danaus plexippus*)	FC	Requires milkweeds (*Asclepias* spp.) for egg-laying and larval development, but adults obtain nectar from a wide variety of flowering plants in many habitats. Individuals congregate in winter roosts, primarily in Mexico and in widely scattered locations on the central and southern California coast.	**Absent as Breeder.** The monarch butterfly occurs in the South Bay as a widespread migrant, and occasional migrants are expected to fly through the project area. Some individuals may also forage for nectar on flowering plants. However, no milkweeds were observed in the project area during site surveys, so the species would not breed on the project site. Further, the species is not known to form large wintering aggregations in Santa Clara County.
California tiger salamander (*Ambystoma californiense*)	FT, ST	Vernal or temporary pools in annual grasslands or open woodlands. Adults live terrestrially in small mammal burrows.	**Absent.** Suitable breeding habitat is absent from the project site, and the species is not known to occur in the surrounding vicinity (CNDDB 2023). The site is isolated from higher-quality habitat and areas of potential occurrence by intensive urban development. Determined to be absent.
California red-legged frog (*Rana draytonii*)	FT, CSSC	Streams, freshwater pools, and ponds with emergent or overhanging vegetation.	**Absent.** No suitable breeding, foraging, or dispersal habitat is present on the project site and the species is not known to occur in the surrounding vicinity (CNDDB 2023). The site is isolated from higher-quality habitat and areas of potential occurrence by intensive urban development. Determined to be absent.

Name	*Status	Habitat	Potential for Occurrence on the Project Site
Foothill yellow-legged frog (*Rana boylii*)	FT, SE	Partially shaded shallow streams and riffles with a rocky substrate. Occurs in a variety of habitats in coast ranges.	**Absent.** No suitable breeding, dispersal, or foraging habitat for this species is present on the and there are no recent records of the species in the surrounding vicinity (CNDDB 2023). The site is isolated from higher-quality habitat and areas of potential occurrence by intensive urban development. Determined to be absent.
Northwestern pond turtle (*Actinemys marmorata*)	FP, CSSC	Permanent or nearly permanent water in a variety of habitats.	**Absent as Breeder.** No northwestern pond turtles were observed during our July 9, 2021 site visit, but individuals of this long-lived species still occur in urban streams and ponds in the Santa Clara Valley, and it is possible, although unlikely, that one or two individual northwestern pond turtles could occur in the study area. The nearest known occurrence is from Upper Penitencia Creek (which is not directly connected to Penitencia East Channel) approximately 2.5 miles southeast of the site (CNDDB 2023). Suitable habitat for the northwestern pond turtle consists of ponds or instream pools (i.e., slack water environments) with available basking sites, such as logs, and nearby upland areas with clay or silty soils for nesting, and shallow aquatic habitat with emergent vegetation and invertebrate prey for juveniles (Jennings and Hayes 1994). The study area does not contain any ponds or instream pools, and potential basking sites were not detected. Moreover, essentially all of the nearby upland areas have been converted to commercial or residential development, further reducing the likelihood that a turtle would attempt to nest in the study area. Therefore, if an individual pond turtle does occur, it would most likely occur as a dispersing individual.
Alameda whipsnake (*Masticophis lateralis euryxanthus*)	FT, ST	Primarily associated with scrub and chaparral, but may also occur in grasslands, especially those with rock outcrops.	**Absent.** No suitable habitat for the Alameda whipsnake occurs on the project site. The site is isolated from higher-quality habitat and areas of potential occurrence by intensive urban development. Determined to be absent.

Name	*Status	Habitat	Potential for Occurrence on the Project Site
Bald eagle (*Haliaeetus leucocephalus*)	SE, SP	Occurs mainly along seacoasts, rivers, and lakes; nests in tall trees or in cliffs, occasionally on electrical towers. Feeds mostly on fish.	**Absent.** No suitable nesting or foraging habitat for bald eagles is present on the project site. A pair has nested for several years near Curtner Elementary School 2.6 miles north/northwest of the project site (Cornell Lab of Ornithology 2023), and individuals may fly over the site on occasion, but they are not expected to use the site itself due to the absence of suitable foraging habitat. Determined to be absent.
California Species of Special Concern			
Southern coastal roach (*Hesperoleucus venustus subditus*)	CSSC	Generally found in small streams, they are well adapted to intermittent watercourses (e.g., tolerant of high temperatures and low oxygen levels).	**Likely Absent.** The reach of Penitencia East Channel on the project site supports intermittent flow, and a drop in elevation downstream from the project site separates this reach from a perennial reach downstream. Although the southern coastal roach likely occurs in the perennial reach, there is a low probability that it occurs in the project reach (it might occur only during very high flows that allow passage upstream to the project site, but such flows may involve flow rates too fast for these small fish to move upstream).
Sacramento hitch (*Lavinia exilicauda exilicauda*)	CSSC	Occurs in warm, lowland, waters including clear streams, turbid sloughs, lakes, and reservoirs. Has a high tolerance for varying stream conditions and water temperature.	**Likely Absent.** The reach of Penitencia East Channel on the project site supports intermittent flow, and a drop in elevation downstream from the project site separates this reach from a perennial reach downstream. Although the southern coastal roach likely occurs in the perennial reach, there is a low probability that it occurs in the project reach (it might occur only during very high flows that allow passage upstream to the project site, but such flows may involve flow rates too fast for these small fish to move upstream).

Name	*Status	Habitat	Potential for Occurrence on the Project Site
Burrowing owl (*Athene cunicularia*)	CSSC	Nests and roosts in open grasslands and ruderal habitats with suitable burrows, usually those made by California ground squirrels.	**Absent.** No burrows of California ground squirrels to provide nesting and roosting habitat for this species were observed on the site or in surrounding areas during the July 9, 2021 survey. The site does not provide suitable foraging habitat given the limited nature of vegetation and the expected paucity of prey. The nearest area where this species currently breeds is on San Jose-Santa Clara Regional Wastewater Facility buffer lands approximately 3.6 miles northwest of the project site (Talon Ecological Research Group 2023), but due to the absence of suitable habitat, this species is not expected to nest, roost, or forage on the project site. Determined to be absent.
San Francisco common yellowthroat (*Geothlypis trichas sinuosa*)	CSSC	Occupies wooded riparian areas, and nests in herbaceous vegetation, usually in wetlands or moist floodplains.	**Absent as Breeder.** No San Francisco common yellowthroats were observed during our July 9, 2021 site visit, and we do not expect this species to nest in or immediately adjacent to the project footprint. The scattered patches of emergent marsh vegetation are too small and too fragmented, and relatively isolated from other patches of larger, contiguous patches of salt marsh habitat where this species is known to occur in the South Bay. However, there is some potential for the species to nest in the perennial reach of the creek well downstream from the project site, and small numbers of dispersing individuals of this species could occasionally forage in the vegetation in and on the banks of the creek on the project site.
Yellow warbler (*Setophaga petechia*)	CSSC (nesting)	Nests in riparian woodlands.	**Absent as Breeder.** No suitable riparian habitat is present on or adjacent to the project site to provide suitable nesting habitat for this species. Nonbreeding individuals will forage in trees and other vegetation on and adjacent to the site during migration.
Western red bat (*Lasiurus blossevillii*)	CSSC	Roosts in foliage in forest or woodlands, especially in or near riparian habitat.	**Absent.** No suitable habitat is present in or adjacent to the project site. Determined to be absent.

Name	*Status	Habitat	Potential for Occurrence on the Project Site
Pallid bat (*Antrozous pallidus*)	CSSC	Forages over many habitats; roosts in caves, rock outcrops, buildings, and hollow trees.	**Absent.** No bats or signs of bat presence, nor any suitable roost sites, were detected in trees or buildings on or adjacent to the project site during the July 9, 2021 survey. Determined to be absent.
Townsend's big-eared bat (*Corynorhinus townsendii*)	CSSC	Roosts in caves and mine tunnels, and occasionally in deep crevices in trees such as redwoods or in abandoned buildings, in a variety of habitats.	**Absent.** No suitable cavernous roosting habitat is present on or adjacent to the project site. Determined to be absent.
San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*)	CSSC	Nests in a variety of habitats including riparian areas, oak woodlands, and scrub.	**Absent.** No nests of this species were detected on or adjacent to the site during the July 9, 2021 survey, and no suitable habitat is present. Determined to be absent.
American badger (*Taxidea taxus*)	CSSC	Burrows in grasslands and occasionally in infrequently disked agricultural areas.	**Absent.** No suitable habitat is present on the project site, and the site is isolated from suitable habitat by intensive urban development. Determined to be absent.
State Fully Protected Species			
Golden eagle (*Aquila chrysaetos*)	SP	Breeds on cliffs or in large trees (rarely on electrical towers); forages in open areas.	**Absent.** No suitable nesting habitat for golden eagles is present within the study area. The species is not known or expected to forage on the site due to a lack of suitable habitat and the highly urbanized surrounding context. Determined to be absent.
White-tailed kite (*Elanus leucurus*)	SP	Nests in tall shrubs and trees; forages in grasslands, marshes, and ruderal habitats.	**Absent.** Suitable nesting and foraging habitat is not present on the project site. The species is not known or expected to forage on the site due to the highly urbanized surrounding context. Determined to be absent.

Key to Abbreviations:

Status: Federally Proposed (FP); Federally Threatened (FT); Federal Candidate (FC); State Endangered (SE); State Threatened (ST); State Fully Protected (SP); State Candidate (SC); California Species of Special Concern (CSSC).

federally and state threatened, do not occur in the study area or on the valley floor. The foothill yellow-legged frog occurs in upper-watershed areas, along cobbly streams, and is absent from the Santa Clara Valley floor. Populations of the California tiger salamander located on the valley floor have been extirpated due to habitat loss, and the species is now considered absent from the majority of the valley floor, including the study area and the surrounding vicinity (H. T. Harvey & Associates 1999, 2011; Valley Water 2011). Populations of the red-legged frog located on the valley floor have been extirpated due to habitat loss and the introduction of non-native predators such as non-native fishes and bullfrogs. Like the tiger salamander, the red-legged frog is now considered absent from the majority of the valley floor, including the project study area and the surrounding vicinity (H. T. Harvey & Associates 1997; Valley Water 2011).

Other special-status species known from the region, but absent from the project site due to a lack of suitable habitat, restricted range, and/or isolation of the site from populations by urbanization, include the Crotch's bumble bee (*Bombus crotchii*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), western red bat (*Lasiurus blossevillii*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), American badger (*Taxidea taxus*), golden eagle (*Aquila chrysaetos*), and white-tailed kite (*Elanus leucurus*).

A pair of bald eagles (*Haliaeetus leucocephalus*) breeds near Curtner Elementary School 2.6 miles north/northwest of the project site, and burrowing owl (*Athene cunicularia*) breed as close as 3.5 miles to the northwest on San Jose-Santa Clara Regional Wastewater Facility buffer lands. However due to the absence of suitable habitat, neither species would use the site or nearby areas for nesting, roosting, or foraging.

Four special-status species, the monarch butterfly, northwestern pond turtle (*Actinemys marmorata*), San Francisco common yellowthroat (*Geothlypis trichas sinuosa*), and yellow warbler (*Setophaga petechia*), have some potential to occur in the project footprint as nonbreeders. The monarch butterfly is expected to occur in the project area as an occasional migrant, but because its larval host plant is absent from the site, the species would not breed in the project area. High-quality northwestern pond turtle habitat, consisting of ponds or instream pools, is absent from the project site, and the intermittent nature of the stream within the project footprint limits the availability of open-water foraging and dispersal habitat for this species. Moreover, essentially all of the nearby areas have been converted to commercial or residential development, limiting the availability of nesting habitat and further reducing the likelihood that a turtle would be found in the study area. The San Francisco common yellowthroat is not expected to nest on the site owing to the sparse nature of vegetation (especially wetland vegetation) along the stream channel. Both the northwestern pond turtle and San Francisco common yellowthroat are more likely to occur in the perennial reach of the creek downstream from the project site, and it is possible that individuals of this species could disperse onto the project site on rare occasions. However, they would occur on the site infrequently and in low numbers, if at all. The yellow warbler would not breed or near the project site due to the absence of suitable riparian habitat, but occasional migrants could forage in trees or other vegetation on or adjacent to the site.

5.3 Sensitive Natural Communities, Vegetation Alliances, and Habitats

Natural communities have been considered part of the Natural Heritage Conservation triad, along with plants and animals of conservation significance, since the state inception of the Natural Heritage Program in 1979. CDFW determines the level of rarity and imperilment of vegetation types, and tracks sensitive communities in its Rarefind database (CNDDB 2023). Global rankings (G) of natural communities reflect the overall condition (rarity and endangerment) of a habitat throughout its range, whereas state (S) rankings are a reflection of the condition of a habitat within California. Natural communities are defined using NatureServe's standard heritage program methodology as follows (Faber-Langendoen et al. 2012):

G1/S1: Critically imperiled.

G2/S2: Imperiled.

G3/S3: Vulnerable.

G4/S4: Apparently secure.

G5/S4: Secure.

In addition to tracking sensitive natural communities, CDFW also ranks vegetation alliances, defined by repeating patterns of plants across a landscape that reflect climate, soil, water, disturbance, and other environmental factors (CDFW 2023). If an alliance is marked G1-G3, all of the vegetation associations within it will also be of high priority. CDFW provides the Vegetation Classification and Mapping Program's (VegCAMP) currently accepted list of vegetation alliances and associations (CDFW 2023).

Impacts on CDFW sensitive natural communities, vegetation alliances/associations, or any such community identified in local or regional plans, policies, and regulations, must be considered and evaluated under CEQA (Title 14, Division 6, Chapter 3, Appendix G of the California Code of Regulations). Furthermore, aquatic, wetland and riparian habitats are also protected under applicable federal, state, or local regulations, and are generally subject to regulation, protection, or consideration by the USACE, RWQCB, CDFW, and/or the USFWS.

5.3.1 Sensitive Natural Communities

A query of sensitive habitats in Rarefind (CNDDB 2023) identified two sensitive habitat types as occurring within the nine USGS quadrangles containing or surrounding study area: northern coastal salt marsh (Rank G3/S3) and sycamore alluvial woodland (Rank G1/S1.1). Northern coastal salt marsh, is characterized by Holland (1986) as occurring along sheltered inland margins of bays, often co-dominated by pickleweed (*Salicornia* spp.), California cordgrass (*Spartina foliosa*), and sometimes saltgrass (*Distichlis spicata*). None of these species and no salt marsh habitats were observed in the study area. Riparian habitats within the study area do

not meet the definition of sycamore alluvial woodland, which is dominated by western sycamore (*Platanus racemosa*), and occurs within braided, depositional channels of intermittent streams, usually with cobble or boulder substrate (Holland 1986).

5.3.2 Sensitive Vegetation Alliances

The intermittent stream/freshwater marsh in the study area is dominated by non-native species, such as water plantain, barnyard grass, tall cyperus, and tall willowherb. The riparian annual grassland is also dominated by non-native species such as wild oats, Italian thistle, and prickly lettuce. Neither habitat type closely align with any designated Alliances as described in the Vegetation Classification and Mapping Program (CDFW 2023). These are all non-native dominated habitats and do not compose a vegetation alliance that would be considered sensitive. Therefore, no sensitive vegetation alliances are present on the project site.

5.3.3 Sensitive Habitats (Waters of the U.S./State)

As described above under Section 3.1.1, Penitencia East Channel is considered waters of the U.S./state up to the OHWM lines. Jurisdictional riparian buffers for waters of the state in the study area would likely extend up to the top of bank lines of the channel.

5.3.4 CDFW Riparian Habitat

Due to its rarity and disproportionately high habitat values and functions to wildlife, CDFW considers even lower quality riparian habitat to be sensitive. As described above in Section 3.2.4, the CDFW would likely claim jurisdiction over areas at, and below, the top of bank lines on either side of Penitencia East Channel regardless of the vegetative composition of these areas. No riparian habitat (e.g., riparian trees) is present above the top of bank in the study area.

5.3.5 Nonnative and Invasive Species

Several nonnative, invasive plant species occur in the study area. Of these, the following have a rating of "limited" invasiveness (considered invasive but their ecological impacts are minor on a statewide level and their reproductive biology and other attributes result in low to moderate rates of invasiveness) according to the California Invasive Plant Council (Cal-IPC) (2023): bristly ox-tongue, wild radish, variable burclover, curly dock, date palm, rabbitfoot grass, and smilo grass. The following species have a "moderate" rating, indicating that they have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure, and that their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment would be generally dependent upon ecological disturbance: Italian thistle, wild oats, ripgut brome, Bermuda grass, and Italian rye grass. Species with a "high" invasive rating by the Cal-IPC have the potential to cause severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment, and most are widely distributed ecologically. Within the study area no species with a "high" rating were observed. Cal-IPC rating for each species is listed in Appendix A.

Section 6. Impacts and Mitigation Measures

The State CEQA Guidelines provide direction for evaluating the impacts of projects on biological resources and determining which impacts will be significant. CEQA defines a "significant effect on the environment" as "a substantial adverse change in the physical conditions which exist in the area affected by the proposed project." Under State CEQA Guidelines Section 15065, a project's impacts on biological resources are deemed significant if the project would:

A. "substantially reduce the habitat of a fish or wildlife species"

B. "cause a fish or wildlife population to drop below self-sustaining levels"

C. "threaten to eliminate a plant or animal community"

D. "reduce the number or restrict the range of a rare or endangered plant or animal"

In addition to the Section 15065 criteria that trigger mandatory findings of significance, Appendix G of State CEQA Guidelines provides a checklist of other potential impacts to consider when analyzing the significance of project effects. The impacts listed in Appendix G may or may not be significant, depending on the level of the impact. For biological resources, these impacts include whether the project would:

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 as defined by Section 404 of the Clean Water Act"

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"

Potential impacts on existing biological resources were evaluated by comparing the quantity and quality of habitats present on the project site under baseline conditions to the anticipated conditions after implementation of the proposed project. Direct and indirect impacts on special-status species and sensitive natural communities

were assessed based on the potential for the species, their habitat, or the natural community in question to be disturbed or enhanced following implementation of the proposed project.

6.1 Impacts on Special-Status Species: 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 CDFW or USFWS (Less than Significant)

6.1.1 Impacts on Developed/Landscaped Habitat and Associated Common Plant and Wildlife Species (Less than Significant)

The proposed project will permanently redevelop 0.74 acre of developed/landscaped habitat in the study area (Figure 4). Permanent impacts would occur as a result of the demolition of the building south of Penitencia East Channel and construction of the road extension of South Milpitas Boulevard, vehicular ramps connecting the Valley Water maintenance roads to the road extension, a vehicular bridge over Penitencia East Channel, and the Tarob Road Connection. Project construction will temporarily impact 0.34 acre of developed/landscaped habitat (Figure 4). The developed/landscaped habitat on the site is not sensitive or valuable from the perspective of providing important plant or wildlife habitat. Therefore, impacts on these habitats would not be considered significant under CEQA.

As discussed previously, the project site currently supports a number of common wildlife species, although due to its largely developed nature, the site provides relatively low-quality habitat for most species and thus supports relatively small numbers of individuals of any one species. The common wildlife species that occur on the site are regionally abundant, are present in widely available habitats in the region, and will continue to be present on the site following construction. Additionally, the project would impact only a small proportion of their regional populations, and the number of individuals likely to be displaced by habitat disturbance and loss would be quite small with respect to the amount of suitable habitat available in the area. Also, landscaping proposed by the project would provide resources useful to some common wildlife species. Thus, impacts on most common species and their habitats resulting from the implementation of the project would not meet the threshold of having a substantial adverse effect, and would not be considered significant under CEQA.

The plant species observed on the project site during the reconnaissance-level survey (Appendix A) are not regulated under state or federal laws and are not listed as rare by the CNPS. All native plant species found or with any potential to occur on the site were regionally abundant and common in California. Therefore, implementation of the project would not have a substantial adverse effect on common plant species and impacts on such species would not be considered significant under CEQA.

6.1.2 Impacts on Special-Status Plant Species (No Impact)

As described above, no special-status plant species are considered to have potential to occur on or adjacent to the study area. As a result, the proposed project will have no impact on special-status plant species.

6.1.3 Impacts on Water Quality, Native Fish, and Northwestern Pond Turtles (Less than Significant with Mitigation)

Construction of the new bridge will necessitate work within the bed and banks of the Penitencia East Channel. Falsework may need to be installed in the channel to facilitate construction of the bridge, and if water is present when construction needs to commence, diversion of flow in the channel and dewatering of the construction area would need to occur. No special-status fish, and possibly no native fish at all, occur in the reach of Penitencia East Channel where the project is located. Therefore, it is unlikely that flow diversion and dewatering would affect movement of fish along the channel or trap fish within the dewatering area. Similarly, northwestern pond turtles are not expected to breed or occur frequently on or near the project site. There is a very low potential for northwestern pond turtles to occur, and if the species occurs in the project area at all, it would occur as an irregular dispersant. Nevertheless, if water is present in the channel when work needs to occur, there is at least a low potential for northwestern pond turtles or native fish (e.g., if high winter flows allowed fish to move upstream) to be present in the work area. Dewatering could result in the loss of native fish to desiccation or turtles due to movement of vehicles and equipment.

In addition, the project could result in indirect impacts on water quality in reaches of Penitencia East Channel further downstream, where fish and northwestern pond turtles are more likely to occur. Indirect impacts on water quality from construction of the project would be avoided and minimized by implementing erosion and sediment control measures, as well as BMPs for work near aquatic environments.

Construction projects in California causing land disturbances that are equal to 1 acre or greater must comply with state requirements to control the discharge of stormwater pollutants under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit; Water Board Order No. 2009-0009-DWQ, as amended). Prior to the start of construction/demolition, a Notice of Intent must be filed with the State Water Board describing the project. A Storm Water Pollution Prevention Plan must be developed and maintained during the project and it must include the use of BMPs to protect water quality until the site is stabilized. Standard permit conditions under the Construction General Permit require that the applicant utilize various measures including: on-site sediment control BMPs, damp street sweeping, temporary cover of disturbed land surfaces to control erosion during construction, and utilization of stabilized construction entrances and/or wash racks, among other factors.

In many Bay Area counties, including Santa Clara County, projects must also comply with the California Regional Water Quality Control Board, San Francisco Bay Region, Municipal Regional Stormwater National Pollutant Discharge Elimination System Permit (Water Board Order No. R2-2015-0049). This permit requires that all projects implement BMPs and incorporate Low Impact Development practices into the design to prevent stormwater runoff pollution, promote infiltration, and hold/slow down the volume of water coming from a site after construction has been completed. In order to meet these permit and policy requirements, projects must incorporate the use of green roofs, impervious surfaces, tree planters, grassy swales, bioretention and/or detention basins, among other factors.

In the absence of avoidance and minimization measures, project activities could similarly result in impacts on special-status fish and northwestern pond turtles in the Penitencia East Channel or other waters downstream from the project site due to a temporary increase in erosion, sedimentation, and turbidity in aquatic habitats located downstream of the work area. Additionally, minor spills of petrochemicals, hydraulic fluids, and solvents may occur during vehicle and equipment refueling. Such leaks/spills could adversely affect water quality downstream of construction activities. However, compliance with permit conditions to protect water quality, as described above, will minimize the potential for impacts to water quality due to increases in erosion, sedimentation, and turbidity as well as releases of pollutants into the creek water. These measures will also minimize the release or pollutants to waters in the Penitencia East Channel, thereby protecting water quality in the river. Therefore, project activities are not expected to result in substantial adverse indirect effects on water in the Penitencia East Channel.

Implementation of Mitigation Measures BIO-1, BIO-2, and BIO-3 will reduce impacts on native fish and northwestern pond turtles to less than significant levels by ensuring that individual native fish and northwestern pond turtles are not trapped or otherwise impacted by the project.

Mitigation Measure BIO-1. Worker Environmental Awareness Program. All construction personnel working on the bridge will participate in a worker environmental awareness program. These personnel will be informed about the potential presence of native fish and northwestern pond turtles within and downstream from the project site. Prior to construction activities, a qualified biologist will instruct all construction personnel about (1) the description and status of these species; (2) the importance of their associated habitats; (3) a list of measures being taken to reduce impacts on these species during project construction; and (4) procedures to be followed if a northwestern pond turtle is observed by construction personnel in or near the project area during construction. If construction personnel observe any turtle in an area where it is at risk of injury or mortality due to the project, or where construction activity could prevent the turtle from returning to perennial habitat downstream from the project site, they will contact a qualified biologist immediately. All project activities that could impact the turtle will stop until the biologist has arrived at the site and determined whether the turtle is a northwestern pond turtle and (with any necessary USFWS approval) relocated the turtle to an appropriate location downstream.

Mitigation Measure BIO-2. Preconstruction Survey and Fish Exclusion Prior to Dewatering Activities. Prior to conducting dewatering activities, a qualified biologist will conduct a survey of the project area to look for fish and northwestern pond turtles. If any northwestern pond turtles are detected in areas where they are at risk of injury or mortality due to the project, or where construction activity could prevent the turtles from returning to perennial habitat downstream from the project site, the biologist will relocate the turtles to suitable habitat in the perennial reach of Penitencia East Channel downstream. If northwestern pond turtle has been listed by the USFWS under FESA by the time construction occurs, the biologist will handle/relocate individual turtles only with USFWS approval.

During the preconstruction survey, the biologist will determine whether there is any potential for native fish to be present in the project area based on presence/absence and depth of water. If any fish are or have the

potential to be present in the on-site segment of creek channel, and if continuous flow is present from the project site downstream to the perennial reach of creek, the biologist will use block nets to exclude fish from the reach to be dewatered. A block net will be placed at the upper end of the reach to be dewatered. Subsequently, qualified biologists will walk from the upper to lower end of the reach with a seine stretched across the channel to encourage fish to move out of the construction area. When the lower end of the construction area is reached, a second block net will be installed to isolate the construction reach. This procedure will be repeated as needed until no fish remain in the construction area. If surface water is not continuous between the project site and the perennial reach downstream, so that fish excluded from the site are unable to reach suitable habitat downstream, then the qualified biologist will capture native fish using appropriate methods and immediately release them in the perennial reach of the channel downstream.

Mitigation Measure BIO-3. Maintenance of Flow through the Site. In the unlikely event that fish are present within the channel when construction occurs, continuous flow will be maintained through the project site (e.g., in a temporary pipe) so that any fish upstream from the site are able to disperse downstream.

6.1.4 Impacts on Wildlife due to Increased Lighting (Less than Significant with Mitigation)

Many animals are sensitive to light cues, which influence their physiology and shape their behaviors, particularly during the breeding season (Ringer 1972, de Molenaar et al. 2006). Artificial light has been used as a means of manipulating breeding behavior and productivity in captive birds for decades (de Molenaar et al. 2006), and has been shown to influence the territorial singing behavior of wild birds (Longcore and Rich 2004, Miller 2006, de Molenaar et al. 2006). While it is difficult to extrapolate results of experiments on captive birds to wild populations, it is known that photoperiod (the relative amount of light and dark in a 24-hour period) is an essential cue triggering physiological processes as diverse as growth, metabolism, development, breeding behavior, and molting (de Molenaar et al. 2006). This holds true for birds, mammals (Beier 2006), and other taxa as well, suggesting that increases in ambient light may interfere with these processes across a wide range of species, resulting in impacts on wildlife populations.

Artificial lighting may indirectly impact mammals and birds by increasing the nocturnal activity of predators like owls, hawks, and mammalian predators (Negro et al. 2000, Longcore and Rich 2004, DeCandido and Allen 2006, Beier 2006). The presence of artificial light may also influence habitat use by rodents (Beier 2006) and by breeding birds (Rogers et al. 2006, de Molenaar et al. 2006), by causing avoidance of well-lit areas, resulting in a net loss of habitat availability and quality.

Artificial lighting may also indirectly affect fish. For example, an increase in illuminance at night can alter the nighttime activities of predators and prey, such as disturbing the seasonal and diel light cycles of freshwater invertebrates that fish feed on in riverine systems, by disrupting their nocturnal drift periods, which is timed with lower predation risk periods (Flecker 1992, Miyasaka and Nakano 2001, Hernandez and Peckarsky 2014). This can reduce the nocturnal drift activity by freshwater invertebrates and potentially reduce the availability of prey for foraging fish species in the river. In addition, an increase in nighttime illuminance can disrupt the temporal and spatial movement patterns of young (fry) fish that typically disperse and migrate at night to

decrease their risk of predation (Scheuerell and Schindler 2003, Stich et al. 2015, Zapata et al 2019). Numerous studies have shown that an increase in nighttime illuminance on bodies of water can inhibit foraging activity, increase predation risk on fish, as well as significantly change the composition of fish communities that occur across a day-night period (Riley et al. 2013, Zapata et al. 2014).

Although the literature has shown how an increase in artificial lighting may indirectly affect birds, mammals, fish, and nesting sea turtles, little is known about potential effects of artificial lighting on many species of amphibians and reptiles, including freshwater turtles (Perry et al. 2008). Northwestern pond turtles most likely exhibit physiological and behavioral responses in the presence of novel artificial light sources. However, few studies have revealed any conclusive data on what the impacts may be from artificial lighting in urban environments on adjacent habitats where freshwater turtles may occur (Perry et al 2008). To our knowledge, no specific studies have been conducted that have attempted to elucidate pond turtle responses to an increase in artificial lighting conditions in their natural aquatic habitats. Northwestern pond turtles are primarily active during the day, spending the majority of their time basking on haul-out structures, such as patches of floating vegetation and logs near the edges or in the middle of their aquatic habitats, where they can quickly escape if threatened (Jennings and Hayes 1994). Some crepuscular and nocturnal movements have been observed by the species, but pond turtles typically take refuge at the bottom of aquatic habitats, burying themselves in muddy bottoms or dense vegetation during the night, and thus, in our opinion, would not be significantly affected by an increase in artificial light conditions.

The project will construct lighting on a bridge that will increase the amount of light within and around the project site. Based on the project's lighting plans, this lighting could potentially spill into the adjacent Penitencia East Channel, thereby resulting in an increase in lighting compared to existing conditions. If the lighting is excessive, or pointed upwards, nocturnal migrant birds may also be adversely affected.

The species inhabiting the sensitive habitats along the Penitencia East Channel are already habituated to the existing artificial illuminance from a variety of urban and natural light sources that are found on the site and nearby. As mentioned previously, fish are unlikely to be present in the segment of channel that includes the project site due to the intermittent nature of stream flow. If fish are present at all, they would be present only briefly during high flows, when fish from downstream areas could swim upstream and temporarily occur in the project vicinity. Similarly, northwestern pond turtles are expected to occur in the project area only as rare dispersants, if they occur at all. The bridge is far enough from areas providing more regular flow downstream that lighting from the project is not expected to adversely affect animals in perennial segments downstream.

Nevertheless, due to the ecological importance of wetland and stream habitats, substantial increases in illuminance of the Penitencia East Channel and its associated aquatic and wetland habitats could result in a potentially significant impact under CEQA by disrupting the natural behaviors of the species using these habitats. Although there is agreement throughout the literature that increases in illuminance can affect wildlife behavior, as described above, there is no quantitative level of illuminance increase (above ambient light) that is agreed upon as a threshold for significant impacts to animals. In our professional opinion, Mitigation Measures

BIO-4 and BIO-5 below, which focus on shielding and minimizing spillover of lighting into the Penitencia East Channel as part of the project, would reduce this impact to a less-than-significant level under CEQA.

Mitigation Measure BIO-4. Minimization and Shielding of Lighting. All lighting for vehicular and pedestrian safety shall be minimized to the extent feasible (i.e., shall be no brighter than necessary for safety purposes), shall be oriented toward the bridge rather than outwards toward the Penitencia East Channel, and shall be fully shielded to block illumination from shining upward or outward toward the creek channel.

Mitigation Measure BIO-5. Review of the Lighting Plan. If lighting is incorporated into the bridge railings (e.g., as a component of proposed artwork), the lighting plan shall be reviewed by a qualified biologist to ensure that the directionality and magnitude of lighting would not be so great as to result in adverse effects on wildlife from the perspective of disturbing wildlife in adjacent areas or attracting/disorienting nocturnal migrant birds. The biologist will make this determination by evaluating whether bright lighting is oriented upward or outward toward the creek channel (which should be avoided), and by working with the project's designers and lighting specialists to ensure that the bridge does not appear as a "beacon", being substantially brighter than ambient lighting in surrounding areas.

6.1.5 Impacts on the San Francisco Common Yellowthroat and Yellow Warbler (Less than Significant)

The San Francisco common yellowthroat and yellow warbler potentially occur on the project site as nonbreeding migrants, transients, or foragers, but they are not known or expected to breed or occur in large numbers on or near the project site. At most, a few individuals of each of these species could occasionally forage on the project site. Proposed project activities would not result in the injury or mortality of individuals of any of these species, as they are mobile enough to avoid construction equipment. Because these species do not breed on the site, project activities will not affect breeding habitat or vulnerable young of these species. Therefore, the project is not expected to result in the injury or mortality of individuals of these species. At most, the project may result in the disturbance of a few foraging individuals and loss of a relatively limited extent of foraging habitat.

6.1.6 Impacts on Nesting Birds (Less than Significant)

Construction disturbance during the bird nesting season (February 1 through August 31, for most species) could result in the incidental loss of eggs or nestlings, either directly through the destruction or disturbance of active nests or indirectly by causing the abandonment of nests. Due to the absence of native or sensitive habitats from the project site, the habitat on the site supports only regionally common, urban-adapted breeding birds, and the numbers that occur on the site (i.e., one to several pairs of each species) represent only a very small proportion of these species' regional populations. In addition, many of these birds are expected to continue to nest and forage on the project site following project construction. Therefore, project impacts on nesting and foraging birds that occur on the site would not rise to the CEQA standard of having a substantial adverse effect, and these impacts are not considered a significant impact under CEQA. However, all native migratory birds,

including raptors, are protected under the California Fish and Game Code[1]. Recommended measures to comply with these laws are provided under Section 7 *Compliance with Additional Laws and Regulations*, below.

6.2 Impacts on Sensitive Communities: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS (Less than Significant with Mitigation)

The CDFW defines sensitive natural communities and vegetation alliances using NatureServe's standard heritage program methodology (CDFW 2023), as described above in Section 5.3. Aquatic, wetland, and riparian habitats are also protected under applicable federal, state, or local regulations, and are generally subject to regulation, protection, or consideration by the USACE, RWQCB, CDFW, and/or the USFWS (see Section 6.3 below). Project impacts on sensitive natural communities, vegetation alliances/associations, or any such community identified in local or regional plans, policies, and regulations, were considered and evaluated.

Riparian annual grassland occurs on the banks of Penitencia East Channel. The majority of ground-disturbing project impacts (i.e., project construction) will occur outside the top of banks of Penitencia East Channel, and because the abutments will be placed above top of bank, no permanent loss of riparian jurisdiction (from abutment encroachment) will occur. No riprap or other improvements are proposed to the banks that would prevent future vegetation growth. However, some permanent and temporary impacts to the riparian banks will occur, in the form of shading from the proposed bridge and temporary work within the bed and banks of the channel during bridge construction. The bridge will permanently shade 0.02 acre of riparian annual grassland (Figure 4). Permanently shaded vegetation will weaken, decrease in cover, or even die off leaving bare soil exposed. However, non-native-dominated annual grassland such as this is typically able to persist under some shading. The new bridge will be 8 ft above the banks, allowing for some light to reach the grassy areas under the deck and enough herbaceous growth to stabilize soils and provide similar habitat quality to the existing condition in most if not all of the newly shaded area.

The temporary work area within the channel, where foot traffic by workers may be needed, consists of a 40-foot buffer upstream and downstream of the proposed bridge, temporarily impacting up to 0.03 acre of riparian annual grassland (Figure 4). Within this temporary impact area, dewatering and diversion of flow would be necessary if water is present when construction occurs, and falsework may be placed within the bed and banks of the channel to facilitate bridge construction. Temporary construction disturbance to the vegetated riparian banks and the channel bed could lead to temporal loss of the soil stabilization functions that the riparian grassland provides, causing erosion and sedimentation, which would be significant if not prevented. Denuded

[1] Per a December 22, 2017 memorandum issued by the U.S. Department of the Interior, the MBTA's prohibition on taking migratory birds and their active nests applies only to direct, purposeful actions, and does not include take incidental to other activities, presumably including tree removal. Nevertheless, all native birds and their nests, eggs, or young are protected by the California Fish and Game Code.

banks may also be susceptible to increased or new infestations of weeds from lack of competition or introduction of new weed propagules on equipment used in this habitat.

Work in and near riparian corridors has the potential for indirect impacts as well, for example, spills of equipment fuels or oil that could enter the channel and cause degradation and contamination of the riparian habitat. However, as the project will comply with the Construction General Permit and will have a Stormwater Pollution Prevention Plan, best management practices will be employed to prevent such spills from entering the riparian corridor.

Although the quality of riparian habitat on the project site is very low, riparian habitat provides important functions with respect to protecting water quality and providing habitat for animals. Therefore, project impacts on riparian habitat are significant, in the absence of mitigation measures. Implementation of Mitigation Measures BIO-6 through BIO-9 will reduce impacts to less-than-significant levels.

Mitigation Measure BIO-6. Work Period. Construction work within the stream banks will be confined to the period of June 15 to October 15 (or as otherwise allowed by resource agency permits). Riparian restoration work using hand tools is not confined to this time period but shall be completed within the wet season the same year following completion of the project.

Mitigation Measure BIO-7. Work Area Delineation. The permittee shall clearly show all riparian habitat on project plansets and place flagging around the work limits within the stream, riparian, and wetland areas to prevent inadvertent impacts to areas not proposed to be disturbed by the project. Flagging shall be removed and appropriately disposed of within 5 calendar days of the completion of construction work. Access paths and staging areas shall be adequately temporarily fenced or flagged to prevent damage to adjacent stream, riparian or wetland habitat.

Mitigation Measure BIO-8. Prevention of Spread of Invasive Plant Species. To prevent the spread of invasive weed infestations from source populations found on the project site to sensitive habitats at other work locations, or causing the spread of new infestations within the riparian corridor at this site,

- All ground disturbing equipment used within the riparian corridor will be washed (including tracks, and undercarriages) at a legally operating equipment yard before being brought to the site and, after construction is completed, before being used at another site providing natural habitat.
- All applicable construction materials used on site, such as straw wattles, mulch, and fill material, will be certified weed free.
- Invasive plant species with a "high" ecosystem impact rating by the California Invasive Plant Council (Cal-IPC; http://www.cal-ipc.org/paf/) will be actively monitored and controlled in the first 3 years following completion of construction and revegetation of temporary impact areas. The percent cover of "high" invasive plant species will be maintained at less than ten percent of the total plant cover in areas disturbed by project work. During the monitoring site visits described in Mitigation Measure BIO-6, the qualified

ecologist will assess the type, distribution, and abundance of invasive plant species and recommend effective control measures. Invasive plants will be removed from the project site on an as-needed basis.

Mitigation Measure BIO-9. Revegetation of Temporary Impact Areas. Temporary impact areas within the bed and banks of the channel shall be restored to preconstruction conditions or better. Restoration shall include restoring the topography of temporary impact areas to preconstruction conditions to the extent feasible, bank stabilization, and reestablishment of appropriate vegetation. A habitat-appropriate, weed-free native seed mix or propagated plants shall be applied or installed. Species such as California buckwheat (*Eriogonum fasciculatum*), California fuschia (*Epilobium canum*), coyote brush (*Baccharis pilularis*), purple needlegrass (*Stipa pulchra*), and seaside heliotrope (*Heliotropium curassavicum*) would be appropriate. The project proponent shall not plant, seed, or otherwise introduce invasive exotic plant species. Revegetation shall be completed as soon as possible after grading at the project site is completed. Seeding placed between October 15 and April 15 shall be covered with broadcast straw, jute netting, coconut fiber blanket, or similar erosion control blanket. Erosion control products with monofilament or woven plastic strands shall not be used. The revegetation will be considered successful if the vegetative cover in the temporary impact areas reaches 75% of the existing baseline cover, excluding species rated as "high" by Cal-IPC.

A qualified ecologist will monitor conditions in the temporary riparian and stream/marsh impact areas for a minimum of 3 years, or until the success criteria for vegetation cover are attained, whichever is later. Prior to commencement of construction, the ecologist will establish at least four permanent photographic documentation stations (i.e., one station near each corner of the bridge) to provide representative views of vegetation cover. The locations of the photographic documentation stations will be recorded using a GPS, and the direction of the photographs documented with a compass. The ecologist will prepare site maps with the photo-documentation points clearly marked for the project site. Prior to commencement of construction, the ecologist will photographically document the pre-project condition of the project site from each documentation station and estimate the vegetation cover at each station. Following implementation of the project, including any seeding or plant installation, a qualified ecologist will visit the site at least once in late spring to photographically document the postconstruction condition of the project site and estimate vegetation cover. The ecologist will report the results of these inspections (including the assessment of overall vegetation cover described in this measure and the assessment of invasive plants described in Mitigation Measure BIO-5) in a brief memo following each year's site visit. Monitoring and maintenance may be extended if the success criteria are not attained by year 3. Remedial measures to be considered include, but are not limited to, supplemental planting or seeding, increased maintenance frequency, increased invasive plant removal activities, or alteration of maintenance strategies.

6.3 Impacts on Wetlands: 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 (Less than Significant with Mitigation)

Wetlands and other waters of the U.S./state are present within Penitencia East Channel in the form of intermittent stream/freshwater marsh. Jurisdictional wetlands in the channel bottom are supported by intermittent flows and presumably a high groundwater table and are dominated by non-native vegetation. Some permanent (shading) and temporary impacts to the channel are proposed, in the form of the bridge and a temporary work area around the bridge. The bridge has been designed so that no loss of wetland or aquatic area will be permanently lost due to abutments or other structures.

The bridge will permanently shade 0.01 acre of intermittent stream/freshwater marsh (Figure 4). This habitat is naturally dynamic, seasonally altering its species composition, cover, and locations every year. The upstream watershed continuously disperses plant propagules into the study area, influencing the species composition dynamics year to year. The watershed will also convey storm flows differently year to year, depending on the amount of hardscape or soil saturation levels. Lastly, seemingly arbitrary locations will contain new plant propagules to take root and storm flows to scour out established vegetation. The shading will occur in a gradient under the bridge with the sunniest area closest to the bridge edges and the shadiest area along the centerline of the bridge. These unpredictable factors will all contribute to a shift in species composition, cover, and location due to bridge shading. Nevertheless, the altered habitat is anticipated to still function as an intermittent stream/freshwater marsh, as the soils and hydrologic regime will not change to a significant level.

The temporary work area within the channel, where dewatering, creek diversion, and installation of falsework may occur as described in Section 6.2, consists of a 40-foot buffer upstream and downstream of the proposed bridge, temporarily impacting up to 0.02 acre of intermittent stream/freshwater marsh (Figure 4). Temporary construction disturbance to the wetland habitat could lead to temporal loss of the soil stabilization functions that the wetland vegetation provides, causing erosion and sedimentation, which would be significant if not prevented. Denuded habitat may also be susceptible to increased or new infestations of weeds from lack of competition or introduction of new weed propagules on equipment used in this habitat.

Work in and near wetlands has the potential for indirect impacts as well, for example, spills of equipment fuels or oil that could enter the channel and cause degradation and contamination of the wetland habitat. However, as the project will comply with the Construction General Permit and will have a Stormwater Pollution Prevention Plan, best management practices will be employed to prevent such spills from entering the riparian corridor.

Although the quality of wetland and creek habitat on the project site is relatively low, this habitat provides important functions with respect to protecting water quality in downstream waters, and these features provide at least some habitat for animals. Therefore, project impacts on wetlands and aquatic habitat are significant, in the absence of mitigation measures. Implementation of Mitigation Measures BIO-6 through BIO-9 will reduce impacts on wetlands and aquatic habitats to less-than-significant levels.

6.4 Impacts on Wildlife Movement: 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 (Less than Significant)

For many species, the landscape is a mosaic of suitable and unsuitable habitat types. Environmental corridors are segments of land that provide a link between these different habitats while also providing cover. Development that fragments natural habitats (i.e., breaks them into smaller, disjunct pieces) can have a twofold impact on wildlife: first, as habitat patches become smaller they are unable to support as many individuals (patch size); and second, the area between habitat patches may be unsuitable for wildlife species to traverse (connectivity).

The project site is almost entirely developed, and is situated within a dense matrix of urban development. The Penitencia East Channel does not provide an important movement pathway for aquatic or terrestrial wildlife species, as the channel dead-ends at the rail line just 0.2 miles upstream from the site. Any animals attempting to move along the stream in an upstream direction would encounter this dead-end, rather than being able to move through the project area to reach higher-quality habitat upstream. Similarly, there are no source populations of aquatic or terrestrial animals upstream that would be moving downstream through the project area. As a result, the proposed development of the project site would not result in the fragmentation of natural habitats, and any common, urban-adapted wildlife species that currently move through the project site would continue to be able to do so following project construction.

Although the project may require dewatering of the on-site portion of Penitencia East Channel, construction would occur during the dry season when little to no water would be present in the creek, and when the creek would not be important for the movement of aquatic species (e.g., fish) upstream and downstream.

Thus, the project would not interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors in the site vicinity.

6.5 Impacts due to Conflicts with Local Policies: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (Less than Significant with Mitigation)

6.5.1 Impacts Due to the Removal of Ordinance-Sized Trees (Less than Significant)

The proposed project will remove approximately 20 trees within what could be classified as vacant, undeveloped, or underdeveloped property, including a number of protected trees. All trees are ornamental and non-native including shamel ash and eucalyptus trees, with diameters ranging from three inches to 37 inches or more. The removal or pruning of ordinance-sized trees conflicts with Section 2-7.01 of the City of Milpitas Municipal Code. However, the project proponent will obtain a tree removal permit through the City's planning and building department and comply with the City's tree replacement guidelines and policies for any trees that need to be removed.

The project will comply with the City's tree preservation ordinance, including obtaining a tree removal permit, and it will comply with conditions of the project's tree removal permit. Such compliance will reduce any potential impacts due to conflicts with the City's tree preservation ordinance to less than significant levels under CEQA.

6.6 Impact due to Conflicts with an Adopted Habitat Conservation Plan: Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan (Less than Significant)

The project site is not located within an area covered by an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, the project would not conflict with any such plans.

6.7 Cumulative Impacts

Cumulative impacts arise due to the linking of impacts from past, current, and reasonably foreseeable future projects in the region. Future development activities in the City will result in impacts on the same habitat types and species that will be affected by the proposed project. The proposed project, in combination with other projects in the area and other activities that impact the species that are affected by this project, could contribute to cumulative effects on special-status species. Other projects in the area include office/retail/commercial development, mixed use, and residential projects that could adversely affect these species.

The cumulative impact on biological resources resulting from the project in combination with other projects in the larger region would be dependent on the relative magnitude of adverse effects of these projects on biological resources compared to the relative benefit of impact avoidance and minimization efforts prescribed by planning documents, CEQA mitigation measures, and permit requirements for each project; and compensatory mitigation and proactive conservation measures associated with each project. In the absence of such avoidance, minimization, compensatory mitigation, and conservation measures, cumulatively significant impacts on biological resources would occur.

However, many projects in the region that impact resources similar to those impacted by the project will be subject to CEQA requirements. It is expected that such projects will mitigate their impacts on sensitive habitats and special-status species through the incorporation of mitigation measures and compliance with permit conditions.

Regardless of the magnitude and significance of cumulative impacts that result from other projects, the South Milpitas Boulevard Bridge project is not expected to have a substantial effect on biological resources, and would implement the mitigation measure described above to reduce impacts under CEQA to less than significant levels. Thus, provided that this project successfully incorporates the mitigation measure described in this

biological resources report, the project will not have a cumulatively considerable contribution to cumulative effects on biological resources.

Section 7. Compliance with Additional Laws and Regulations for Nesting Birds

Several species of common native birds protected by the MBTA and California Fish and Game Code may nest in trees and shrubs on the site or immediately adjacent to the site. It is also possible that protected native birds could nest on the building on the site. The removal of vegetation or demolition of a building supporting active nests may cause the direct loss of eggs or young, while construction-related activities located near an active nest may cause adults to abandon their eggs or young. This type of impact would not be significant under CEQA, in our opinion, because of the local and regional abundances of the species that could potentially nest on the site and the very low magnitude of the potential impact of development on these species (i.e., the project is expected to impact only a few pairs of these species, which is not a substantial impact on their regional populations). However, the following measures should be implemented to ensure that project activities do not violate the MBTA and California Fish and Game Code:

Measure 1. Avoidance of the Nesting Season. To the extent feasible, commencement of demolition and construction activities should be scheduled to avoid the nesting season. If demolition and construction activities are scheduled to take place outside the nesting season, all potential demolition/construction impacts on nesting birds protected under the MBTA and California Fish and Game Code will be avoided. The nesting season for most birds in Santa Clara County extends from February 1 through August 31.

Measure 2. Pre-Activity/Pre-Disturbance Surveys. If it is not possible to schedule demolition and construction activities between September 1 and January 31, then pre-activity surveys for nesting birds should be conducted by a qualified ornithologist to ensure that no nests will be disturbed during project implementation. We recommend that these surveys be conducted no more than seven days prior to the initiation of demolition or construction activities. During this survey, the ornithologist will inspect all trees and other potential nesting habitats (e.g., trees, shrubs, and buildings) in and immediately adjacent to the impact areas for nests.

Measure 3. Non-Disturbance Buffers. If an active nest is found sufficiently close to work areas to be disturbed by these activities, the ornithologist will determine the extent of a construction-free buffer zone to be established around the nest (typically 300 feet for raptors and 100 feet for other species), to ensure that no nests of species protected by the MBTA and California Fish and Game Code will be disturbed during project implementation.

Measure 4. Inhibition of Nesting. If construction activities will not be initiated until after the start of the nesting season, all potential nesting substrates (e.g., bushes, trees, grasses, and other vegetation) that are scheduled to be removed by the project may be removed prior to the start of the nesting season (e.g., prior to February 1). This will preclude the initiation of nests in this vegetation, and minimize the potential delay of the project due to the presence of active nests in these substrates.

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Appendix A. Plants Observed

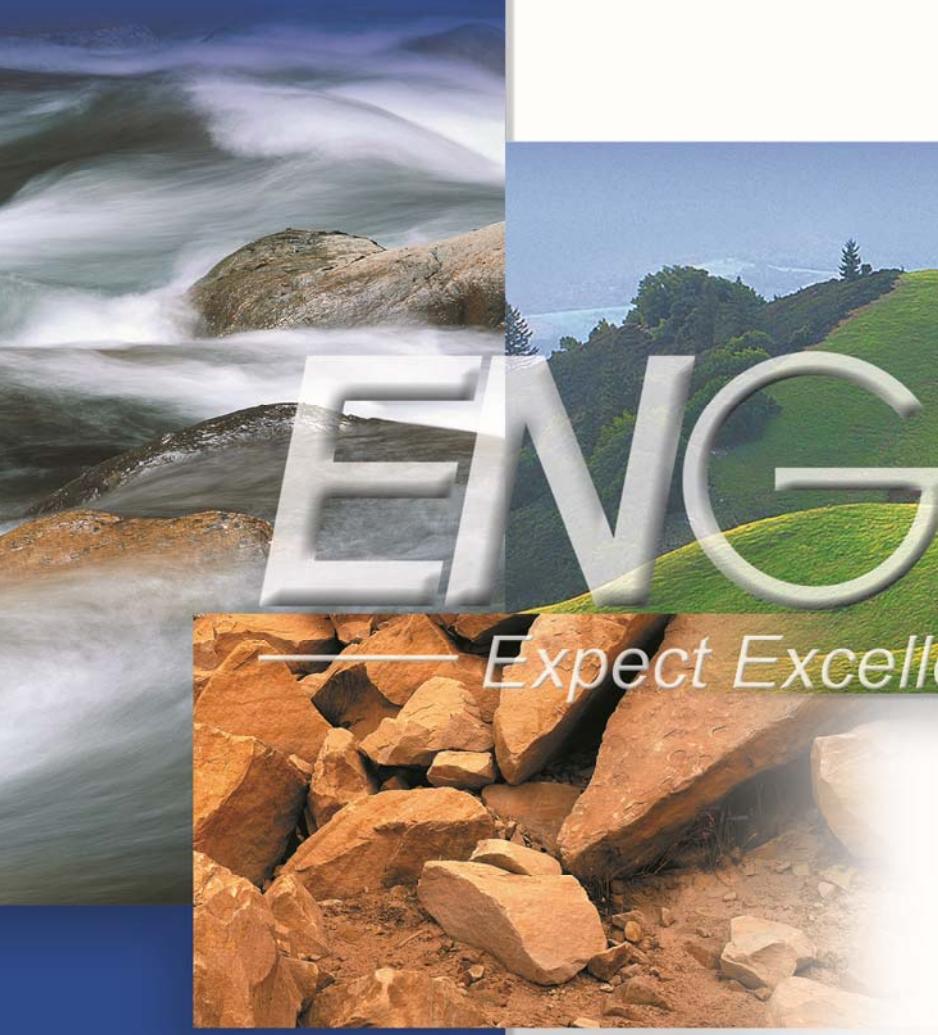
Scientific Name	Common Name	Wetland Rank	Cal-IPC Rank
EUDICOTS			
ASTERACEAE – SUNFLOWER FAMILY			
Carduus pycnocephalus ssp. *pycnocephalus**	Italian thistle		Moderate
*Helminthotheca echioides**	bristly ox-tongue	FAC	Limited
*Lactuca serriola**	prickly lettuce	FACU	
*Tragopogon sp.**	goat's beard		
BRASSICACEAE – MUSTARD FAMILY			
*Raphanus sativus**	radish		Limited
CONVOLVULACEAE – MORNING–GLORY FAMILY			
*Convolvulus arvensis**	bindweed		
EUPHORBIACEAE – SPURGE FAMILY			
Euphorbia polycarpa	smallseed sandmat		
FABACEAE – LEGUME FAMILY			
*Medicago polymorpha**	variable burclover	FACU	Limited
*Melilotus albus**	white sweetclover		
*Vicia sativa**	garden vetch	FACU	
LYTHRACEAE – LOOSESTRIFE FAMILY			
Lythrum sp.	loosestrife	OBL	
MALVACEAE – MALLOW FAMILY			
*Malva parviflora**	cheeseweed		
OLEACEAE – OLIVE FAMILY			
*Fraxinus uhdei**	shamel ash		
ONAGRACEAE – EVENING PRIMROSE FAMILY			
Epilobium brachycarpum	short-fruited willowherb		
PLANTAGINACEAE – PLANTAIN FAMILY			
*Kickxia elatine**	sharp-leaved kickxia		
Veronica sp.	speedwell		
POLYGONACEAE – BUCKWHEAT FAMILY			
*Persicaria maculosa**	lady's thumb	FACW	
Polygonum aviculare ssp. *aviculare**	oval leaf knotweed	FAC	
*Rumex crispus**	curly dock	FAC	Limited
SALICACEAE – WILLOW FAMILY			

Populus fremontii ssp. *fremontii*	Fremont cottonwood	FAC	
MONOCOTS			
ALISMATACEAE – WATER–PLANTAIN FAMILY			
*Alisma lanceolatum**	lance-like water-plantain	OBL	
ARECACEAE – PALM FAMILY			
*Phoenix canariensis**	Canary Island palm		Limited
CYPERACEAE – SEDGE FAMILY			
Cyperus eragrostis	lovegrass flatsedge	FACW	
POACEAE – GRASS FAMILY			
*Avena fatua**	wild oat		Moderate
*Bromus diandrus**	ripgut grass		Moderate
*Cynodon dactylon**	Bermuda grass	FACU	Moderate
*Echinochloa crus-galli**	cock's spur barnyard grass	FACW	
*Festuca perennis**	rye grass	FAC	Moderate
*Polypogon monspeliensis**	annual beard grass	FACW	Limited
*Polypogon viridis**	water beard grass	FACW	
Stipa miliacea var. *miliacea**	smilo grass		Limited
TYPHACEAE – CATTAIL FAMILY			
Typha domingensis	southern cattail	OBL	

APPENDIX C
Bridge Design Geotechnical Report by ENGEO, dated 2017

FOUNDATION EXPLORATION

VEHICULAR BRIDGE
400 AND 450 MONTAGUE EXPRESSWAY
MILPITAS, CALIFORNIA



ENGEO

Expect Excellence

Submitted to:
Mr. Dave Geist
Lennar Homes
2603 Camino Ramon, Suite 525
San Ramon, California 94583

Prepared by:
ENGEO Incorporated

January 5, 2017

Project No:
12074.000.002

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Project No.
12074.000.002

January 5, 2017

Mr. Dave Geist
Lennar Homes
2603 Camino Ramon, Suite 252
San Ramon, CA 94583

Subject: Vehicular Bridge
400 and 450 Montague Expressway
Milpitas, California

FOUNDATION EXPLORATION

Dear Mr. Geist:

We prepared this bridge design geotechnical report for Lennar Homes. We characterized the subsurface conditions at the location of the proposed Vehicular Bridge planned at your 400 and 450 Montague Expressway project to provide the enclosed geotechnical recommendations for design.

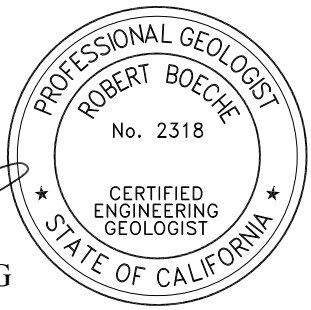
Our experience and that of our profession clearly indicate that the risk of costly design, construction, and maintenance problems can be significantly lowered by retaining the design geotechnical engineering firm to review the project plans and specifications and provide geotechnical observation and testing services during construction. Please let us know when working drawings are nearing completion, and we will be glad to discuss these additional services with you.

If you have any questions or comments regarding this report, please call and we will be glad to discuss them with you.

Sincerely,

ENGEO Incorporated

Jeanine T. Ruffoni, PE



Robert H. Boeche, CEG

Pedro J. Espinosa, GE
jtr/rhb/pe/bvv

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1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

We prepared this report to provide recommendations for foundation design of the proposed Vehicular Bridge at the 400 and 450 Montague Expressway project in Milpitas. For this report, we conducted a subsurface exploration, performed lab testing, and provided design details relevant to the proposed bridges.

We previously provided preliminary foundation recommendations in July 2016 (ENGEO, July 2016). We also previously provided geotechnical recommendations regarding development of the adjacent residential project in June 2015 (ENGEO, June 2015).

A separate report will be issued to address the planned Pedestrian Overcrossing once design plans are available.

For our use, we received the following:

- Carlson, Barbee, & Gibson (CBG), 730 E. Capitol Ultimate Improvements Plan, 450 Montague, Structural Engineering Group, dated June 18, 2015.
- Cornerstone Structural Engineering Group (CSEG), Memorandum: 450 Montague Vehicular and Pedestrian Bridges Required Preliminary Foundation Report (PFR) Items, dated July 13, 2015.
- CSEG, Foundation Design Data Sheet, Milpitas Blvd Extension Bridge Over Penitencia Creek, dated June 30, 2016.
- CSEG, General Plan, S. Milpitas Boulevard Bridge Over East Penitencia Creek, dated August 22, 2016 (Plan Check Submittal).

This report was prepared for the exclusive use of our client and their consultants for design of this project. In the event that any changes are made in the character, design or layout of the development, we must be contacted to review the conclusions and recommendations contained in this report to evaluate whether modifications are recommended. This document may not be reproduced in whole or in part by any means whatsoever, nor may it be quoted or excerpted without our express written consent.

1.2 PROJECT LOCATION

Based on review of the provided 730 E. Capitol Ultimate Improvements plan prepared by CBG with markups by CSEG, the planned Vehicular Bridge is generally located southeast of the intersection of Montague Expressway and East Capitol Avenue in Milpitas, California, as shown on Figures 1 and 2. More specifically, the planned bridge is shown to span East Penitencia Creek, connecting the future Milpitas Boulevard extension to the north with a future public park

to the south. The adjacent East Penitencia Creek banks are generally up to 10 feet high and have slope gradients of 2:1 (horizontal:vertical) or flatter.

1.3 PROJECT DESCRIPTION

Based on a memorandum prepared by CSEG and dated July 13, 2015, the planned Vehicular Bridge will consist of a 40-foot-long and 48-foot-wide, clear-span cast-in-place reinforced concrete slab supported on cast-in-drilled-hole (CIDH) piers. It is also our understanding that the abutments will be diaphragm abutments.

2.0 FINDINGS

2.1 GEOLOGY AND SEISMICITY

2.1.1 Geology

Regional geologic maps locate the site in the broad, north-south trending, alluvial-filled Santa Clara Valley. Wentworth, et al. (1999, Figure 3) has mapped the soils underlying the bridge locations as younger Holocene-age alluvial fan deposits (Qhf1).

2.1.2 Seismicity

Because of the presence of nearby active faults[1], the Bay Area Region is considered seismically active. Numerous small earthquakes occur every year in the region, and large (>M7) earthquakes have been recorded and can be expected to occur in the future. The site is not located within a State of California Earthquake Fault Zone. Figure 5 shows the approximate location of known active and potentially active faults and significant historic earthquakes mapped within the San Francisco Bay Region.

The nearest known active faults [1] considered in the development of the ARS curve in accordance with the 2013 Caltrans SDC procedure (further discussed in Section 3.1.2.) are as follows: the Silver Creek Fault is mapped approximately 1.9 miles southwest of the site; the Hayward Fault (southeast extension) is mapped about 2.4 miles northeast of the site; and the Hayward Fault (main trace) is mapped about 5.5 miles north of the site.

2.2 FIELD EXPLORATION

We observed drilling of two borings (1-B3 and 1-B4) at the locations shown on the Site Plan, Figure 2. We note that Borings 1-B1 and 1-B2 were performed at the general abutment locations for the planned Pedestrian Overcrossing and are not included in this report.

[1] Caltrans considers an active fault as one that has had surface displacement within Holocene or latest Pleistocene time (last 15,000 years)

Table 2.2-1 summarizes the exploration location, elevation, and depth.

TABLE 2.2-1
Summary of Exploration Locations

Exploration Location	Total Depth (feet)	Top Elevation (NGVD 29) (feet)	Bottom Elevation (NGVD 29) (feet)
1-B3	57½	43	-14½
1-B4	61½	42	-19½

Considering the type of planned foundation (24-inch CIDH), the depth of exploration was targeted for approximately 60 feet below ground surface. Furthermore, based on our experience in the general site area in similarly mapped geologic deposits, we anticipate that deposits generally become stiffer with increasing depth.

An ENGEO representative observed the drilling and logged the subsurface conditions at each location. We retained a truck-mounted drill rig and crew to advance the borings using 6-inch-diameter mud rotary methods. The borings were advanced to depths ranging from 57½ to 61½ feet below existing grade. We permitted and backfilled the borings in accordance with the requirements of the Santa Clara Valley Water District.

We collected disturbed and relatively undisturbed soil samples using a 2½-inch-inside-diameter (I.D.) California-type split-spoon sampler fitted with 6-inch-long stainless steel liners and a 2-inch-outside-diameter (O.D.) Standard Penetration Test (SPT) split-spoon sampler. In addition, 3-inch O.D. Shelby tube samplers were utilized.

The standard blow counts were obtained by dropping a 140-pound hammer through a 30-inch free fall. The sampler was driven 18 inches and the number of blows was recorded for each 6 inches of penetration. Unless otherwise indicated, the blows per foot recorded on the boring log represent the accumulated number of blows to drive the last 1 foot of penetration; the blow counts have not been converted using any correction factors.

We used the field logs to develop the report logs in Appendix A. The logs depict subsurface conditions at the exploration locations for the date of exploration; however, subsurface conditions may vary with time.

2.3 SURFACE CONDITIONS

The borings were located along the Santa Clara Valley Water District maintenance trail and site grades ranged from approximately Elevation 42 to 43 feet (NGVD 29). The surface conditions generally consisted of minor shrubs and seasonal vegetation.

2.4 SUBSURFACE CONDITIONS

Based on the conditions encountered in the exploratory borings, the subsurface conditions generally consist of stiff to very stiff lean clay and fat clay deposits encountered to the maximum explored depth of approximately 61½ feet below existing ground surface (bgs). Undocumented fill consisting of gravelly lean clay was encountered in 1-B3 to approximately 2 feet bgs. Also, a localized zone of medium stiff fat clay was encountered at approximately 41 feet bgs.

2.5 GROUNDWATER CONDITIONS

Prior to switching to mud rotary drilling, groundwater was generally encountered during solid-flight auger drilling activities at approximately 11 feet bgs, corresponding to Elevation 32 feet (NGVD 29). Similarly, a historic high groundwater level between 5 and 10 feet below existing grade was reported for the site vicinity (CGS, Milpitas Quadrangle, 2001).

Fluctuations in the level of groundwater may occur due to variations in rainfall, tidal fluctuations, irrigation practice, and other factors not evident at the time measurements were made.

2.6 LABORATORY TESTING

The lab tests performed in this study include moisture content, dry density, plasticity index, gradation, and shear strength on selected samples. The laboratory test results are included on the borelog in Appendix A. Individual test results are presented in Appendix B. We also submitted select samples for analytical corrosion testing including pH, redox, resistivity, sulfate and chloride content as further discussed in Section 3.2.

3.0 DISCUSSION AND CONCLUSIONS

Based on our explorations, laboratory test results and analysis, we conclude that the proposed bridge is feasible from a geotechnical and geologic standpoint, provided that the recommendations included in this report, along with other sound engineering practices, are incorporated in the design and construction of the project.

The site was evaluated with respect to known geological and geotechnical hazards common to the San Francisco Bay Region, as discussed in the below sections.

3.1 SEISMIC HAZARDS

Potential seismic hazards resulting from a nearby moderate to major earthquake can generally be classified as primary and secondary. The primary effect is ground rupture, also called surface faulting. The common secondary seismic hazards include ground shaking and ground lurching. The following sections present a discussion of these hazards as they apply to the site.

3.1.1 Ground Rupture

Since there are no known active faults crossing the project area and the project area is not located within an Earthquake Fault Special Study Zone, it is our opinion that ground rupture is unlikely at the subject property.

3.1.2 Ground Shaking and Seismic Design Criteria

As discussed previously, the project site is located in a seismically active region. An earthquake of moderate to high magnitude generated within the San Francisco Bay Region could cause significant ground shaking at the project site. The degree of shaking is dependent on the magnitude of the event, the distance to its zone of rupture and local geologic conditions. The seismic design criteria are discussed below.

Based on the geology of the area and our study for the greater Montague Expressway project, we anticipate the subsurface conditions to be relatively uniform at the bridge location. For design, we estimated the average shear wave velocities for the top 100 feet (30 meters) (V_s30) of soil to be approximately 300 meters/second.

To develop ARS curves in accordance with the 2013 Caltrans SDC procedures, we performed site-specific seismic hazard analyses. The 2013 Caltrans SDC requires comparing and enveloping the ARS curves calculated from the following:

- Deterministic Criteria based on late-Quaternary faults in the 2012 fault database published by California Geology Survey.
- Probabilistic Criteria based on a 5% in 50 years probability of exceedance ground motion (975-year return period).
- Minimum Spectrum based on a $M_w = 6.5$ strike-slip event occurring at a distance of 12 km from site.

The deterministic criteria are controlled by an event on the Silver Creek fault (approximately 1.9 miles from the project area), which is a reverse fault capable of generating a Maximum Credible Earthquake with a maximum moment magnitude, M_{max}, of 6.9. The probabilistic criteria are based on source data from the 2008 United States Geological Survey (USGS) National Seismic Hazard Map.

The resulting ARS curve developed in accordance with the 2013 Caltrans SDC, include near-fault directivity effects and is contained in Figure 6.

3.1.3 Liquefaction

Soil liquefaction results from loss of strength during cyclic loading, such as imposed by earthquakes. Soils most susceptible to liquefaction are clean, loose, saturated, uniformly graded,

fine-grained sands. Empirical evidence indicates that loose to medium dense gravels, silty sands, low-plasticity silts, and some low-plasticity clays are also potentially liquefiable.

Review of the Seismic Hazard Zones Map for the Milpitas Quadrangle (2004, Figure 4) indicates that the project area is located within a mapped liquefaction zone.

Considering the borings generally encountered moderately- to highly-expansive stiff to very stiff cohesive materials, we consider the risk of liquefaction to be low.

3.1.4 Lateral Spreading

Lateral spreading is a failure within a nearly horizontal soil zone, which causes the overlying soil mass to move down a gentle slope or toward a free face such as a creek or open body of water. The existing slope banks of the adjacent Penitencia Creek may act as a free face for lateral spreading should subsurface soils liquefy during a seismic event. However, as discussed in above sections, we consider the risk of liquefaction to be low. Therefore, it is our opinion that the risk of lateral spreading at the proposed bridge locations is low.

3.2 SOIL CORROSIVITY

We submitted three select soil samples to CERCO Analytical Inc. for determination of pH, resistivity, sulfate, and chloride. The results are summarized in the table below and the complete results of these tests are presented in Appendix C.

TABLE 3.2-1
Soil Corrosivity Test Results

Sample Number	Sulfate (mg/kg)	Chloride Ion (mg/kg)	Resistivity (Ohm-cm)	pH
1-B3 @ 5 feet bgs	71	< 15	860	8.28
1-B4 @ 30 feet bgs	33	< 15	3,700	8.57

According to Caltrans Corrosion Guidelines Version 2.0 (2012), site soils are considered corrosive if chloride concentration is 500 ppm or above, sulfate concentration is 2,000 ppm or above, or pH is 5.5 or less. Based on these criteria, site soils are not considered corrosive to structural elements.

In accordance with AASHTO LRFD Bridge Design Specifications, 6th Edition, with Amendments by Caltrans dated January 2014, a minimum concrete compressive strength of 3,600 psi for reinforced concrete and a maximum water-cement ratio of 0.40 is required. Minimum concrete cover for various structural elements should be determined using Table 5.12.3-1 (AASHTO).

It should be noted; however, that the structural engineering design requirements for concrete may result in more stringent concrete specifications.

Note that ASTM Test Method D4327 was used in lieu of the ACI designated sulfate test methods as it provides better test results.

3.3 SCOUR

Scour is the engineering term for the erosion of the soil surrounding a bridge foundation and is the result of the erosive action of flowing water excavating and carrying away material from the streambed and banks around the piers and abutments of the bridge foundation system.

We understand that a scour evaluation will be performed for the proposed Vehicular Bridge, which is to cross Penitencia Creek. For the purposes of this report, we have assumed that negligible scour will occur at the bottom of the creek. If the future hydraulic study indicates that there is a potential for scour, the foundation recommendations contained herein should be modified as necessary.

4.0 RECOMMENDATIONS

Based on the results of the geotechnical exploration presented in this report, it is our opinion that the proposed bridge is feasible from a geotechnical standpoint provided the recommendations provided in the following sections are considered in the bridge design and construction.

4.1 FOUNDATION DESIGN

4.1.1 Foundation Type

We understand that the foundation system for the bridge will consist of a 24-inch CIDH pile system.

4.1.2 Foundation Data Provided by Structural Engineer

The below tables show the loading data provided by the project Structural Engineer, CSEG.

TABLE 4.1.2-1
Foundation Design Data

Support Location	Pile Type	Pile Cap Size (feet)		Nominal Resistance (kips)		Permissible Settlement (inches)	No. of Piles per Support
		B	L	Compression[1]	Tension		
Abut 1	24-inch CIDH	3	48	390[1]	N/A	2	6
Abut 2	24-inch CIDH	3	48	390[1]	N/A	2	6

Notes: 1. Nominal resistance includes resistance factor ($\phi = 0.7$)

TABLE 4.1.2-2
Foundation Design Loads

Support No.	Service-I Limit State (kips)			Strength Limit State (Controlling Group, kips)				Extreme Limit State (Controlling Group, kips)			
	Total Load		Permanent Loads	Compression[1]		Tension		Compression		Tension	
	Per Support	Per Pile	Per Support	Per Support	Max Per Pile	Per Support	Max Per Pile	Per Support	Max per Pile	Per Support	Max per Pile
Abut 1	960	190	750	1890	390	N/A	N/A	N/A	N/A	N/A	N/A
Abut 2	960	190	750	1890	390	N/A	N/A	N/A	N/A	N/A	N/A

Notes: 1. Nominal resistance includes resistance factor ($\phi = 0.7$)

4.1.3 Pile Vertical Capacity

We developed allowable vertical capacity versus depth for a 24-inch-diameter CIDH pile and assumed friction only piles. Our analysis is based on the beta method and is in accordance with the guidelines provided in the Federal Highway Administration (FHWA) Publication FHWA NHI-10-016 (Brown et al, 2010).

Based on the pile data design loads provided by CSEG, we determined the ultimate (geotechnical factor of safety equals one) compression vertical capacities for the CIDH piles as outlined in the table below.

TABLE 4.1.3-1
Pile Data Table

Location	CIDH Pile Diameter (inches)	Nominal Resistance (kips)	Design Tip Elevation (NGVD 29) (feet)
		Compression[1]	
Abutment 1	24	390	-18
Abutment 2	24	390	-19

Notes: 1. Nominal resistance includes resistance factor ($\phi = 0.7$)
2. The structural designer shall calculate the lateral lengths.

We checked the service limit loading against the tolerable settlement and settlement does not control design.

We do not anticipate any vertical pile group effect as long as the center-to-center spacing of each CIDH pile is at least three pile diameters. See Section 4.1.4 for further discussion on lateral pile group effects.

4.1.4 Lateral Resistance

Lateral load resistance for pile-supported structures is developed through pile bending/soil interaction. The magnitude of the lateral load resistance is dependent upon several factors, including axial load on the pile, pile stiffness, pile embedment length, conditions of fixity at the pile cap, the physical properties of surrounding soil and the magnitude of allowable lateral deflections.

Based upon the subsurface conditions encountered, we developed L-Pile soil input criteria for lateral pile capacity and load-deflection computation.

TABLE 4.1.4-1
Lateral Pile Analysis Parameters
(Based on 1-B3 and 1-B4 generalized subsurface conditions)

Elevation (NGVD 29) (Feet)	Generalized Soil Type	L-Pile Soil Type	Eff. Unit Weight (pci)	Friction Angle (deg.)	Undrained Cohesion, c (psi)	Strain Factor, E_{50}	Modulus of Soil Reaction, K (pci)
42 to 37	Clay	Soft CLAY (Matlock)	0.072	-	10.4	0.01	-
37 to 2	Clay	Soft CLAY (Matlock)	0.033	-	13.9	0.007	-
2 to -8	Clay	Soft CLAY (Matlock)	0.033	-	8.7	0.007	-
-8 to -18	Clay	Soft CLAY (Matlock)	0.033	-	17.4	0.007	-

4.1.5 Lateral Capacity Group Reduction

Research has shown that the lateral capacity of a group of piles is generally less than that of a single pile for pile spacing less than 6 to 8 pile diameters. We recommend the multipliers provided in Table 4.1.5-1 to be considered in the LPILE/GROUP analysis. These multipliers are based on AASHTO LRFD BDS where "D" is pile diameter.

TABLE 4.1.5-1
Preliminary Design P-Multiplier Values by Row Position

	Design P-Multiplier			
Pile Spacing (Center-to-Center)	3D	5D	7D	8D
Lead Row	0.75	1.0	1.0	1.0
Second Row	0.55	0.85	1.0	1.0
Third and Higher Rows	0.40	0.70	0.90	1.0

4.1.6 CIDH Pile Construction

The following guidelines should be used during construction of CIDHs.

1. For center-to-center pile spacing less than six times the pile diameter, no two adjacent piles can be constructed concurrently.

2. The bottoms of drilled holes should be reasonably clean and free of loose soil before reinforcing steel is installed and concrete is placed.

3. We recommend that the excavation of piers be performed under our direct observation to establish that the piers are founded in suitable materials and constructed in accordance with the recommendations presented in this report.

4. Concrete placement by pumping with rigid tremie pipe to the bottom of the drilled hole is recommended. Specifications should require that sufficient space be provided in the reinforcing cage during fabrication to allow the insertion of a tremie tube for concrete placement. The reinforcing cage should be installed and the concrete pumped immediately after drilling is completed.

5. If caving occurs, a temporary casing or wet construction method may be required during construction. Casings should have an outer diameter equal to or exceeding the pile diameter. Temporary casing should be placed tight-in-hole. Vibratory or impact hammer with or without center-relief drilling can be used to install the temporary casing provided the ground vibrations are monitored for potential movement; casing installation using this method should be suspended if excessive movement is detected. The temporary casing should be retrieved as the concrete is being poured, while always maintaining at least a 5-foot head of concrete inside the casing.

6. During the exploration, groundwater was encountered at approximately 11 feet bgs. Groundwater level can fluctuate due to seasonal rainfall amount, local irrigation, groundwater recharge program and other man-made conditions. If groundwater is encountered, it should be controlled in accordance with Section 19-3.03B(5) of the Caltrans Standard Specifications (2015).

Drilling operations and concrete placement should be coordinated so that drilled holes are left open a minimum amount of time. Depressions at the tops of the bridge abutment caissons, resulting from drilling operations or from any other cause, should be backfilled to prevent ponding. Concrete collars occurring at the tops of the bridge abutment caissons as a result of over pouring must be removed to prevent unnecessary uplift forces from being applied to the caissons.

At the time of concrete placement, the volume of concrete entering the drilled holes should be monitored to verify that additional loss of ground has not occurred between drilling operations and the pouring of concrete.

4.2 RETAINING WALLS

4.2.1 Abutment Walls

We understand the abutments of the proposed bridges will be constructed to retain engineered fill. Abutment walls should be designed to resist both lateral loads imposed by earth pressures and any additional lateral loads caused by surcharging from construction equipment and vehicles operating above the walls.

The following Table 4.2.1-1 provides soil design parameters for both existing onsite material as well as Caltrans structure backfill material.

TABLE 4.2.1-1
Soil Design Parameters for Abutment Walls

Soil Properties	Onsite Soil	Caltrans Structure Backfill
Density of Retained Engineered Fill	120 pcf	
Minimum Friction Angle	20 degrees	32 degrees
Active Pressure	50 pcf	36 pcf
At-rest Pressure	80 pcf	70 pcf
Passive Resistance	Section 7.8 of Caltrans SDC (2013)	
Seismic Active Increment Pressure*	34 pcf	

*The Seismic Active Increment shall be modeled with a triangular distribution

The above parameters assume a level backfill at the top of the wall. If lateral movement at the top of abutment walls is restrained, the at-rest pressure should be used for design.

4.2.2 Retaining Wall Drainage

Back drains should be installed behind abutment walls to relieve hydrostatic pressure. Back drains should be constructed with Bridge Detail 3-1 on Sheet BO-3 per Caltrans Standard Plans (2015) or the geocomposite drain alternative per Section 6 of the Caltrans Bridge Design Details (1992), whichever is more stringent. If back drains are not installed, lateral earth pressure values should be increased by 40 pcf to account for hydrostatic pressure.

4.3 PAVEMENT DESIGN AND EARTHWORK

Pavement design and earthwork should conform to the recommendations provided in our Geotechnical Exploration report prepared for the adjacent residential development (ENGEO, June 2015).

5.0 LIMITATIONS AND UNIFORMITY OF CONDITIONS

This report presents geotechnical recommendations for design of the improvements discussed in Section 1.3. If changes occur in the nature or design of the project, we should be allowed to

review this report and provide additional recommendations, if any. It is the responsibility of the owner to transmit the information and recommendations of this report to the appropriate organizations or people involved in design of the project, including but not limited to architects, engineers, and designers. The conclusions and recommendations contained in this report are solely professional opinions and are valid for a period of no more than 2 years from the date of report issuance.

We strived to perform our professional services in accordance with generally accepted geotechnical engineering principles and practices currently employed in the area; no warranty is expressed or implied. There are risks of earth movement and property damages inherent in building on or with earth materials. We are unable to eliminate all risks or provide insurance; therefore, we are unable to guarantee or warrant the results of our services.

This report is based upon field and other conditions discovered at the time of report preparation. We developed this report with limited subsurface exploration data. We assumed that our subsurface exploration data is representative of the actual subsurface conditions across the site. Considering possible underground variability of soil, rock, and groundwater, additional costs may be required to complete the project. We recommend that the owner establish a contingency fund to cover such costs. If unexpected conditions are encountered, notify us immediately to review these conditions and provide additional and/or modified recommendations, as necessary.

Our services did not include excavation sloping or shoring, soil volume change factors, or flood potential. In addition, our geotechnical exploration did not include work to determine the existence of possible hazardous materials. If any hazardous materials are encountered during construction, notify the proper regulatory officials immediately.

This document must not be subject to unauthorized reuse, that is, reusing without our written authorization. Such authorization is essential because it requires us to evaluate the document's applicability given new circumstances, not the least of which is passage of time.

Actual field or other conditions will necessitate clarifications, adjustments, modifications or other changes to our documents. Therefore, we must be engaged to prepare the necessary clarifications, adjustments, modifications or other changes before construction activities commence or further activity proceeds. If our scope of services does not include construction observation, or if other persons or entities are retained to provide such services, we cannot be held responsible for any or all claims arising from or resulting from the performance of such services by other persons or entities, and from any or all claims arising from or resulting from clarifications, adjustments, modifications, discrepancies or other changes necessary to reflect changed field or other conditions.

We determined the lines designating the interface between layers on the exploration logs using visual observations. The transition between the materials may be abrupt or gradual. The exploration logs contain information concerning samples recovered, indications of the presence of various materials such as clay, sand, silt, rock, existing fill, etc., and observations of groundwater encountered. The field logs also contain our interpretation of the subsurface

conditions between sample locations. Therefore, the logs contain both factual and interpretative information. Our recommendations are based on the contents of the final logs, which represent our interpretation of the field logs.

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FIGURES

Figure 1 – Vicinity Map
Figure 2 – Site Plan
Figure 3 – Regional Geologic Map
Figure 4 – Seismic Hazard Zone Map
Figure 5 – Regional Faulting and Seismicity Map
Figure 6 – Caltrans ARS Curve

FIGURES

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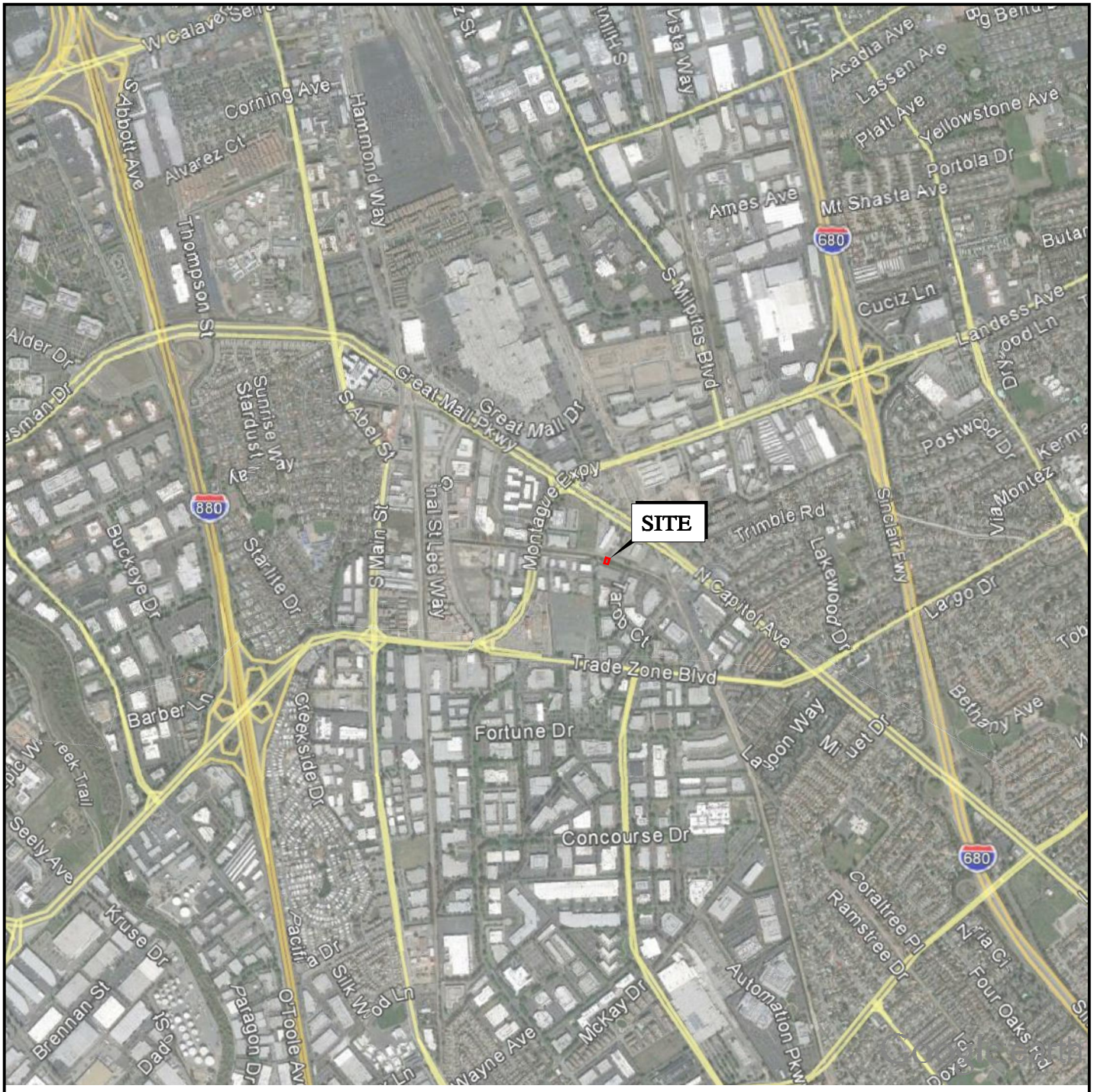

N

0 FEET 2000

0 METERS 1000

BASE MAP SOURCE: GOOGLE EARTH MAPPING SERVICE

ENGEO Expect Excellence

VICINITY MAP

400 AND 450 MONTAGUE EXPRESSWAY - VEHICULAR BRIDGE

MILPITAS, CALIFORNIA

PROJECT NO.: 12074.000.002		FIGURE NO. 1
SCALE: AS SHOWN		
DRAWN BY: PC	CHECKED BY: AF	

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ORIGINAL FIGURE PRINTED IN COLOR

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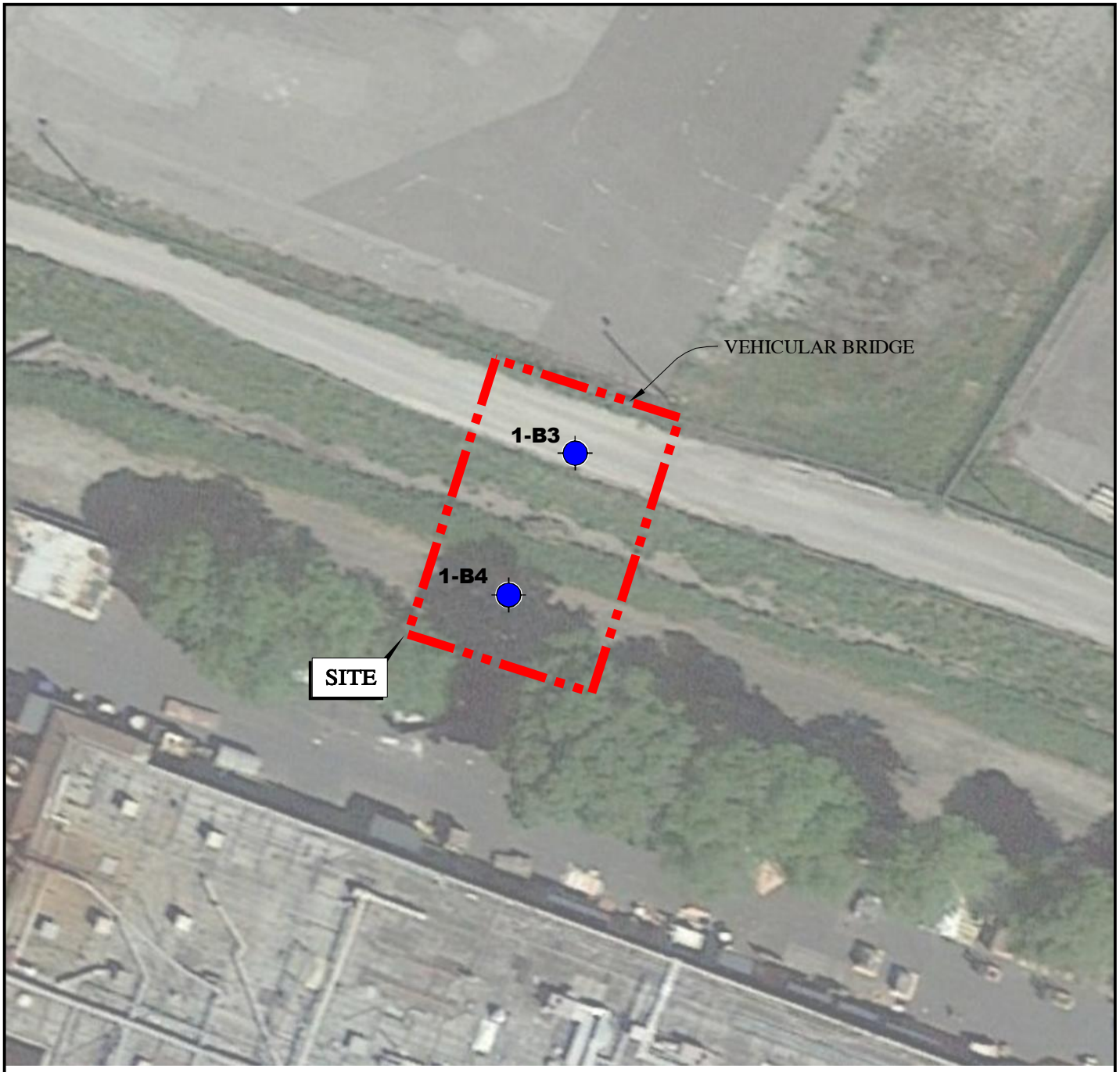

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EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

1-B4 BORING (ENGEO, 2016)

BASE MAP SOURCE: GOOGLE EARTH MAPPING SERVICE

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SITE PLAN

400 AND 450 MONTAGUE EXPRESSWAY - VEHICULAR BRIDGE

MILPITAS, CALIFORNIA

PROJECT NO.: 12074.000.002		FIGURE NO. 2
SCALE: AS SHOWN		
DRAWN BY: LL	CHECKED BY: AF	

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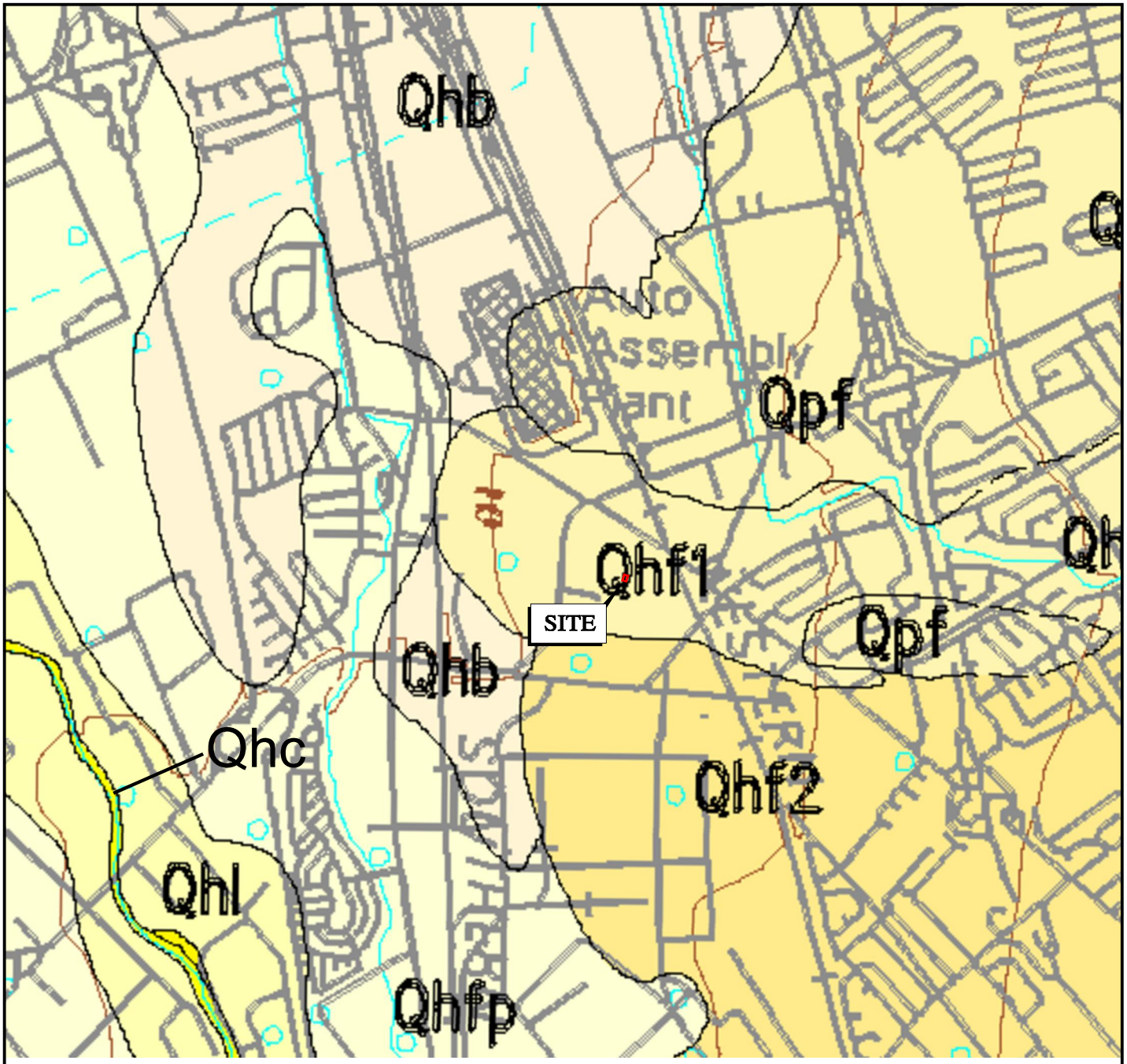

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EXPLANATION

——— – – – –	GEOLOGIC CONTACT-DASHED WHERE GRADATIONAL OR APPROXIMATELY LOCATED
Qhb	BASIN DEPOSITS
Qhfp	FLOOD PLAIN DEPOSITS
Qhl	LEVEE DEPOSITS
Qhc	STREAM CHANNEL DEPOSITS
Qhf1	ALLUVIAL FAN DEPOSITS (YOUNGER)
Qhf2	ALLUVIAL FAN DEPOSITS (OLDER)
Qpf	ALLUVIAL FAN DEPOSITS

BASE MAP SOURCE: WENTWORTH, 1999

ENGEO Expect Excellence

REGIONAL GEOLOGIC MAP

400 AND 450 MONTAGUE EXPRESSWAY - VEHICULAR BRIDGE

MILPITAS, CALIFORNIA

PROJECT NO.: 12074.000.002		FIGURE NO. 3
SCALE: AS SHOWN		
DRAWN BY: PC	CHECKED BY: AF	

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EXPLANATION

LIQUEFACTION

AREAS WHERE HISTORIC OCCURRENCE OF LIQUEFACTION, OR LOCAL GEOLOGICAL, GEOTECHNICAL AND GROUNDWATER CONDITIONS INDICATE A POTENTIAL FOR PERMANENT GROUND DISPLACEMENTS SUCH THAT MITIGATION AS DEFINED IN PUBLIC RESOURCES CODE SECTION 2693(c) WOULD BE REQUIRED

BASE MAP SOURCE: CALIFORNIA DEPARTMENT OF CONSERVATION, CALIFORNIA GEOLOGICAL SURVEY, 2006

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SEISMIC HAZARD ZONE MAP

400 AND 450 MONTAGUE EXPRESSWAY - VEHICULAR BRIDGE

MILPITAS, CALIFORNIA

PROJECT NO.:	12074.000.002
SCALE:	AS SHOWN
DRAWN BY:	PC
CHECKED BY:	AF

FIGURE NO. 4

G:\Drafting\DRAFTING2_Dwg_10000 to 12999\12074\000\GEX-0916\12074000002-GEX-4-SeismicHazMap-0916.dwg Plot Date: 9-28-16 llee

ORIGINAL FIGURE PRINTED IN COLOR

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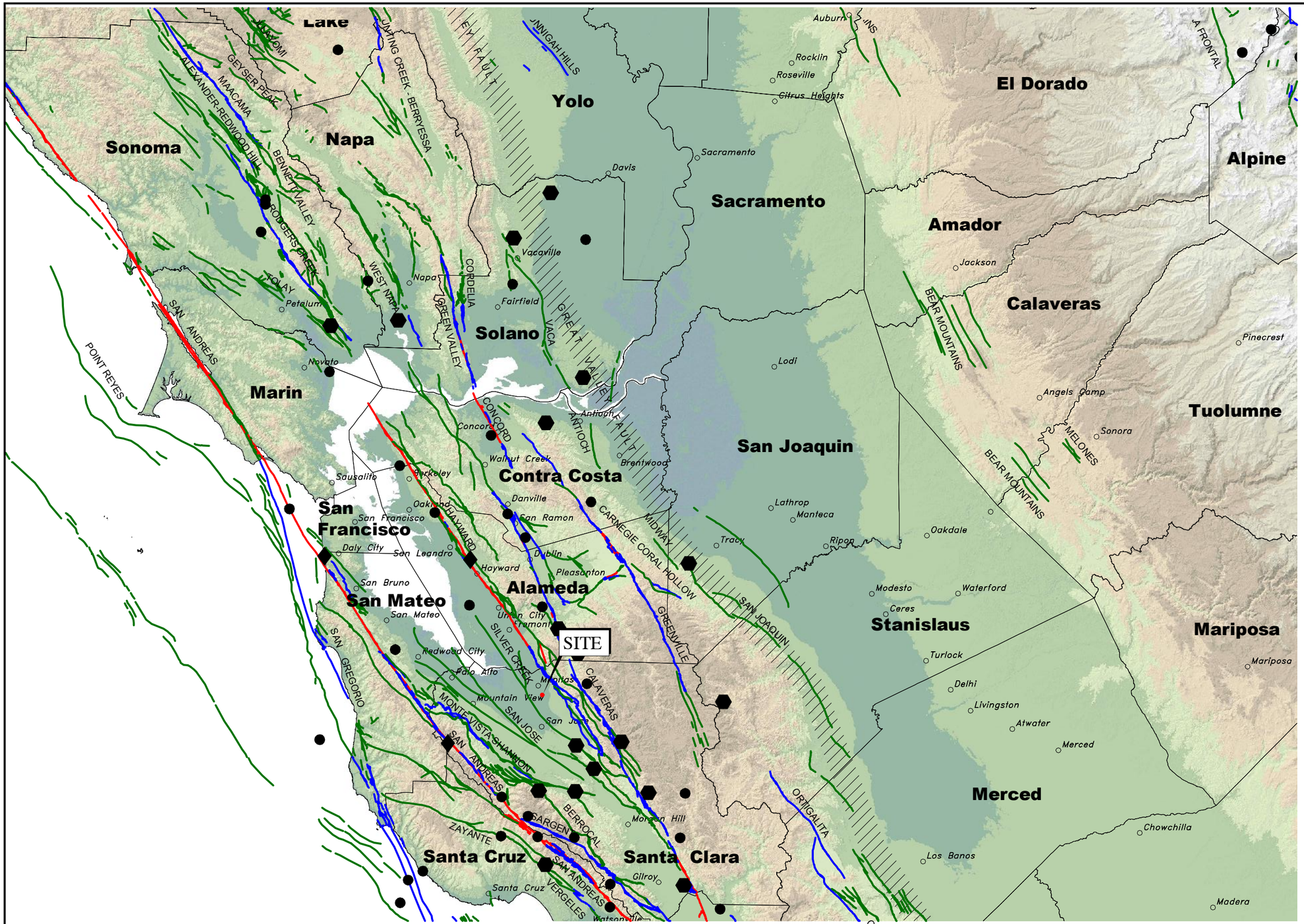

EXPLANATION

- MAGNITUDE 7+
- MAGNITUDE 6-7
- MAGNITUDE 5-6
- HISTORIC FAULT
- HOLOCENE FAULT
- QUATERNARY FAULT
- HISTORIC BLIND THRUST FAULT ZONE

BASE MAP SOURCE:
COLOR HILLSHADE IMAGE BASED ON THE NATIONAL ELEVATION DATASET (NED) AT 30 METER RESOLUTION
U.S.G.S. QUATERNARY FAULT DATABASE, NOVEMBER, 2010
U.S.G.S. HISTORIC EARTHQUAKE DATABASE (1800–2000)

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REGIONAL FAULTING AND SEISMICITY

400 AND 450 MONTAGUE EXPRESSWAY - VEHICULAR BRIDGE
MILPITAS, CALIFORNIA

PROJECT NO.: 12074.000.002		FIGURE NO 5
SCALE: AS SHOWN		
DRAWN BY: PC	CHECKED BY: AF	

ORIGINAL FIGURE PRINTED IN COLOR

G:\Drafting\DRAFTING2_Dwg_10000 to 12999\12074\000\GEX-0916\12074000002-GEX-5-RegFaultSeismicMap-0916.dwg Plot Date:9-28-16 llee

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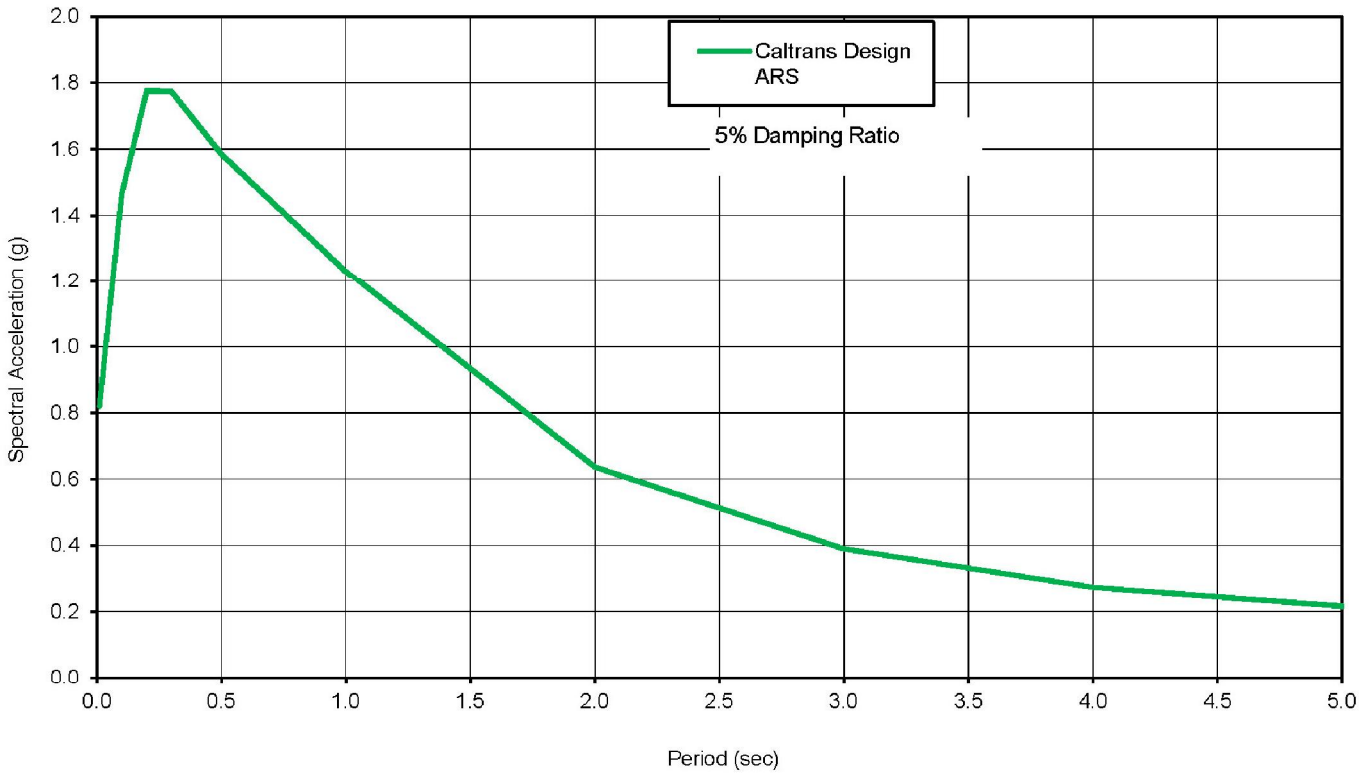

Peak Ground Acceleration (PGA)= 0.82 g
Shear Wave Velocity (Vs30) = 300 m/s

Spectral Coordinates

Period (s)	Acc. (g)
0.010	0.821
0.100	1.466
0.200	1.776
0.300	1.774
0.500	1.586
1.000	1.232
2.000	0.637
3.000	0.391
4.000	0.274
5.000	0.218

ENGEO Expect Excellence

ARS CURVE
400 AND 450 MONTAGUE EXPRESSWAY - VEHICULAR BRIDGE
MILPITAS, CALIFORNIA

PROJECT NO.: 12074.000.002
SCALE: NO SCALE
DRAWN BY: LL
CHECKED BY: AF

FIGURE NO. 6

G:\Drafting\DRAFTING2_Dwg_10000 to 12999\12074\000\GEX-0916\12074000002-GEX-6-ARSCURVES-0916.dwg Plot Date: 9-28-16 llee

ORIGINAL FIGURE PRINTED IN COLOR

APPENDIX A

Key to Boring Logs
Exploration Logs

APPENDIX A

KEY TO BORING LOGS

MAJOR TYPES			DESCRIPTION
COARSE-GRAINED SOILS MORE THAN HALF OF MAT'L LARGER THAN #200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LESS THAN 5% FINES	GW - Well graded gravels or gravel-sand mixtures GP - Poorly graded gravels or gravel-sand mixtures
		GRAVELS WITH OVER 12 % FINES	GM - Silty gravels, gravel-sand and silt mixtures GC - Clayey gravels, gravel-sand and clay mixtures
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 5% FINES	SW - Well graded sands, or gravelly sand mixtures SP - Poorly graded sands or gravelly sand mixtures
		SANDS WITH OVER 12 % FINES	SM - Silty sand, sand-silt mixtures SC - Clayey sand, sand-clay mixtures
FINE-GRAINED SOILS MORE THAN HALF OF MAT'L SMALLER THAN #200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50 % OR LESS		ML - Inorganic silt with low to medium plasticity CL - Inorganic clay with low to medium plasticity OL - Low plasticity organic silts and clays
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50 %		MH - Elastic silt with high plasticity CH - Fat clay with high plasticity OH - Highly plastic organic silts and clays
	HIGHLY ORGANIC SOILS		PT - Peat and other highly organic soils

For fine-grained soils with 15 to 29% retained on the #200 sieve, the words "with sand" or "with gravel" (whichever is predominant) are added to the group name.

For fine-grained soil with >30% retained on the #200 sieve, the words "sandy" or "gravelly" (whichever is predominant) are added to the group name.

GRAIN SIZES

U.S. STANDARD SERIES SIEVE SIZE				CLEAR SQUARE SIEVE OPENINGS			
200	40	10	4	3/4 "	3"	12"	
SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

RELATIVE DENSITY

SANDS AND GRAVELS	BLOWS/FOOT (S.P.T.)
VERY LOOSE	0-4
LOOSE	4-10
MEDIUM DENSE	10-30
DENSE	30-50
VERY DENSE	OVER 50

CONSISTENCY

SILTS AND CLAYS	STRENGTH*
VERY SOFT	0-1/4
SOFT	1/4-1/2
MEDIUM STIFF	1/2-1
STIFF	1-2
VERY STIFF	2-4
HARD	OVER 4

SAMPLER SYMBOLS

- Modified California (3" O.D.) sampler
- California (2.5" O.D.) sampler
- S.P.T. - Split spoon sampler
- Shelby Tube
- Continuous Core
- Bag Samples
- Grab Samples
- NR No Recovery

MOISTURE CONDITION

Dry	Dusty, dry to touch
Moist	Damp but no visible water
Wet	Visible freewater

LINE TYPES

- ———— Solid - Layer Break
- – – – – – Dashed - Gradational or approximate layer break

GROUND-WATER SYMBOLS

- ▽ Groundwater level during drilling
- ▼ Stabilized groundwater level

(S.P.T.) Number of blows of 140 lb. hammer falling 30" to drive a 2-inch O.D. (1-3/8 inch I.D.) sampler

* Unconfined compressive strength in tons/sq. ft., asterisk on log means determined by pocket penetrometer

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LOG OF BORING 1-B3

ENGEO INCORPORATED

Geotechnical Exploration
Vehicular Bridge
Milpitas, CA
12074.000.002

DATE DRILLED: 8/17/2016
HOLE DEPTH: Approx. 57½ ft.
HOLE DIAMETER: 6.0 in.
SURF ELEV (NGVD 29): Approx. 43 ft.

LOGGED / REVIEWED BY: S. Barua / RB
DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: SSA, Switch to Mud
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
			GRAVELLY LEAN CLAY (CL), grayish brown, stiff, slightly moist, subrounded gravel, (FILL)			15							1.5*
	40		FAT CLAY (CH), dark brown, stiff, slightly moist										
5			Becomes very stiff.			13							3.5*
	35		Becomes dark gray mottled with orange.			9					27.4	87.2	2.5*
10			Becomes stiff, moist.		▽	12							1.75*
	30												
15			Becomes dark gray to black.			14							1.75*
	25												
20			Becomes very stiff, wet.			100 psi 250 400 500 600					21	106.5	
	20		SILT (ML), dark grayish brown, stiff to very stiff, moist to wet										
25													

LOG - GEOTECHNICAL W/ELEV. 12074000002_MONTAGUE BRIDGE ABUTMENT_GINT LOGS.GPJ ENGEO INC.GDT 9/27/16

LOG OF BORING 1-B3

Geotechnical Exploration
Vehicular Bridge
Milpitas, CA
12074.000.002

DATE DRILLED: 8/17/2016
HOLE DEPTH: Approx. 57½ ft.
HOLE DIAMETER: 6.0 in.
SURF ELEV (NGVD 29): Approx. 43 ft.

LOGGED / REVIEWED BY: S. Barua / RB
DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: SSA, Switch to Mud
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Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
			Switch to mud rotary drilling method										
			SANDY LEAN CLAY (CL), dark gray mottled with light gray, stiff, moist, fine-grained sand			19				51			
	15												
30			FAT CLAY (CH), dark yellowish brown, very stiff, moist			16							2.25*
	10												
35			Becomes stiff.			13							1.75*
	5												
40			Becomes medium stiff.			18					22.9	101.9	0.75*
	0												
45			Becomes stiff.			18							1.25*
	-5												
50													

LOG - GEOTECHNICAL W/ELEV. 12074000002_MONTAGUE BRIDGE ABUTMENT_GINT LOGS.GPJ ENGEO INC.GDT 9/27/16

LOG OF BORING 1-B3

Geotechnical Exploration
Vehicular Bridge
Milpitas, CA
12074.000.002

DATE DRILLED: 8/17/2016
HOLE DEPTH: Approx. 57½ ft.
HOLE DIAMETER: 6.0 in.
SURF ELEV (NGVD 29): Approx. 43 ft.

LOGGED / REVIEWED BY: S. Barua / RB
DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: SSA, Switch to Mud
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
			Same as above.			22							1.25*
	-10												
55			Same as above.			23					20.9	104.3	1.75*
			Bottom of boring at approximately 57½ feet below ground surface. Groundwater encountered during solid-flight drilling operations at approximately 11 feet below ground surface.										

LOG - GEOTECHNICAL W/ELEV. 12074000002_MONTAGUE BRIDGE ABUTMENT_GINT LOGS.GPJ ENGEO INC.GDT 9/27/16

LOG OF BORING 1-B4

ENGEO INCORPORATED

Geotechnical Exploration
Vehicular Bridge
Milpitas, CA
12074.000.002

DATE DRILLED: 8/18/2016
HOLE DEPTH: Approx. 61½ ft.
HOLE DIAMETER: 6.0 in.
SURF ELEV (NGVD 29): Approx. 42 ft.

LOGGED / REVIEWED BY: S. Barua / RB
DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: SSA, Switch to Mud
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
	40		LEAN CLAY (CL), dark brown mottled with yellowish brown, hard, slightly moist, rootlets			28							4.5+*
5			Same as above.			15							4.5*
	35		FAT CLAY (CH), dark yellowish brown mottled with orange, stiff to very stiff, moist, rootlets			8							2.0*
10			Becomes dark grayish brown mottled with orange, no rootlets.		▽	10							2.0*
	30												
15			Becomes dark gray, very stiff.			50 psi 100 150 250 400					28.1	92.1	
	25		Switch to mud rotary drilling method										
20			Becomes dark grayish brown, hard, moist to wet.			18							4.25*
	20												
25													

LOG - GEOTECHNICAL W/ELEV. 12074000002_MONTAGUE BRIDGE ABUTMENT_GINT LOGS.GPJ ENGEO INC.GDT 9/27/16

LOG OF BORING 1-B4

ENGEO INCORPORATED

Geotechnical Exploration
Vehicular Bridge
Milpitas, CA
12074.000.002

DATE DRILLED: 8/18/2016
HOLE DEPTH: Approx. 61½ ft.
HOLE DIAMETER: 6.0 in.
SURF ELEV (NGVD 29): Approx. 42 ft.

LOGGED / REVIEWED BY: S. Barua / RB
DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: SSA, Switch to Mud
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
			SANDY LEAN CLAY (CL), dark olive brown, medium stiff to stiff, moist, fine-grained sand, <5% subrounded gravel			7				55	20.2	108.3	1.0*
30	15		Becomes fine- to medium-grained sand.			26							2.0*
	10		LEAN CLAY (CL), dark yellowish brown mottled with orange, stiff to very stiff, moist										
35			Becomes dark gray mottled with yellowish brown.			15	33	17	16				1.5*
	5												
40			FAT CLAY (CH), gray with yellowish brown, stiff, moist			19							1.75*
	0												
45			Becomes olive brown mottled with orangeish brown.			15					22	97.6	
	-5												
50													

LOG - GEOTECHNICAL W/ELEV. 12074000002_MONTAGUE BRIDGE ABUTMENT_GINT LOGS.GPJ ENGEO INC.GDT 9/27/16

LOG OF BORING 1-B4

Geotechnical Exploration
Vehicular Bridge
Milpitas, CA
12074.000.002

DATE DRILLED: 8/18/2016
HOLE DEPTH: Approx. 61½ ft.
HOLE DIAMETER: 6.0 in.
SURF ELEV (NGVD 29): Approx. 42 ft.

LOGGED / REVIEWED BY: S. Barua / RB
DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: SSA, Switch to Mud
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
			Becomes olive brown.			17							1.75*
	-10												
55			Becomes olive brown mottled with dark gray, very stiff, <5% fine gravel			22							2.75*
	-15												
60			Becomes olive brown mottled with light brown.			23							3.5*
			Bottom of boring at approximately 61½ feet below ground surface. Groundwater encountered during solid-flight drilling operations at approximately 11 feet below ground surface.										

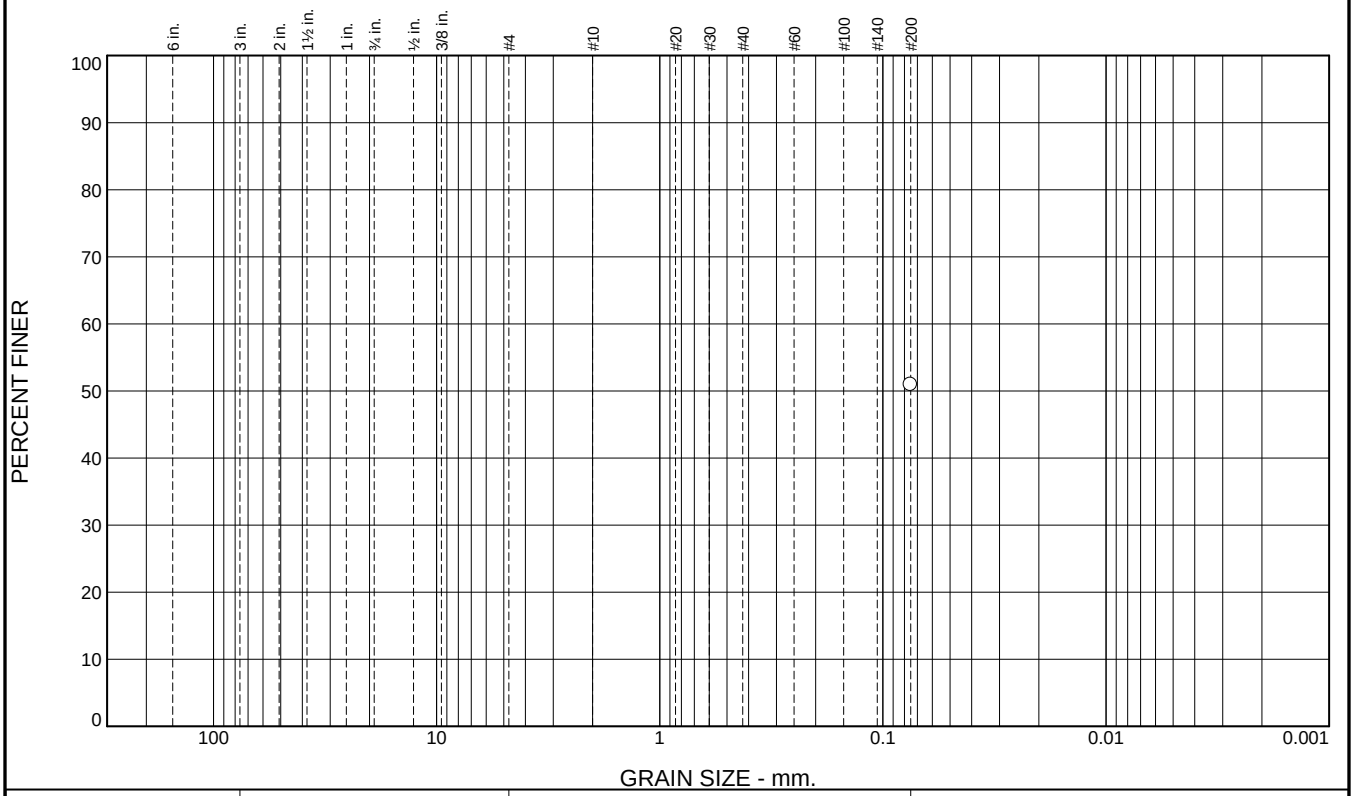
LOG - GEOTECHNICAL W/ELEV. 12074000002_MONTAGUE BRIDGE ABUTMENT_GINT LOGS.GPJ ENGEO INC.GDT 9/27/16

APPENDIX B

Laboratory Test Data
(ENGEO, 2016)

APPENDIX B

Particle Size Distribution Report



% +75mm	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
						50.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#200	50.9		

* (no specification provided)

Soil Description

See Exploration Log

Atterberg Limits

PL= LL= PI=

Coefficients

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

Classification

USCS= AASHTO=

Remarks

ASTM D1140

Sample Number: 1-B3 @ 27-27.5 **Depth:** 27-27.5

Date: 8-26-16

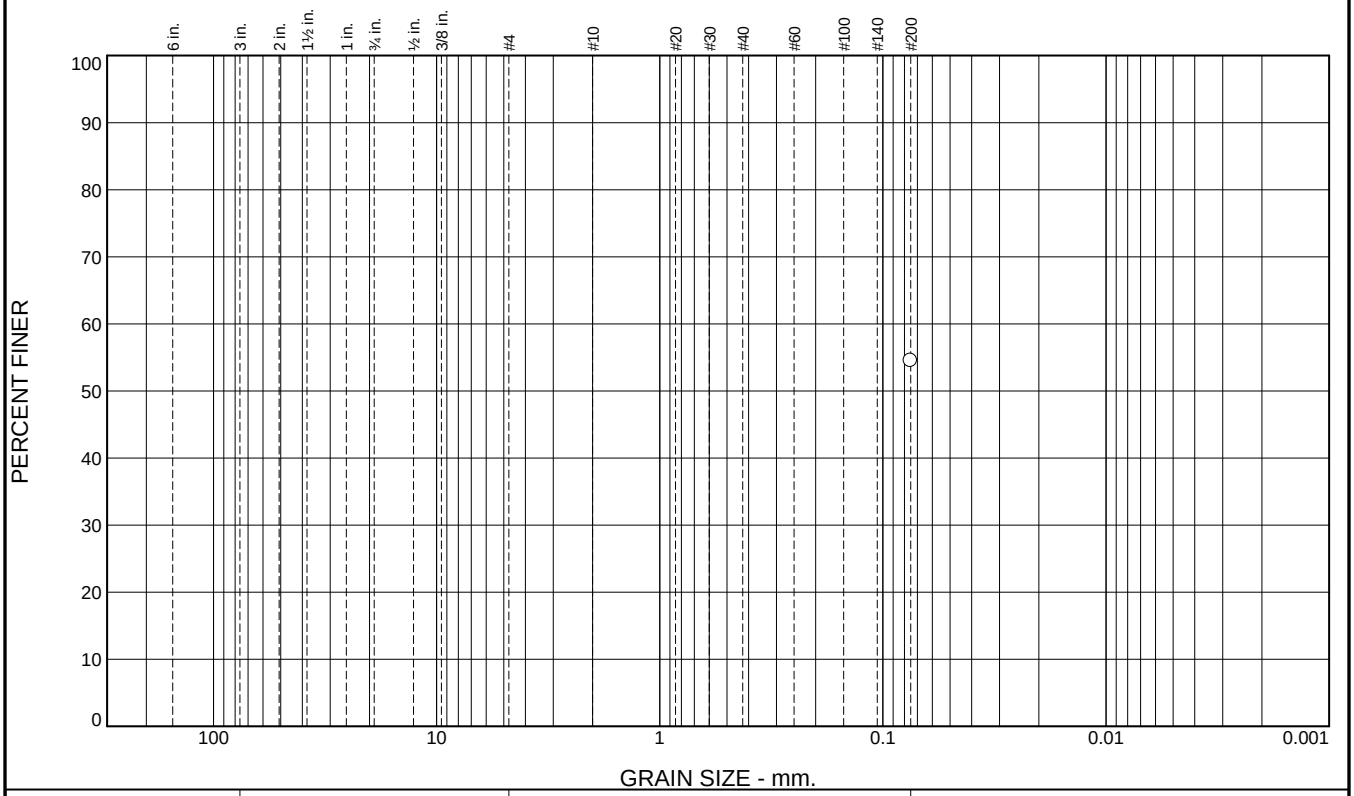
ENGEO INCORPORATED

Client: Lennar Homes of California
Project: Montague Expressway, Bridge Abutment

Project No: 12074.000.002 **Figure**

Tested By: I. McCauley **Checked By:** K. Lecce

Particle Size Distribution Report



% +75mm	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
						54.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#200	54.5		

* (no specification provided)

Soil Description

See Exploration Log

Atterberg Limits

PL= LL= PI=

Coefficients

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

Classification

USCS= AASHTO=

Remarks

ASTM D1140

Sample Number: 1-B4 @ 26-26.5 **Depth:** 26-26.5

Date: 8-26-16

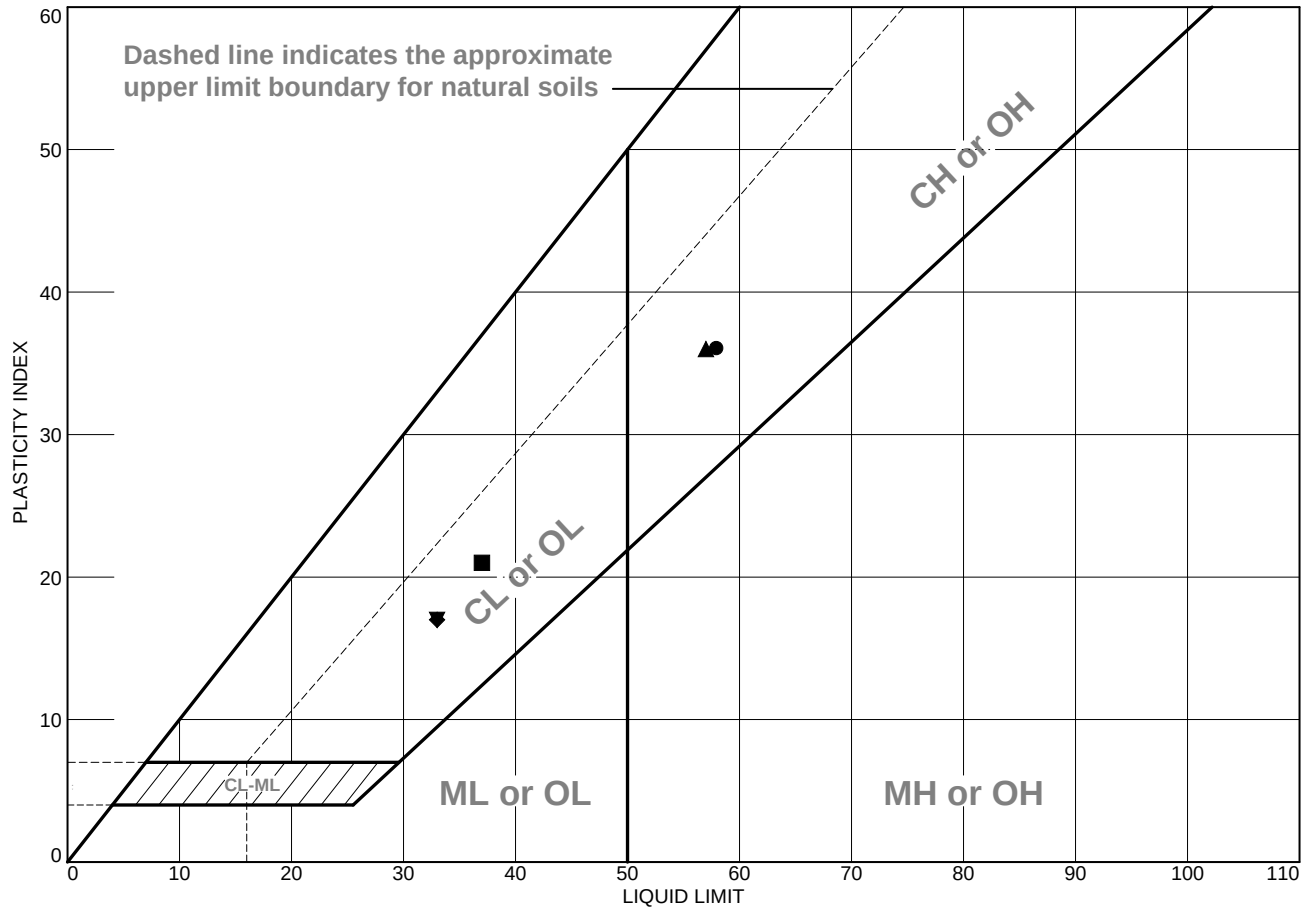
ENGEO INCORPORATED

Client: Lennar Homes of California
Project: Montague Expressway, Bridge Abutment

Project No: 12074.000.002 **Figure**

Tested By: I. McCauley **Checked By:** K. Lecce

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	See Exploration Log	58	22	36			
■	See Exploration Log	37	16	21		76.6	
▲	See Exploration Log	57	21	36			
◆	See Exploration Log	33	16	17		78.6	
▼	See Exploration Log	33	16	17			

Project No. 12074.000.002 **Client:** Lennar Homes of California

Project: Montague Expressway, Bridge Abutment

●**Depth:** 5.5 **Sample Number:** 1-B1 @ 5-5.5
■**Depth:** 52-52.5 **Sample Number:** 1-B1 @ 52-52.5
▲**Depth:** 6-6.5 **Sample Number:** 1-B2 @ 6-6.5
◆**Depth:** 56-56.5 **Sample Number:** 1-B2 @ 56-56.5
▼**Depth:** 36-36.5 **Sample Number:** 1-B4 @ 36-36.5

ENGEO INCORPORATED

Remarks:
●ASTM D4318, wet method
■ASTM D4318, wet method
ASTM D1140
▲ASTM D4318, wet method
◆ASTM D4318, wet method
ASTM D1140
▼ASTM D4318, wet method

Figure

Tested By: ○ K. Lecce □ M. Havey △ K. Lecce ◇ K. Lecce ▽ M. Havey **Checked By:** I. McCauley

LABORATORY MINIATURE VANE SHEAR

ASTM D4648

APPARATUS USED: Wykeham Farrance, Model 27-WF1730/4

Sample #	Sample ID	Remold? (Y/N)	Test depth (ft)	Spring number	Shear strength (psf)
1	1-B1 @ 11-13.5	N	12-12.25	3	1173
2	1-B2 @ 10-12.5	N	11-11.25	3	1104
3	1-B3 @ 21-23.5	N	22-22.25	3	2484
4	1-B4 @ 15-17.5	N	16-16.25	4	2245

Testing remarks:

PROJECT NAME: Montague Expressway, Bridge Abutment
DATE: 08/24/16
PROJECT NUMBER: 12074.000.002
CLIENT: Lennar Hoimes of California
PHASE NUMBER: 002

ENGEO Expect Excellence

Tested by: G. Criste
Reviewed by: D. Seibold

Isotropic Unconsolidated Undrained Triaxial Test

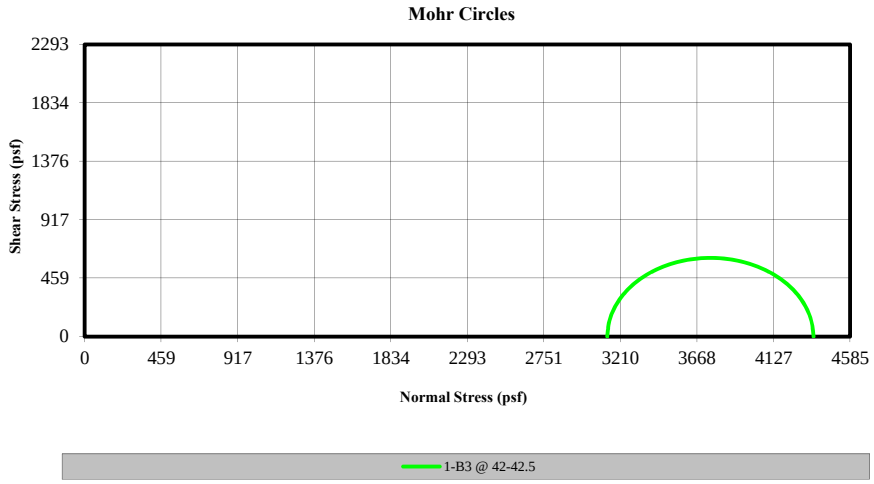
(ASTM D2850)

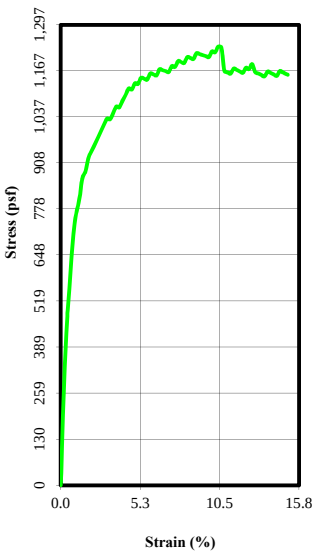
Date: 08/29/16

Checked By: J. Ruffoni

Date: 8/28/2016

Tested By: K. Lecce





Before Test	Specimen 1-B3 @ 42-42.5			
Water Content (%)	22.91			
Dry Density (pcf)	101.93			
Saturation (%)	97.45			
Void Ratio	0.62			
Diameter (in)	2.407			
Height (in)	5.085			
Height-to-Diameter Ratio	2.113			
ASTM D4318 - Wet Method				
Liquid Limit	-			
Plastic Limit	-			
ASTM D854 - Assumed				
Specific Gravity	2.650			
After Test	1-B3 @ 42-42.5			
Water Content (%)	24.08			
Saturation (%)	100.00			
Strain Rate (in/min)	0.05			
Peak Deviator Stress (psf)	1234.9			
Axial Strain @ Failure (%)	10.429			
	Cell Pressure			
Cell (psf)	3130.6			
Back (psf)	n/a			
	Principle Stresses at Failure			
σ1 (psf)	4365.4			
σ3 (psf)	3130.6			
Corrected Peak Deviator Stress				

Mohr-Coulomb Parameters with a Non-zero Friction Angle (Ø≠0)			Cohesion at Failure with a Zero Friction Angle (Ø=0)			
Cohesion, c (psf)	0.0		617.4			
Friction Angle Ø	0.00		n/a			

Project Information	
Project Name:	Montague Expressway, Bridge Abutment
Project Number:	12074.000.002
Project Location:	1-B3
Client:	Lennar Homes of California
Description:	See exploration logs
Test Remarks:	

ENGEO Expect Excellence

Isotropic Unconsolidated Undrained Triaxial Test

(ASTM D2850)

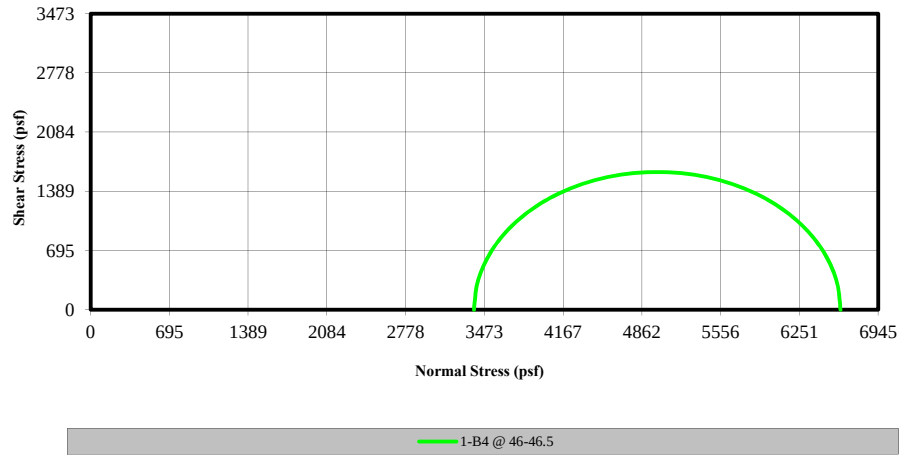
Date: 08/29/16

Checked By: J. Ruffoni

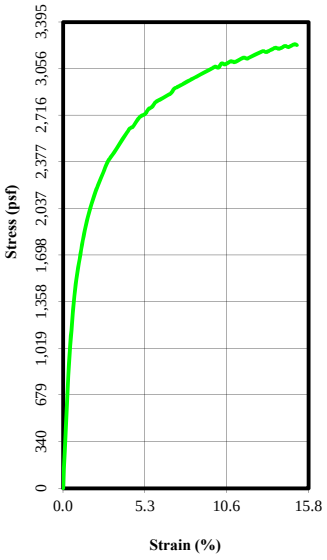
Date: 8/28/2016

Tested By: K. Lecce

Mohr Circles



Stress-Strain Curve



Before Test	Specimen 1-B4 @ 46-46.5			
Water Content (%)	22.01			
Dry Density (pcf)	97.56			
Saturation (%)	83.84			
Void Ratio	0.70			
Diameter (in)	2.407			
Height (in)	5.080			
Height-to-Diameter Ratio	2.111			
ASTM D4318 - Wet Method				
Liquid Limit	-			
Plastic Limit	-			
ASTM D854 - Assumed				
Specific Gravity	2.650			
After Test	1-B4 @ 46-46.5			
Water Content (%)	22.63			
Saturation (%)	86.20			
Strain Rate (in/min)	0.05			
Peak Deviator Stress (psf)	3233.6			
Axial Strain @ Failure (%)	14.943			
	Cell Pressure			
Cell (psf)	3379.7			
Back (psf)	n/a			
	Principle Stresses at Failure			
σ1 (psf)	6613.3			
σ3 (psf)	3379.7			
Corrected Peak Deviator Stress				

Mohr-Coulomb Parameters with a Non-zero Friction Angle (Ø≠0)			Cohesion at Failure with a Zero Friction Angle (Ø=0)			
Cohesion, c (psf)	0.0		1616.8			
Friction Angle Ø	0.00		n/a			

Project Information	
Project Name:	Montague Expressway, Bridge Abutment
Project Number:	12074.000.002
Project Location:	1-B4
Client:	Lennar Homes of California
Description:	See exploration logs
Test Remarks:	

ENGEO Expect Excellence

APPENDIX C

Corrosivity Test Data
(CERCO Analytical Inc., 2016)

APPENDIX C

California State Certified Laboratory No. 2153

CERCO analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 462 2771 Fax. 925 462 2775
www.cercoanalytical.com

Client: ENGEO Incorporated
Client's Project No.: 12074.000.002
Client's Project Name: 400 and 450 Montague Expressway, Milpitas
Date Sampled: 08/17 & 18/16
Date Received: 25-Aug-16
Matrix: Soil
Authorization: Signed Chain of Custody

Date of Report: 2-Sep-2016

Job/Sample No.	Sample I.D.	Redox (mV)	pH	Conductivity (umhos/cm)*	Resistivity (100% Saturation) (ohms-cm)	Sulfide (mg/kg)*	Chloride (mg/kg)*	Sulfate (mg/kg)*
1608236-001	1-B2 @ 15'	370	8.50	-	1,400	-	N.D.	56
1608236-002	1-B3 @ 5'	360	8.28	-	860	-	N.D.	71
1608236-003	1-B4 @ 30'	290	8.57	-	3,700	-	25	33

Method:	ASTM D1498	ASTM D4972	ASTM D1125M	ASTM G57	ASTM D4658M	ASTM D4327	ASTM D4327
Reporting Limit:	-	-	10	-	50	15	15
Date Analyzed:	1-Sep-2016	31-Aug-2016	-	31-Aug-2016	-	1-Sep-2016	1-Sep-2016

* Results Reported on "As Received" Basis
N.D. - None Detected

Cheryl McMillen
Laboratory Director

Quality Control Summary - **All laboratory quality control parameters were found to be within established limits**

1608236

11521

CHAIN OF CUSTODY RECORD

PROJECT NUMBER:	PROJECT NAME:
12074.000.002	400 and 450 Montague Expressway, Milpitas

SAMPLED BY: (PRINT) Seema Barua

PROJECT MANAGER: Jeanine Ruffoni / (925) 551-1696

ROUTING: E-MAIL JRuffoni@engeo.com Hard Copy NA

	SAMPLE NUMBER	DATE	TIME	MATRIX	NUMBER OF CONTAINERS	CONTAINER SIZE	PRESERVATIVE	Redox	pH	Sulfate	Resistivity	Chloride	REMARKS REQUIRED DETECTION LIMITS
001	1-B2@15'	8/17/16	----	SOIL	1	Bag	NA	X	X	X	X	X	ASTM Test Methods
002	1-B3@5'	8/17/16	----	SOIL	1	Bag	NA	X	X	X	X	X	ASTM Test Methods
003	1-B4@30'	8/18/16	----	SOIL	1	Bag	NA	X	X	X	X	X	ASTM Test Methods

RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
Jackie Schuyler	8-25-16 10:40			8/25/16 1340	
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)	RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE/TIME	REMARKS	
				STANDARD T.A.T.	

DISTRIBUTION: ORIGINAL ACCOMPANIES SHIPMENT; COPY TO PROJECT FIELD FILES

ENGEO INCORPORATED

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SAN JOSE, CALIFORNIA 95119
(408) 574-4900 FAX (888) 279-2698
WWW.ENGEO.COM

APPENDIX D
Hydraulic Analysis by Schaaf & Wheeler, dated 2020

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

870 Market Street, Suite 1278
San Francisco, CA 94102-2906
t. 415-433-4848
f. 415-433-1029
s&w@swsv.com

MEMORANDUM

TO:	Tyler Wood, LMC	DATE:	September 4, 2020
FROM:	Katie Hogan, PE, CFM Caitlin Gilmore, PE, QSD Emily Straley, PE	JOB#:	LENN.04.20
SUBJECT:	East Penitencia Creek Bridge Crossing Hydraulic Analysis		

The development at 730 and 750 East Capitol in Milpitas, California is under construction based on approved design plans dated October 12, 2016 on the north side of East Penitencia Creek east of Montague Expressway, as shown in Figure 1. A proposed vehicular bridge crossing to connect the north and south sides of the creek is currently under design. Downstream of the project site, a pedestrian bridge is to be constructed as part of the Centre Pointe development. Schaaf & Wheeler conducted a hydraulic analysis to compare the existing and proposed 100-year water surface elevations along East Penitencia Creek due to the construction of the new vehicular bridge. An investigation into the potential for future flood control projects was also conducted to verify the proposed bridge design does not need to be modified to accommodate for those future projects. This memorandum documents the methodology and results of the hydraulic analysis.

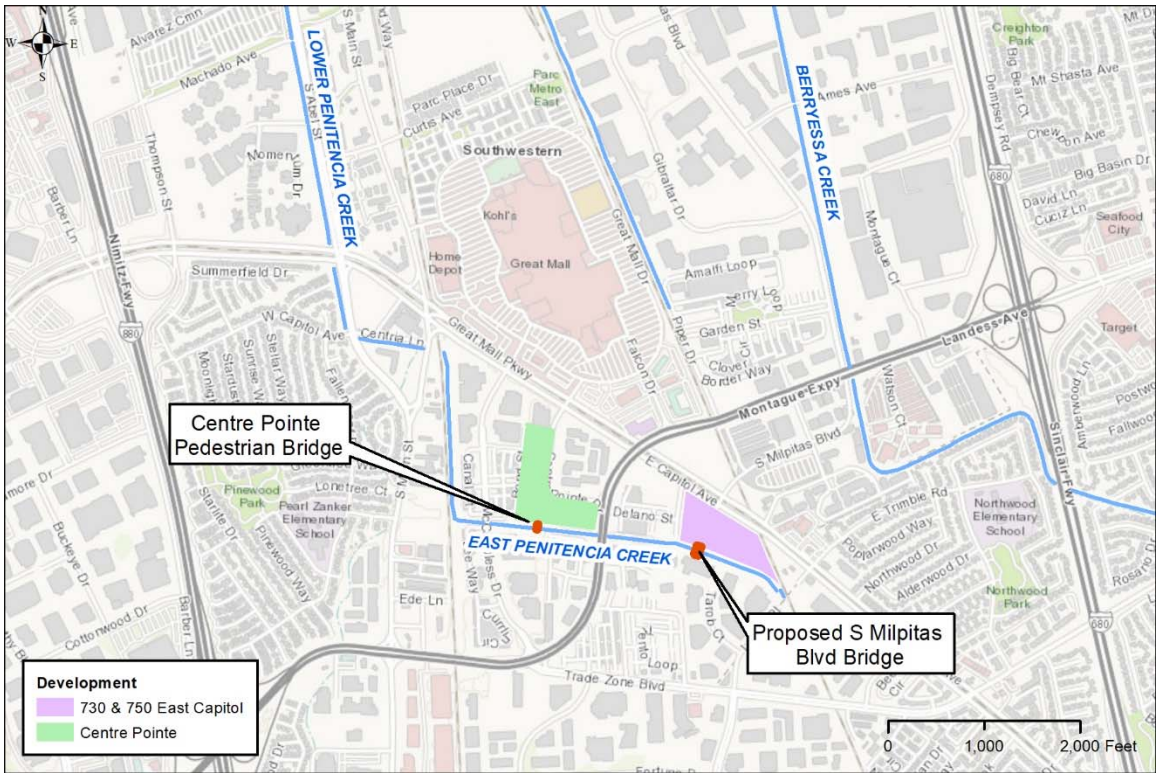


Figure 1 – Location Map

FEMA Effective

The FEMA effective Federal Insurance Rate Map (FIRM) along East Penitencia Creek shows flooding outside of the channel banks, some of which results from overland flow from a spill on Upper Penitencia Creek in San Jose. East Penitencia Creek is mapped as Special Flood Hazard Area (SFHA) Zone AO (1 foot) along the overbanks and Zone A in the channel, as shown in Figure 2. The project is located on FEMA FIRM panel 06085C0067J, effective February 19, 2014. The effective flood profiles in the Flood Insurance Study (FIS) indicate a water surface elevation of approximately 45.5 feet (NAVD 88) at the proposed S Milpitas Boulevard bridge location. A more recent (2018) hydrologic and hydraulic study using Infoworks ICM software, however, was developed along East Penitencia creek since the effective map was created.

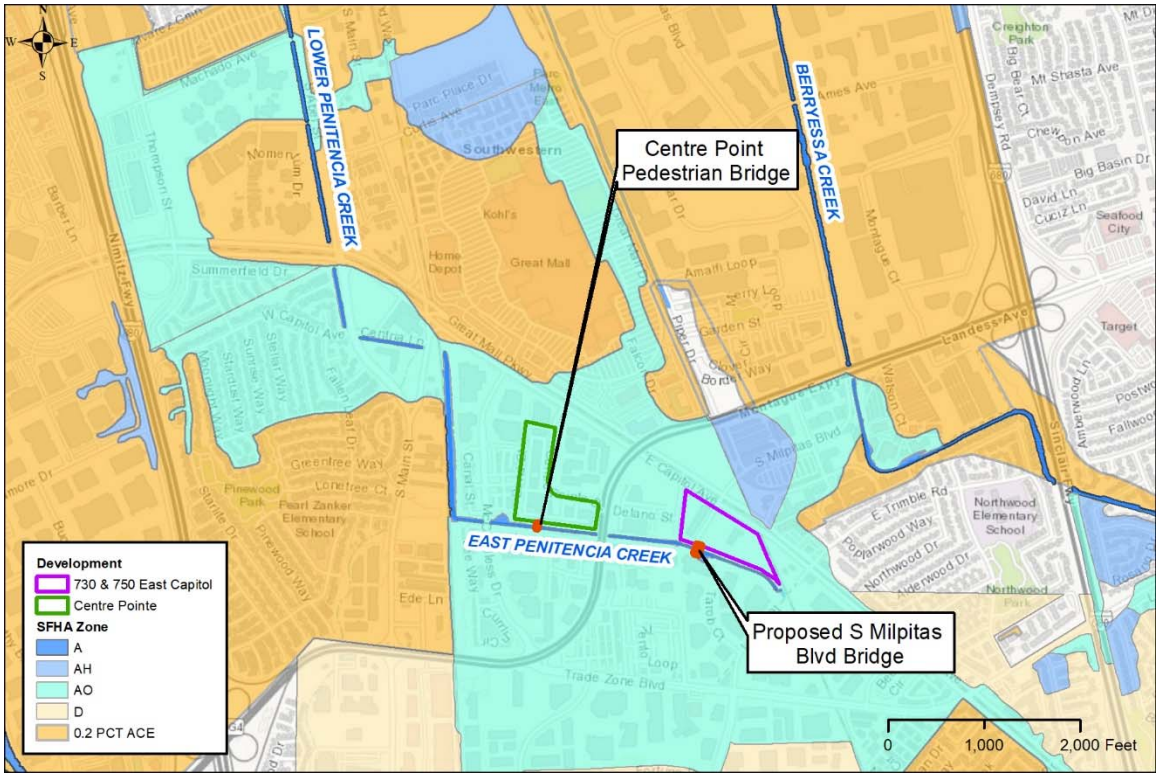


Figure 2 – Effective SFHA Map

Previous Study

Schaaf & Wheeler (S&W) developed an Infoworks ICM model for the Santa Clara Valley Water District (SCVWD) and FEMA CTP remapping project submitted in 2018 to the City of Milpitas. The City of Milpitas, City of San Jose, and SCVWD have all reviewed the model, and it is currently under review with FEMA. The proposed FEMA FIRM map is shown in Figure 3 remaps the subject areas as Zone AE with base flood elevations (BFEs). The Zone X areas indicate where the 100-year flood depth was determined to be less than one foot. This model is considered to have the most recent hydrologic data and was used to develop the HEC-RAS steady state model for this study. The results from this 2018 study may be subject to change because the study has not yet been officially adopted by FEMA.

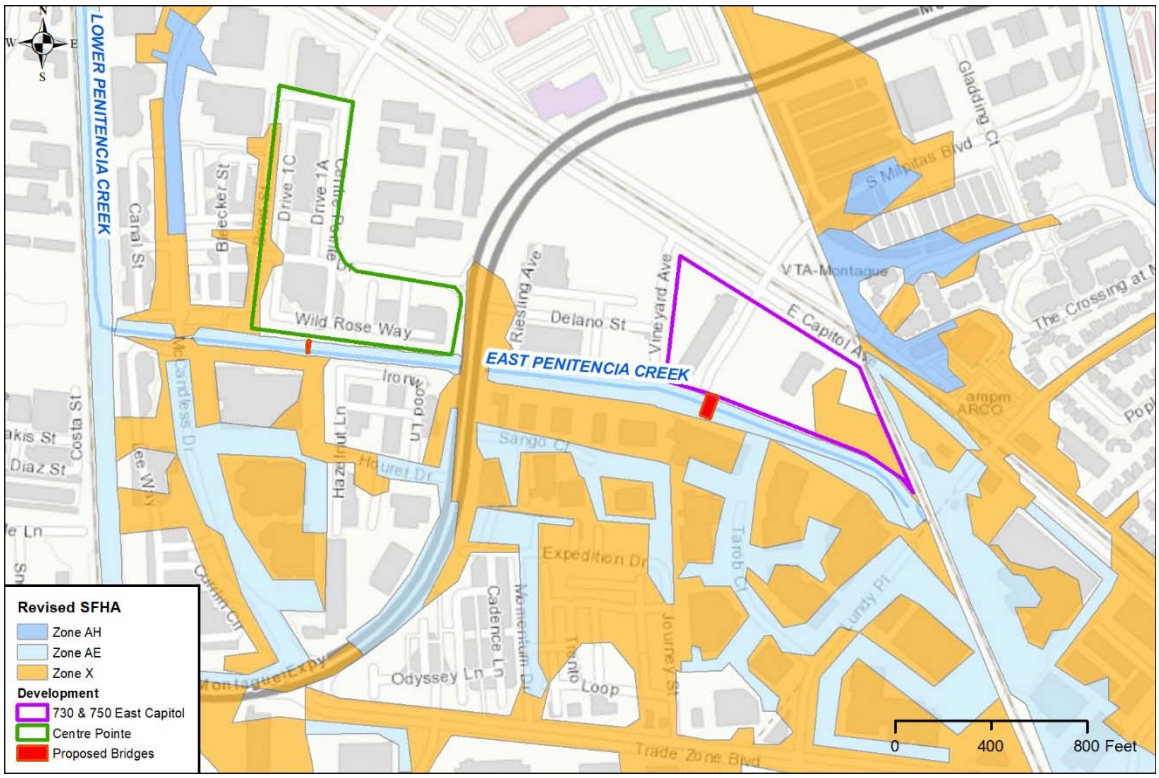


Figure 3 – Revised SFHA (2018 ICM Model Results)

Existing Hydraulic Analysis

A steady state HEC-RAS version 5.0.7 model was created along East Penitencia Creek to calculate water surface elevations for existing and proposed bridge conditions. Cross sections were placed along the entire East Penitencia Creek reach from the confluence with Lower Penitencia Creek to the beginning of the open channel at the railroad. Cross sections were spaced an average of 100 LF apart and at critical locations, such as bridge crossings and grade control structures. Figure 4 shows the cross section and structure locations.

Geometry Data

Cross section and bridge geometry were developed using various sources, including SCVWD 2017 survey, 2012 and 2015 surveys for the 730 and 750 East Capitol project, 2013 BART/VTA design survey, and 2006 Santa Clara County LiDAR data used for the ICM model terrain surface. Table 1 lists each data source, its reference datum, and the conversion to NAVD 88 as needed. Table 2 lists the cross sections and their topographic sources. All elevations listed in this memorandum reference the NAVD 88 vertical datum, and the hydraulic models were created referencing NAVD 88 vertical datum.

Figure 4 – Cross Section Location Map

Table 1 - Topography Sources

Source	Date	Datum	Conversion to NAVD 88
SCVWD Survey East Penitencia Creek	2017	NAVD 88	NA
730 and 750 East Capitol Survey	2012	NGVD 29	+2.743
730 and 750 East Capitol Survey	2015	NGVD 29	+2.743
BART/VTA Survey	2013	NAVD 88	NA
Santa Clara County LiDAR/ICM Terrain	2006	NAVD 88	NA

Table 2 - Topography Source by Cross Section

River Stations	Channel Source	Overbank Source
3127 – 2822	2015 Survey	2017 SCVWD
2822 - 2283	2012 & 2015 E Capitol Survey	2012 & 2015 E Capitol Survey
2243 – 1625	2017 SCVWD & ICM Model Sections	2006 LiDAR
1446	2012 E Capitol Survey	2006 LiDAR
1392	Interpolated Section using ICM Model Sections	2006 LiDAR
1070	ICM Model Sections	2006 LiDAR

River Stations	Channel Source	Overbank Source
941	2013 VTA/BART Survey	2006 LiDAR
903-132	2017 SCVWD Survey & ICM Model Sections	2006 LiDAR
Montague & McCandless Roads	2013 VTA/BART Survey & ICM Model	

A profile comparison of the ICM flowline and the profile for this hydraulic analysis (2020 Channel Flowline) is provided in Figure 5. The profiles generally match downstream of the existing grade control structure. However, the ICM model shows the flowline of the channel approximately 4.5 feet lower than the effective FIS profile and 2015 survey near the proposed South Milpitas Boulevard bridge. Further investigation indicated that an existing grade control structure may have not been fully accounted for in the 2017 SCVWD survey and thereby the ICM profile. A site visit conducted on July 24, 2020 confirmed a two-foot concrete drop structure with an approximately 5-foot rock rip rap structure directly upstream, as shown in Figure 6. This grade control structure was captured in the 2015 survey for the 730 and 750 East Capitol development and was included in the hydraulic model for this study.

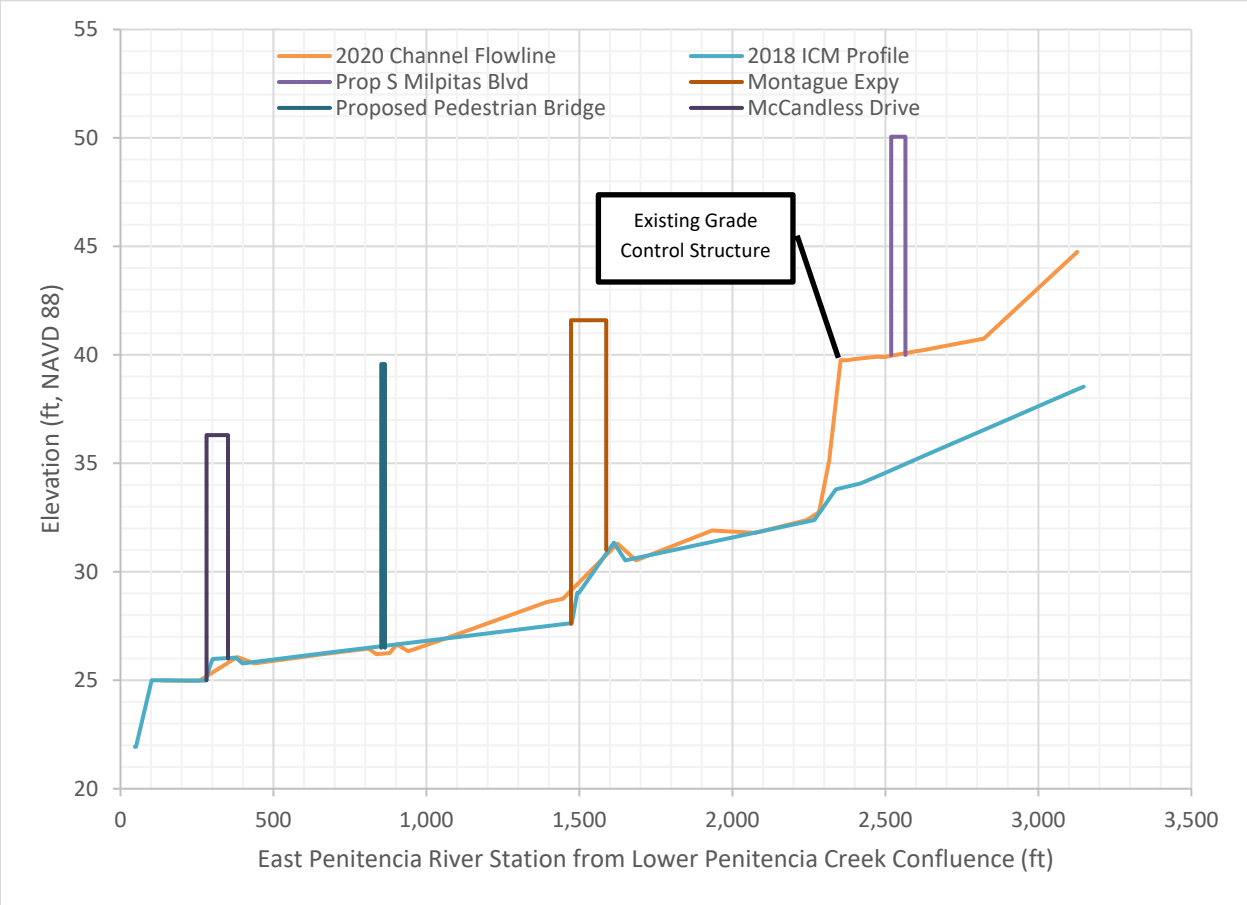


Figure 5 – ICM Channel Profile versus S&W 2020 Model Profile

Figure 6 - Existing Grade Control Structure Looking Upstream (East) on East Penitencia Creek

Hydraulic Parameters

Manning's roughness values (n-values) were assigned based on the ICM model's 1D roughness factors. The channel was assigned a roughness value of 0.035 and the overbanks 0.10 with blocked obstructions for existing buildings. Contraction and expansion coefficients were set to 0.1 and 0.3, respectively, except upstream and downstream of structures where they were revised to 0.3 for contraction and 0.5 for expansion. Ineffective areas were added at cross sections upstream and downstream of structures at a 1:1 ratio upstream of crossings and 4:1 ratio downstream.

Steady Flow Data

The steady flow data was obtained from the 2018 ICM model along the river reaches of East Penitencia Creek. Numerous scenarios involving levee breaches throughout the watershed were investigated as part of the 2018 study. Comparisons to the breach failure scenarios from the Upper Penitencia Creek and Berryessa Creek levee breaches show that the highest peak flowrates along East Penitencia Creek occur during the "All Levees Hold", or no levee breaches, scenario. This scenario was therefore used to obtain the peak flow rates in the HEC-RAS steady state analysis. Table 3 summarizes the flow change locations and corresponding 100-year flow rates. Flow change locations generally correspond to storm drain inflows and overflows from Upper Penitencia Creek.

Table 3 – Flow Change Locations "All Levees Hold" Scenario

Location	River Station	100-year Q (cfs)
460 LF Downstream Lundy Drive	3127	625
Upstream Montague Expy	1685	665
Downstream Montague Expy	1446	710
580 LF Downstream Montague Expy	903	735
Upstream McCandless Drive	438	760
Upstream Lower Penitencia Confluence	223	777

The peak flowrates on East Penitencia Creek are controlled by the overflow from Upper Penitencia Creek. Figure 7 shows the hydrograph just upstream of the proposed bridge location. There are two peaks. The first peak occurs at approximately hour 12 from the local drainage system, and the second peak (approximately hour 16) occurs due to overflows from Upper Penitencia Creek. The second peak, or the overflow from Upper Penitencia Creek, results in the maximum peak discharges on East Penitencia Creek.

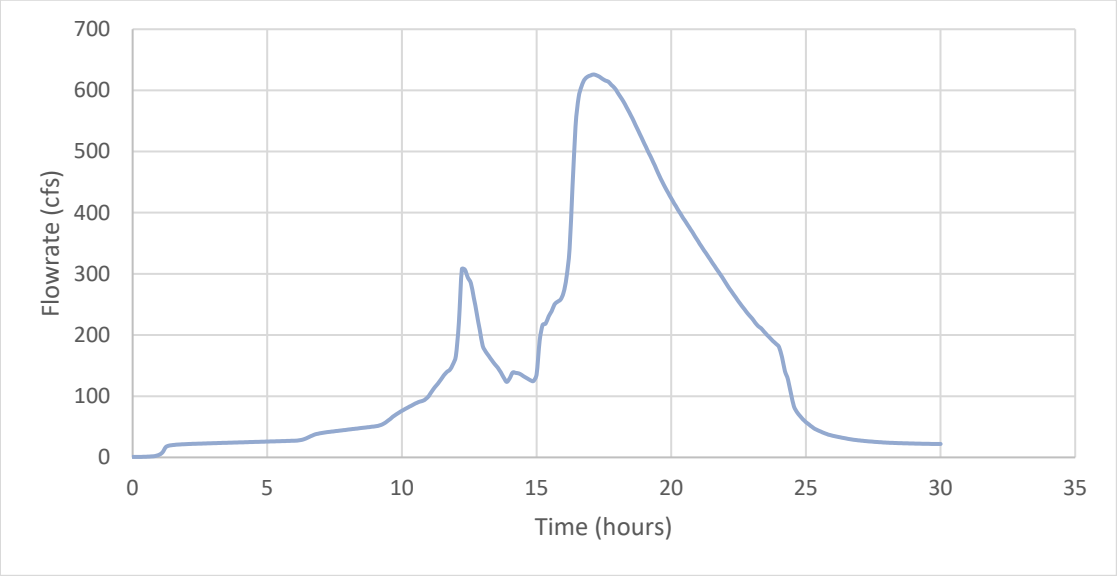


Figure 7 – East Penitencia Creek 100-year Hydrograph Upstream Proposed South Milpitas Blvd Bridge

Boundary Conditions

The 100-year boundary condition at the confluence of East Penitencia with Lower Penitencia Creek was input as a known water surface elevation of 32.4 feet (NAVD 88) from the 2018 ICM model.

Proposed Conditions

The proposed model was created by modifying the existing conditions model to add the proposed pedestrian bridge and the South Milpitas Boulevard vehicular bridge at the locations indicated in Figure 4 above. The pedestrian bridge was input according to RJA January 2019 plans for Centre Pointe included in the attachments to this memorandum. The bridge spans the channel and does not impede flow. Therefore, ineffective areas and expansion and contraction coefficients were not modified from existing conditions.

The South Milpitas Boulevard bridge was modeled according to the structural plans dated April 2020 completed by Cornerstone Structural Engineering Group included as an attachment to this memorandum.

The proposed vehicular bridge spans the channel, and the low chord is elevated above the existing conditions water surface elevation. However, the presence of flow in the overbanks under existing and proposed conditions warrants modifications to the ineffective areas and expansion and contraction coefficients to represent the abutment obstructions under proposed conditions. Ineffective areas were adjusted based on a 1:1 ratio upstream of the bridge opening and 4:1 downstream. Contraction and expansion coefficients upstream and downstream of the bridge were modified to 0.3 and 0.5, respectively.

The right bank of the creek was also was revised based on fill and grading from the 730 and 750 East Capitol grading plans dated October 12, 2060 by Carlson, Barbee & Gibson, Inc.

Scour

Bridge scour is the erosion or removal of streambed or bank material from bridge foundations caused by flowing water and is usually considered to have a long-term degradation effect (Mays, 2005). The proposed South Milpitas Boulevard vehicular bridge was evaluated for scour based on the Federal Highway Administration (FHWA) Hydraulic Engineering Circular, HEC-18 (April 2012). Two types of scour conditions were considered: contraction scour, and local scour at the abutments.

Contraction scour, which occurs when there is an increase in flow velocity through a bridge cross section that is narrower than the upstream channel, is the most common type of general scour based on HEC-18. This type of scour is temporal in nature; there can be an increase and decrease in streambed elevation during the passing of a flood. Contraction scour is minimal for the proposed South Milpitas Boulevard bridge due to the slight encroachment of the left abutment (looking downstream) not causing a change in water surface elevation or velocity. The estimated contraction scour based on the 100-year flood profile is 0.6 ft.

Local scour can be identified by the formation of horseshow vortices at the base of piers or abutments. When there is an increase in head water on the upstream side of the obstruction, followed by an acceleration of the flow around the nose of the pier or abutment, a horseshoe vortex can form. This type of vortex causes bed material from around the base of the obstruction to be removed. When the loose sediment is transported away from the base region faster than it is replaced, a scour hole develops.

The FHWA scour equations are based on laboratory data for an ideal condition and are to be considered conservative. The equations are based on non-cohesive soils, which is the worst-case condition as soils information was minimal when the analysis was completed, and indefinitely long sustained flow conditions to develop the potential scour holes.

Although the abutments do not project into the channel, abutment scour due to floodplain flow is expected to occur at Abutment 1 (left abutment looking downstream). Abutment 2 does not project into the channel or the floodplain. Abutment scour was calculated based on the 100-year flood profile. The estimated abutment scour at Abutment 1 is 0.7 ft. The total scour depth is the abutment scour plus contraction scour which equals 1.3 ft.

It is recommended that scour countermeasure be incorporated into the bridge design through extending the top of the Abutment 1 footing to a minimum depth of 1 foot below the calculated total scour depth of 1.3 ft, or by some other structural measure that accounts for scour. The velocities through the bridge section are below the suggested maximum permissible velocity of 6 feet per second for a natural grass

lined or gravel channel per USACE *Hydraulic Design of Flood Control Channels* (1994) so armoring is not required.

East Penitencia Creek is not expected to be subjected to long-term channel degradation or aggradation in the existing condition. Grade control structures are present both upstream and downstream of the proposed bridge location which limits degradation. There is a 5 ft concrete drop structure located approximately 180 ft downstream of the bridge location. The top elevation of the drop structure is 39 ft and the bottom elevation is 34 feet. It is protected from scour by rock riprap but some erosion is occurring. The top of East Penitencia Creek is a siphon located approximately 1,400 ft upstream of the bridge location. The approximate elevation of the siphon outlet is 46 feet.

Degradation could occur at the bridge location should the drop structure fail. The channel invert may change to form an equalized slope between the bottom of the drop structure and siphon outlet elevations. This may result in a channel invert elevation of approximately 36 feet at the bridge location assuming 4 feet of degradation. However, this is a very approximately estimate of change since it is impossible to predict how the channel will stabilize should the drop structure fail and not be repaired.

The Caltrans Scour Summary Table and Scour Data Table per Memo to Designers 16-1 are provided in Tables 4 and 5. The summary tables assume that the downstream control structure remains in place per CalTrans documentation to consider the as-built conditions.

Table 4 - Scour Summary Table - Caltrans

Long Term & Short Term Scour Depths for South Milpitas Boulevard Bridge of E Penitencia Creek			
Support No.	Degradation Scour Depth (ft)	Contraction Scour Depth (ft)	Short Term (Local) Scour Depth (ft)
Abutment 1	0	0.6	0.7
Abutment 2	0	0.6	NA

Table 5 - Scour Data Table - Caltrans

Support No.	Long Term (Degradation and Contraction) Scour Elevation (ft) (NGVD)*	Long Term (Degradation and Contraction) Scour Elevation (ft) (NAVD)*	Short Term (Local) Scour Depth (ft)
Abutment 1	36.8	39.5	0.7
Abutment 2	36.8	39.5	NA

** Scour elevation is channel invert minus long term scour depth of 0.6 ft.*

Future Conditions

The SCVWD requested an investigation of the potential for future flood control projects along East Penitencia Creek that may impact the proposed vehicular bridge design at South Milpitas Boulevard. A review of the 2018 ICM model "All Levees Hold" scenario shows that Upper Penitencia Creek overflows into East Penitencia Creek near the proposed South Milpitas Boulevard bridge crossing. Figure 8 shows the general 100-year "All Levees Hold" flow path per the ICM model results. The 100-year storm overtops Upper Penitencia Creek near Victory Way and continues northwest where it eventually overtops the railroad. Runoff then continues north towards East Penitencia Creek. One overflow path to East Penitencia is through the area upstream of the proposed Milpitas Boulevard bridge, as shown on Figure 9. A floodwall along the south (left) bank of East Penitencia Creek would block the overflow and cause inundation to potentially increase inundation at the properties and structures behind the future wall. A continued overflow path to East Penitencia Creek is recommended from Upper Penitencia Creek unless Upper Penitencia Creek is contained by a future flood control project.

If a future Upper Penitencia Creek project prevents overflow to East Penitencia Creek, the peak discharges on East Penitencia Creek would be limited to the first peak around hour 12 in Figure 7. These "No Overflow" peak discharges on East Penitencia Creek are lower than the "All Levees Hold" scenario peak discharges. An existing and proposed conditions steady flow plan using only the first peak, or inflows from the East Penitencia Creek watershed, was created in the hydraulic model. Peak discharges are generally limited to the upstream pipe capacities. Table 6 lists the "No Overflow" scenario peak discharges and their flow change locations. The flow changes generally correspond with storm drain inflows.

Table 6 – Flow Change Locations "No Overflow" Scenario

Location	River Station	100-year Q (cfs)
460 LF Downstream Lundy Drive	3127	284
Near Vineyard Avenue	2398	310
Downstream Montague Expy	1446	345
Upstream McCandless Drive	658	355

The existing conditions "No Overflow" geometry matches the existing conditions "All Levees Hold" geometry. The 100-year is not contained in the channel on the left bank in this scenario. The proposed conditions was copied from the "All Levees Fail" proposed scenario and modified to include a floodwall along the left bank of East Penitencia Creek to contain the 100-year "No Overflow" discharges and represent the future conditions model.

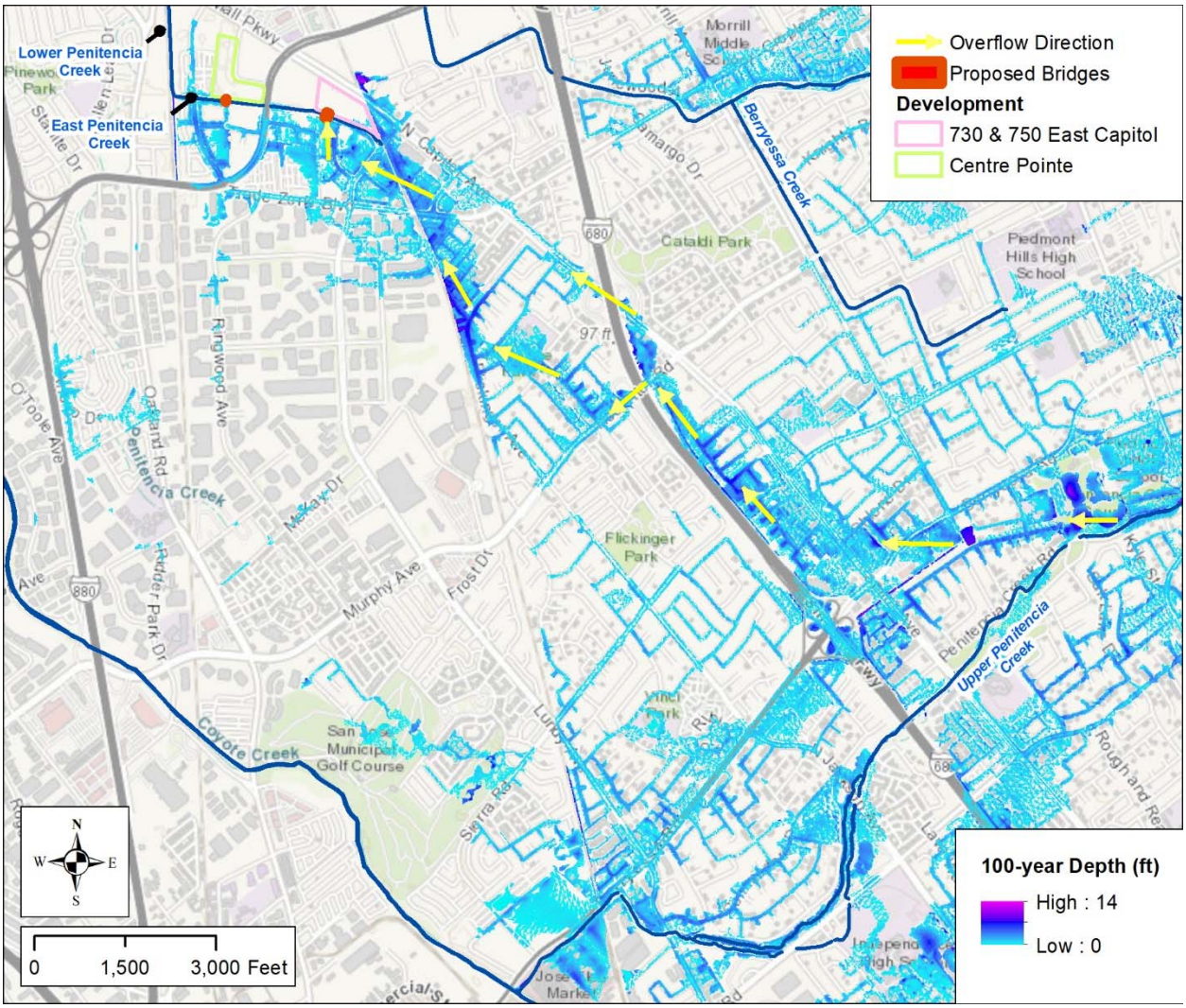


Figure 8 – 100-year All Levees Hold Inundation Depths and Overflow Path

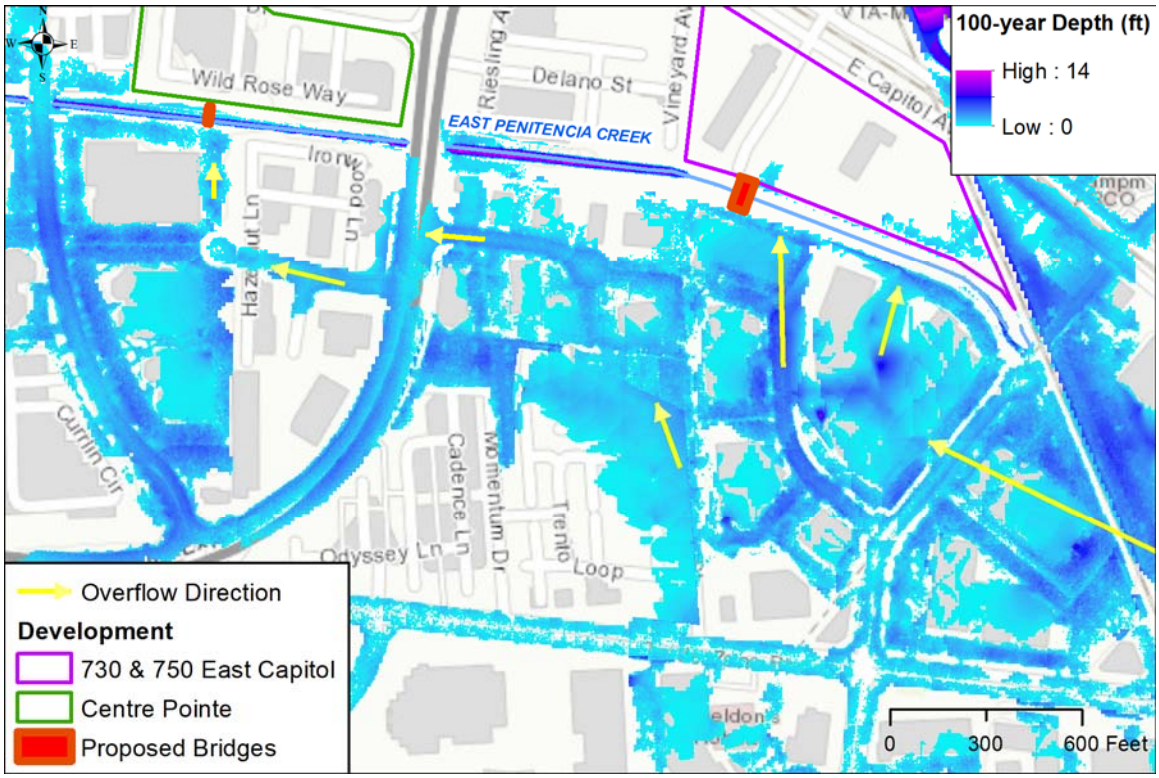


Figure 9 – 100-year All Levees Hold Inundation Depths and Overflow Path at East Penitencia Creek

Hydraulic Results

The results of the hydraulic analysis are summarized in Table 7. The "All Levees Hold" proposed conditions show 0.01 foot increase upstream of the proposed pedestrian bridge and 0.34 foot increase upstream of the proposed South Milpitas Boulevard bridge. The pedestrian bridge does not cause a significant increase in water surface elevation. The proposed South Milpitas Boulevard bridge spans the channel and the low chord is approximately 2.29 feet above the 100-year "All Levees Hold" proposed water surface elevation. The increase in water surface elevations is likely because the left overbank is used for conveyance as the 100-year storm is not contained in channel. The proposed abutments create obstructions in the overbank.

The future conditions "No Overflow" model shows no increase in water surfaces upstream of the pedestrian bridge and shows 0.38 foot increase in water surface elevation upstream of the proposed South Milpitas Boulevard. This increase is due to both the bridge abutments and the possible future floodwall along the left bank of East Penitencia Creek. This scenario would likely only occur if a future project were completed along Upper Penitencia Creek to prevent overflows to East Penitencia Creek. Table 8 includes the hydraulic summary table per the CalTrans Memo to Designers 16-1.

Table 7 - 100-year Water Surface Elevation Comparison

	"All Levees Hold"			Future Conditions "No Overflow"		
River Station	Existing WSE (ft, NAVD 88)	Proposed WSE (ft, NAVD 88)	Difference (ft)	Existing WSE (ft, NAVD 88)	Proposed WSE (ft, NAVD 88)	Difference (ft)
3127	48.72	48.82	0.10	47.05	47.05	0.00
2822	46.26	46.05	-0.21	45.47	45.84	0.37
2618	45.43	45.74	0.31	45.08	45.43	0.35
2596	45.39	45.73	0.34	45.02	45.40	0.38
2542	Proposed South Milpitas Boulevard					
2497	44.98	45.03	0.05	44.95	45.14	0.19
2471	45.00	45.01	0.01	44.95	45.09	0.14
2398	44.92	44.92	0.00	43.76	43.76	0.00
2375	44.79	44.79	0.00	43.76	43.76	0.00
2354	44.75	44.75	0.00	43.33	43.33	0.00
2316	40.15	40.15	0.00	38.28	38.26	-0.02
2283	40.45	40.45	0.00	37.67	37.67	0.00
2243	40.39	40.39	0.00	37.55	37.55	0.00
2075	40.14	40.14	0.00	37.02	37.02	0.00
1934	40.02	40.02	0.00	36.71	36.71	0.00
1685	39.83	39.83	0.00	36.38	36.38	0.00
1625	39.73	39.73	0.00	36.19	36.19	0.00
1530	Montague Expressway					
1446	37.85	37.85	0.00	35.02	35.02	0.00
1392	35.94	35.94	0.00	33.79	33.79	0.00
1070	35.85	35.85	0.00	33.62	33.62	0.00
941	35.42	35.42	0.00	33.31	33.31	0.00
903	35.47	35.47	0.00	33.35	33.35	0.00
880	35.46	35.47	0.01	33.35	33.35	0.00
858	Proposed Pedestrian Bridge					
836	35.42	35.42	0.00	33.31	33.31	0.00
811	35.35	35.35	0.00	33.26	33.26	0.00
658	35.15	35.15	0.00	33.11	33.11	0.00
438	34.79	34.79	0.00	32.92	32.92	0.00
382	34.77	34.77	0.00	32.91	32.91	0.00
316	McCandless Drive					
258	32.98	32.98	0.00	32.50	32.50	0.00
223	32.89	32.89	0.00	32.48	32.48	0.00
132	32.40	32.40	0.00	32.40	32.40	0.00

Table 8 - Hydrologic Summary Table - Caltrans

Hydrologic Summary for South Milpitas Boulevard Bridge of E Penitencia Creek			
	Drainage Area: 1.7 square miles		
Frequency	Design Flood (100-year)	Base Flood (100-year)	Flood of Record (N/A)
Discharge	625 cfs	625 cfs	NA
Water Surface Elevation at Bridge	45.73	45.73	NA

Conclusions

The proposed bridge structures do not cause an impact over 1 foot cumulatively through East Penitencia Creek. The proposed pedestrian bridge has a slight (0.01 foot) increase, and the proposed South Milpitas Boulevard Bridge has a 0.34 foot increase. The increase in water surface elevation up and downstream of the proposed South Milpitas Bridge is due to the abutments creating an obstruction in the conveyance areas and contraction and expansion in the overbanks. The proposed bridge deck is 2.29 feet above the 100-year water surface elevation and spans the main channel; therefore, the increase is not due to the height of the bridge deck but rather overbank obstruction and hydraulic losses due to expansion and contraction.

Contraction scour and abutment scour are expected to occur at the South Milpitas Bridge. Contraction scour is 0.6 ft and abutment 1 scour is 0.7 feet for a total scour depth of 1.3 feet for the 100 year flood. Scour at abutment 2 is not expected to occur. Countermeasures are recommended to incorporate the scour potential into the Abutment 1 design by extending the top of the Abutment 1 footing to a minimum depth of 1 foot below the calculated total scour depth of 1.3 feet. Additionally, the downstream drop structure is currently providing scour protection. Bridge designers may want to account for the additional scour that may occur if the drop structure were removed without repair, or seek assurance from Valley Water that the drop structure will be maintained.

The investigated future condition scenario includes assumes proposed bridge conditions with no overflow from Upper Penitencia Creek and a floodwall assumed to be constructed along the left bank of East Penitencia Creek to contain the local 100-year flowrates. Increases in water surface elevation compared to existing conditions are a result of both the proposed South Milpitas Boulevard bridge abutments and the potential future floodwall. This future proposed scenario results in a 100-year water surface elevation of 45.40 feet (NAVD 88). The proposed bridge deck elevation is 50.1 feet (NAVD 88) and provides approximately 4.7 feet of freeboard to the top of the bridge. The proposed bridge deck is at least 4 feet above the 100-year water surface elevation and meets FEMA levee accreditation freeboard requirements for this future scenario.

Attachments

1. Centre Pointe – Penitencia Creek Pedestrian Bridge Across East Penitencia Creek Between McCandless Drive and Montague Expressway Plans, RJA, November 8, 2019
2. S. Milpitas Boulevard Bridge over Penitencia East hannel, Conerstone Structural Engineering Group, April 1, 2020.

BENCHMARK

SOUTHERLY DISK IN MONUMENT WELL AT THE INTERSECTION OF ABEL STREET AND CORNING AVENUE,
ELEVATION = 17.124' NGVD29 (19.864' NAVD88) +2.74 to NAVD 88
ALL ELEVATIONS SHOWN ON THESE PLANS ARE BASED ON NGVD29.

FEMA FLOOD ZONE:

"ZONE AO" – AVERAGE FLOOD DEPTHS OF 1 FOOT. MAP NO. 06085C0067H, DATE FEBRUARY 19, 2014.

STANDARDS:

TO BE SUPPLEMENTED BY CALTRANS STANDARD PLANS DATED MAY 2015 AND CALTRANS STANDARD SPECIFICATIONS DATED APRIL 20, 2018 AND CITY OF MILPITAS STANDARDS.

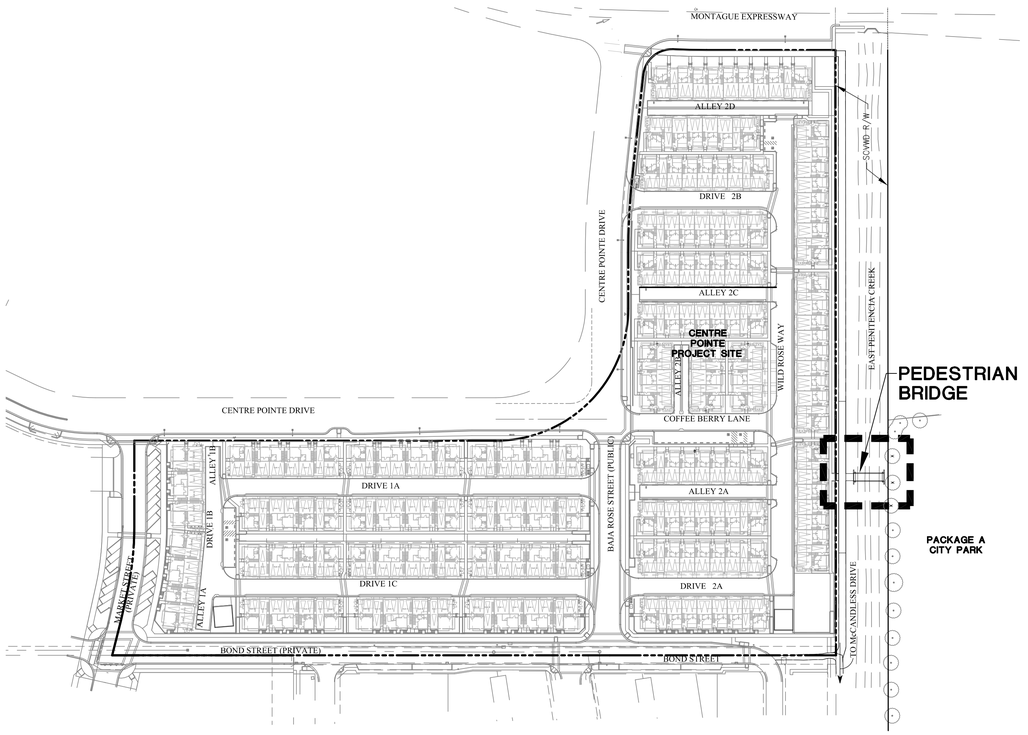
LEGEND

PROPOSED	DESCRIPTION	EXISTING
	PROJECT BOUNDARY	
	LOT LINE	
	CENTERLINE	
	CURB & GUTTER	
	CONCRETE SIDEWALK	
	EDGE OF PAVEMENT	
	EDGE OF TRAIL	
	GAS	GAS
	STORM DRAIN	
	MANHOLE	
	AREA DRAIN	
X	FENCE	X
1+00.00	ELECTROLIER STATION	
	WALL	
348	CONTOUR	350
×350.7	OVERLAND RELEASE SPOT ELEVATION	×349.2
0.5% OR	SLOPE & DIRECTION	
OR	DIRECTION OF SURFACE FLOW	
	ACCESSIBLE ROUTE	
	CONCRETE	
	DECOMPOSED GRANITE	
X	EXISTING TREE TO BE REMOVED (BY OTHERS)	

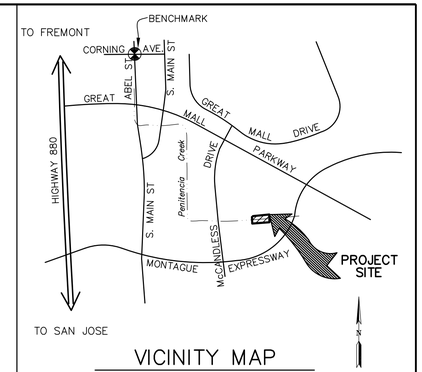
ABBREVIATIONS

AB	AGGREGATE BASE	(N)	NORTH
ADA	AMERICANS WITH DISABILITIES ACT	(NE)	NORTHEAST
APPROX	APPROXIMATELY	NO.	NUMBER
BC	BEGIN CURVE	N.T.S.	NOT TO SCALE
BVC	BEGIN VERTICAL CURVE	O.C.	ON CENTER
CL	CENTERLINE or CLASS	O.D.	OUTSIDE DIAMETER
CONC	CONCRETE	PCC	PORTLAND CEMENT CONCRETE
DG	DECOMPOSED GRANITE	PED	PEDESTRIAN
DIA	DIAMETER	PL or ℄	PROPERTY LINE
DWG	DRAWING	PSI	PER SQUARE INCH
(E)	EAST	PT	POINT
EC	END CURVE	PVC	POLYVINYL CHLORIDE PIPE
EG	EXISTING GROUND	PVI	POINT OF VERTICAL INTERSECTION
ELEV	ELEVATION	R	RIGHT or RADIUS
EP	EDGE OF PAVEMENT	R/W	RIGHT OF WAY
ET	EDGE OF TRAIL	RET	RETAINING
EVC	END OF VERTICAL CURVE	REL	RELATIVE
EX	EXISTING	S	SLOPE
FG	FINISH GRADE	(S)	SOUTH
FGH	FINISH GRADE HIGH	(SE)	SOUTHEAST
FGI	FLAT GRATE INLET	SSMH	SANITARY SEWER MANHOLE
FGL	FINISH GRADE LOW	(SW)	SOUTHWEST
FI	FIELD INLET	SCVWD	SANTA CLARA VALLEY WATER DISTRICT
FL	FLOW LINE	SD	STORM DRAIN
GB	GRADE BREAK	SDMH	STORM DRAIN MANHOLE
GND	GROUND	STD	STANDARD
GR	GRATE	SWK	SIDEWALK
H or HOR.	HORIZONTAL	SS	SANITARY SEWER
HP	HIGH POINT	STA	STATION
HR	HOUR	TW	TOP OF WALL
HSS	HOLLOW STRUCTURAL SECTION	TYP	TYPICAL
IMP	IMPROVEMENTS	VC	VERTICAL CURVE
INV	INVERT	V or VERT.	VERTICAL
L	LEFT	(W)	WEST
LF	LINEAR FEET		
LP	LOW POINT		
MAX	MAXIMUM		
MIN	MINIMUM		

PACKAGE B - IMPROVEMENT PLANS FOR
CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
CITY OF MILPITAS PROJECT NO. 2005
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY
MILPITAS, CALIFORNIA



LOCATION MAP
SCALE: N.T.S.



VICINITY MAP
NO SCALE

CIVIL SHEET INDEX

PAGE NO.	SHEET NO.	SHEET TITLE
1	1	TITLE SHEET
2	2	NOTES
3	3	MULTI–USE TRAIL 2+43 TO 4+55
4	4	MULTI–USE TRAIL SECTIONS
5	5	RETAINING WALL AND SOUTH TRAIL
6	6	BRIDGE PLAN AND SOUTH TRAIL
7	7	WATER POLLUTION CONTROL AND EROSION CONTROL PLAN
8	8	BEST MANAGEMENT PRACTICES

STRUCTURAL SHEET INDEX

PAGE NO.	SHEET NO.	SHEET TITLE
9	S1	GENERAL PLAN
10	S2	ABUTMENT DETAILS NO. 1
11	S3	ABUTMENT DETAILS NO. 2
12	S4	RW–1 RETAINING WALL – PLAN & ELEVATION
13	S5	RW–2 RETAINING WALL – PLAN & ELEVATION
14	S6	RETAINING WALL DETAILS
15	S7	RAILING DETAILS
16	S8	STRUCTURAL AND GEOTECHNICAL SPECIAL INSPECTION AND TESTING

UNDERGROUND SERVICE ALERT 1(800) 227–2600 CALL BEFORE YOU DIG

LOCATION OF UTILITIES

LOCATION OF UTILITIES SHOWN IS ONLY APPROXIMATE. DETERMINATION OF THE ACTUAL LOCATION IS THE RESPONSIBILITY OF THE CONTRACTOR.

ALL ELEVATIONS SHOWN ON THESE PLANS ARE BASED ON NGVD29

CIVIL ENGINEER: I hereby declare that I am the engineer of work for this project, that I have exercised responsible charge over the design of the project as defined in section 6703 of the business and professions codes, and that the design is consistent with current standards. The design shown hereon is necessary and reasonable and does not restrict any historic drainage flows from adjacent properties nor increase drainage to adjacent properties. The design includes principles and techniques to reduce quantity and improve the quality of storm water runoff, as required by NPDES. I understand that the check of project drawings and specifications by the City of Milpitas is confined to a review only and does not relieve me, as engineer of work, of my responsibilities for project design.

SIGNATURE DATE P.E.
Firm: RUGGERI–JENSEN–AZAR
Address: 8055 CAMINO ARROYO, GILROY, CA 95020
Telephone: (408) 848–0300

BIGGS CARDOSA ASSOCIATES INC
STRUCTURAL ENGINEERS
865 The Alameda
San Jose, California 95126
408–296–5515

RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
8055 CAMINO ARROYO GILROY, CA 95020
PHONE: (408) 848–0300 FAX: (408) 848–0302

Designer Stamp: LICENSED PROFESSIONAL ENGINEER LUIS SANTIAGO SOTELO C79665 EXP. CIVIL STATE OF CALIFORNIA

Record Drawings

Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Utility/Facility Dept. Head: _____ Date: _____
Project Engineer: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____ Res. No. _____

Drawn By: RJA Date: 1/29/19
Checked By: RJA Date: 1/29/19
Designed By: RJA Date: 1/29/19

Revisions

Num.	Description	By	Date

NOT FOR CONSTRUCTION
100% SUBMITTAL
NOVEMBER 8, 2019

CITY OF MILPITAS
ENGINEERING DIVISION

CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

TITLE SHEET

RECOMMENDED FOR BIDDING BY: _____ DATE: _____
MICHAEL SILVEIRA, PE CIP MANAGER

APPROVED FOR BIDDING BY: _____ DATE: _____
Steven P. Erickson P.E. City Engineer

PROJECT NO. 2005
Rec. Dwg No.
SCALE: NONE
SHEET 1 OF 16

PLOT DATE: November 6, 2019
FILE PATH: W:\Jobs 12\122015\Drawings\Final\Offsite IP – Penitencia Pedestrian Bridge\Improvement Plans\1 TITLE SHEET.dwg

PROJECT INFORMATION

City of Milpitas:	Engineering Department 455 E. Calaveras Blvd. Milpitas, California 95035 (408) 586–3315 Fax (408) 586–3305 Contact: Maren Schram, P.E. City Project Manager	Civil Engineer:	Ruggeri–Jensen–Azar & Associates 8055 Camino Arroyo Gilroy, California 95037 (408) 848–0300 Fax (408) 848–0302 Contact: Luis Santiago–Sotelo, P.E.
Structural Engineer:	Biggs Cardosa Associates, Inc. 865 The Alameda San Jose, California 95126 (408) 296–5515 Fax (408) 296–8114 Contact: Sarah Moyles, P.E.	Geotechnical Engineer:	ENGEO Incorporated 6399 San Ignacio Ave., Suite 150 San Jose, CA 95119 (408) 574–4900 Fax (888) 279–2698 Contact: Theodore P. Bayham, P.E., G.E.

PG&E NOTES

EMERGENCY PHONE NUMBER: 1–800–743–5000

1. Grading/Excavation: PG&E requires a minimum of existing grade or 36 inches of cover over gas lines (whichever is less). Based on external stress calculations, the maximum allowable fill over the pipeline easement is 24" from existing grade. Any excavations, including grading work, above or around the gas transmission facilities must be performed while a PG&E inspector is present. This includes all laterals, subgrades, gas line depth verifications (potholes), etc. Please follow PG&E Work Procedure TD–4412P–05 "*Excavation Procedures for Damage Prevention*" when working in the vicinity of the gas transmission pipeline. Any plans to expose and support a PG&E gas transmission pipeline across an open excavation need to be approved by PG&E Engineering in writing PRIOR to performing the work.

2. Construction loading: Care must be taken to ensure the safety of the pipeline and the public. There are wheel loading restrictions over the pipeline which will limit the construction equipment used during road/site grading and building operations over the pipeline. Minimally invasive construction techniques must be utilized to minimize damage to the pipeline coating or the pipeline itself. For compaction, please use walk–behind compaction equipment if within 2–feet of the pipeline. At greater than 2–feet, use only equipment that meets the Wheel Loading limits shown below. These limits will be enforced within 10 feet of the pipeline:

Wheel Weight Limits
PGE L–300A–300B

COVER	LB. per Wheel
Less than 2 ft	hand dig
2 ft	4,000
3 ft	7,500
4 ft	9,500
5 ft	10,250
6 ft	10,250

3. Structures: No structures are to be built on the easements. This includes fences, water fountains, pools, ponds, decks, patios, building overhangs, signs, carports, septic or other tanks, leach fields, bioswale areas, storage sheds, loading ramps, or similar.

4. Substructures: All utility crossings must be as close to perpendicular as feasible (90° +/– 15°) to the 20 inch or 34 inch gas lines and must be separated by a minimum of 24 inches from the gas pipelines. Parallel utilities, electroliers, water lines, 'kicker blocks', storm drain inlets, drainage outlets, water meters, valves, back pressure devices or other utility substructures cannot be allowed in the PG&E easement/right of way or within 10 feet of the pipeline, whichever is greater.

5. Cathodic Protection: The active gas transmission pipelines in the project area are protected from corrosion with an "Impressed Current" Cathodic Protection System. Any proposed substructures/facilities, such as metal conduit, pipes, service lines, ground rods, anodes, wires, etc. that may affect the pipeline Cathodic Protection System will require review and approval by PG&E Corrosion Engineering.

6. Landscaping: Trees or deep rooted shrubs shall not be located within 10 feet of edge of the 20"/34" pipe (pipe zone). Trees less than 12 inches in diameter with non–intrusive root structures can be placed outside of the 10 foot pipe zone. This is in accordance with PG&E Utility Standard TD–4490S "Gas Pipeline Rights–of–Way Management" Section 2.

7. Pipeline Markers: PG&E requires pipeline markers be placed along the pipeline route in order to ensure public awareness of the presence of the pipeline, as well as allow visual confirmation of the pipeline location during aerial patrols. Any existing markers will be temporarily relocated to accommodate construction work, but disk or post markers must be reinstalled at the property lines and public road crossings at a minimum.

8. Boring/Trenchless Installations: PG&E must review and approve of 3rd party plans to bore across or parallel to (within 10 feet) a gas transmission pipeline. There are stringent criteria to pothole the gas transmission facility at regular intervals for all parallel bore installations. A PG&E Standby Inspector must be present during all pothole and boring/trenchless installations within 10 feet of the pipelines.

9. Fencing: Care must be taken to ensure the safety and accessibility of the pipelines. No parallel fencing will be allowed within the easements, and any perpendicular fencing will require 14 foot access gates, secured with PG&E corporation locks. Any temporary construction fencing must be coordinated with PG&E Operations personnel, and a PG&E corporation lock place on the gate to allow PG&E access to the Gas Transmission Pipeline Easement at all times.

GENERAL NOTES

1. All work and materials shall comply with standard specifications, construction details, and standard drawings of the City of Milpitas available in the City Engineer's office. It is the responsibility of the contractor to obtain permits necessary to perform the improvements in these plans from the appropriate agencies and to comply with the agencies' requirements. The contractor must comply with all applicable national, state and local laws.

2. Plans used for construction of public facilities purposes must be signed by the City Engineer or his representative. Any subsequent changes shall be approved by the City Engineer or his representative prior to their construction.

3. The official copy of these plans are on file in the office of the City Engineer in Milpitas.

4. This plan is subject to review and subsequent approval in the event the work has not commenced within six (6) months of the date of plan approval.

5. All utilities and improvements that become damaged during construction shall be completely restored to the satisfaction of the City at no additional cost to the City.

6. A $2,000 deposit shall be made to the City of Milpitas and a construction recycled water meter shall be obtained for incidental water used during construction at the Contractor's expense.

7. The Contractor shall notify the City 48 hours in advance of any work to be done in order that inspection may be provided.

8. Prior to any work, the contractor shall obtain a City Business license.

9. The Contractor is responsible for the preservation and or perpetuation of all existing monuments and stakes within the Contractor's area of work. The Contractor shall not disturb or remove any monuments or stakes without the permission of the City Engineer, and he shall bear the expense of resetting any monuments or stakes which may be disturbed or removed with or without permission. The Contractor shall provide a minimum of 15 working days–notice to the City prior to disturbance or removal of existing monuments or stakes. The Contractor shall utilize the services of a California Licensed Land Surveyor to reset all disturbed or removed monuments and stakes or provide witness monuments if agreed upon with City, and file the required documentation with the County Surveyor pursuant to the Business and Professions Code Section 8771.

10. Construction shall not begin until 7 AM and shall end by 7 PM, weekdays and weekends. Without prior approval from the City of Milpitas, construction is not permitted on holidays.

11. A National Pollution Discharge Elimination System Permit (NPDES construction permit) is required prior to commencement of construction activity related to this site and shall be obtained by the owner and/or owner's contractor as appropriate. Any discharge (during construction) of groundwater into the downstream storm system must be uncontaminated. The contractor shall make this determination prior to any discharge.

12. If archaeological resources or human remains are discovered during construction, refer to project specifications.

13. All grading shall comply with City of Milpitas Grading Ordinance, this plan, the Geotechnical Report prepared by ENGEO Incorporated for this project and for "Lower Penitencia Creek Pedestrian Bridge" dated April 24, 2018 including all subsequent addendums. All grading work shall be done under the observation of the Geotechnical Engineer. The Geotechnical Engineer shall be notified 48 hours before the start of any grading.

14. The Contractor is responsible for matching existing streets, surrounding landscape, and other improvements with a smooth transition in paving, curbs, gutters, sidewalks, and grading. Abrupt or apparent changes in grades or cross slopes shall be avoided.

GENERAL NOTES (CONTINUED)

15. The Contractor agrees that, in accordance with generally accepted construction practices, the Contractor will be required to assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property. This requirement shall apply continuously and not be limited to normal working hours.

16. Excavation shall be adequately shored, braced and sheeted so that the earth will not slide or settle and so that all existing improvements of any kind will be fully protected from damage. Any damage resulting from a lack of adequate shoring, bracing, and sheeting, shall be the responsibility of the Contractor, and he shall effect necessary repairs or reconstruction at his own expense. Where the excavation for a conduit, trench, and/or structure is five feet or more in depth, the Contractor shall provide adequate sheeting, shoring and bracing or equivalent method, for the protection of life, or limb, which shall conform to the applicable construction safety orders of the Division of Industrial Safety of the State of California. The Contractor shall always comply with OSHA requirements.

17. The Contractor shall take effective action to prevent the formation of any airborne dust nuisance and shall be responsible for any damage resulting from his failure to do so.

18. Existing underground utilities and improvements are shown in their approximate locations based upon record information available at the time of the preparation of these plans. Locations may not have been verified in the field and no guarantee is made as to the accuracy or completeness of the information shown. The Contractor shall notify utility companies at least 2 working days in advance of Construction to field locate utilities. Call Underground Service Alert (USA) at 1–800–227–2600. It shall be the responsibility of the Contractor to determine the existence and location of utilities shown on these plans, indicated in the field by locating services, or evidenced by facilities visible at or adjacent to the job site. Any additional cost incurred as a result of the Contractor's failure to verify locations of existing utilities prior to beginning construction shall be borne by the Contractor and is deemed included and merged in the contract unit price. The contractor shall excavate inspection holes ("pot holes") and determine the location and depth of all underground structures and utilities that are in the vicinity of and/or may be affected by the proposed improvement work, at Contractor's expense, prior to any construction work which could damage or conflict with said structures and/or utilities.

19. The Contractor shall meet and follow all NPDES requirements in effect at the time of construction.

20. Signs shown in the plans shall be installed on wood posts per State Specifications Section 82.

LEVEE FILL SPECIFICATIONS

1. Fill material for trench backfill of levees and for levee embankment may be either imported backfill material or suitable material from trench excavation blended with imported earth fill material. The fill material is to be free of debris, organic or deleterious material and not contain rocks or lumps over 4 inches in greatest dimension; no more than 15% of the rocks or lumps should be larger than 2 ½ inches. The fill material shall contain at least 75% finer than the #4 U.S. Standard Sieve and 50% finer than the #200 Sieve. The liquid limit shall be less than 40 and the plasticity index shall be between 10 and 20. Levee fill material should be relatively impervious (permeability less than 10 to the minus 6 cm/sec).

2. Surfaces exposed by stripping or excavation shall be scarified to a minimum depth of 6 inches and compacted to a relative compaction of not less than 95% based on ASTM D1557 standard. The loose thickness of each layer of embankment material before compaction shall not exceed 8 inches, and each lift shall be compacted to at least 90% relative compaction based on ASTM D1557 standard. The field density and moisture content of compacted fill will be determined according to ASTM D1556, D2992 and D3017 standard procedures. Any backfilled area not meeting the minimum test requirements shall be removed and recompacted until tests meet the minimum requirements. Jetting or ponding is not permitted.

3. No thin, sliver fills will be accepted. Where compacted channel embankment is required or where replacement in over excavated areas must be accomplished, the new embankment must be placed in thin, maximum 8 inch thick horizontal layers with a minimum width of 6 feet. This specified width may be any combination of new fill plus cut into existing slope, except that a minimum cut of 2 feet into existing slope per layer of fill must be made. Slope shall be trimmed to conform to existing section after placement of fill has been completed.

AGGREGATE SPECIFICATIONS

1. The general extent of furnishing and installing aggregate base is shown on the drawings and includes, but is not limited to, the following: concrete walkways and decomposed granite trail.

2. Submit manufacturer's certification that products comply with requirements of the contract documents.

3. Manufacturer qualifications – Obtain required products from a single manufacturer. Provide accessory items only as produced or recommended by manufacturer of primary products.

4. Aggregate base course material shall be class 2, 3/4 inch maximum as per the state standard specifications.

5. Sub–grade preparation shall be performed on all areas to receive aggregate base as per State Standard Specifications. spreading and compacting aggregate base courses shall be as specified in the plans and the State Standard Specifications. Aggregate bases shall be compacted at min. 95% compaction.

   Where placement of up to 2 inch aggregate base is shown on plans, contractor shall not perform any preparation of subgrade to receive aggregate base.

DECOMPOSED GRANITE SPECIFICATIONS

1. Provide all necessary materials, labor, tools and equipment to perform the work included in the section for the:
   - Extent of decomposed granite paving work is shown on drawings.
   - Decomposed granite paving will have stabilizer binder additive as shown on the plans.
   - Metal header to be installed per drawings and details.

2. Submit manufacturer's "cut sheets" or product literature that products comply with requirements of the contract documents. Provide product sample with stabilizer and without for approval. Provide mock–up of 4–ft by 4–ft if requested by owner.

3. Decomposed granite shall not be installed during rainy conditions.

4. Provide owner's authorized representative with the following excess materials for use in future for repair, including:
   - 40–50 lb. bags of dg
   - 1–40 lb. bags of stabilizer additive

5. The decomposed granite material shall be produced from a virgin source of granite rock deposits and free of serpentine and deleterious or hazardous material. DG Suppliers include:
   - TMT Enterprises, San Jose, CA 408–432–9040
   - Lyngso Garden Materials, Inc. Redwood City 650–364–1730
   - South Bay Materials, San Jose, CA 408–977–1855, or approved equal.

6. The stabilized decomposed granite shall be pre–mixed and contain a stabilizer to be patented, non–toxic, organic binder that is a colorless and odorless concentrated powder than binds decomposed granite together to produce a firm surface. Suppliers include:
   - Stabilizer Solutions, INC. 1–800–336–2468, or approved equal.

7. Apply chemical weed control agent, "Ronstar g" or approved equal, in strict compliance with manufacturer's recommended dosages and application instruction. Apply "Ronstar g" prior to the installation of aggregate base.

8. Placement of Decomposed Granite Upon thorough moisture penetration, compact aggregate screenings to 95% relative compaction by compaction equipment such as; double drum roller (2–4 ton) or single drum roller (1000 lbs.) vibratory plate tamp. do not begin compaction for 6 hours after placement and up to 48 hours. take care in compacting decomposed granite when adjacent to planting and irrigation systems. Remove and replace decomposed granite paving that is damaged, defective or does not meet the requirements of this section.

CONCRETE PAVEMENT SPECIFICATIONS

1. Comply with City of Milpitas Standard Drawings No 427 Residential Sidewalk.

2. Provide all necessary materials, labor, tools and equipment to perform the work included in the section for the:
   - Installation of forming for walkways.
   - Placing reinforcement.
   - Placing and finishing concrete.
   - Curing of concrete.

3. Acquire cement and aggregate from same source for all work.

4. Construct concrete surface course only when atmospheric temperature is above 40 degrees F., when the underlying base is dry, and when weather is not rainy.

5. Concrete shall be Proportion normal–weight concrete mixes to provide the following properties:
   - Compressive Strength: Minimum 3000 psi at 28 days.
   - Slump Limit: Minimum 2 inches, maximum 4 inches.
   - Aggregate Size (maximum): 1 inch.
   - W/C Ratio: 0.50 maximum at point of placement.
   - Air Content: 5–1/2 percent plus or minus 1.5 percent.
   - Drying Shrinkage Limit: 0.04 percent. Drying shrinkage limit is percentage of change in length after 21 days of drying when tested per ASTM C157.

BIGGS CARDOSA ASSOCIATES INC
STRUCTURAL ENGINEERS
865 The Alameda
San Jose, California 95126
408–296–5515

RJA
RUGGERI-JENSEN-AZAR
ENGINEERS ▪ PLANNERS ▪ SURVEYORS
8055 CAMINO ARROYO GILROY, CA 95020
PHONE: (408) 848–0300 FAX: (408) 848–0302

BCA

Designer Stamp:

LICENSED PROFESSIONAL ENGINEER
LUIS SANTIAGO–SOTELO
C79665
EXP. ____
CIVIL
STATE OF CALIFORNIA

Record Drawings

Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Utility/Facility Dept. Head: _____ Date: _____
Project Engineer: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____ Res. No. _____

Drawn By: RJA Date: 1/29/19
Checked By: RJA Date: 1/29/19
Designed By: RJA Date: 1/29/19

Revisions

Num.	Description	Engr. Aprv.	Date

NOT FOR CONSTRUCTION
100% SUBMITTAL
NOVEMBER 8, 2019

CITY OF MILPITAS
CALIFORNIA
INCORPORATED JANUARY 26, 1954

CITY OF MILPITAS
ENGINEERING DIVISION

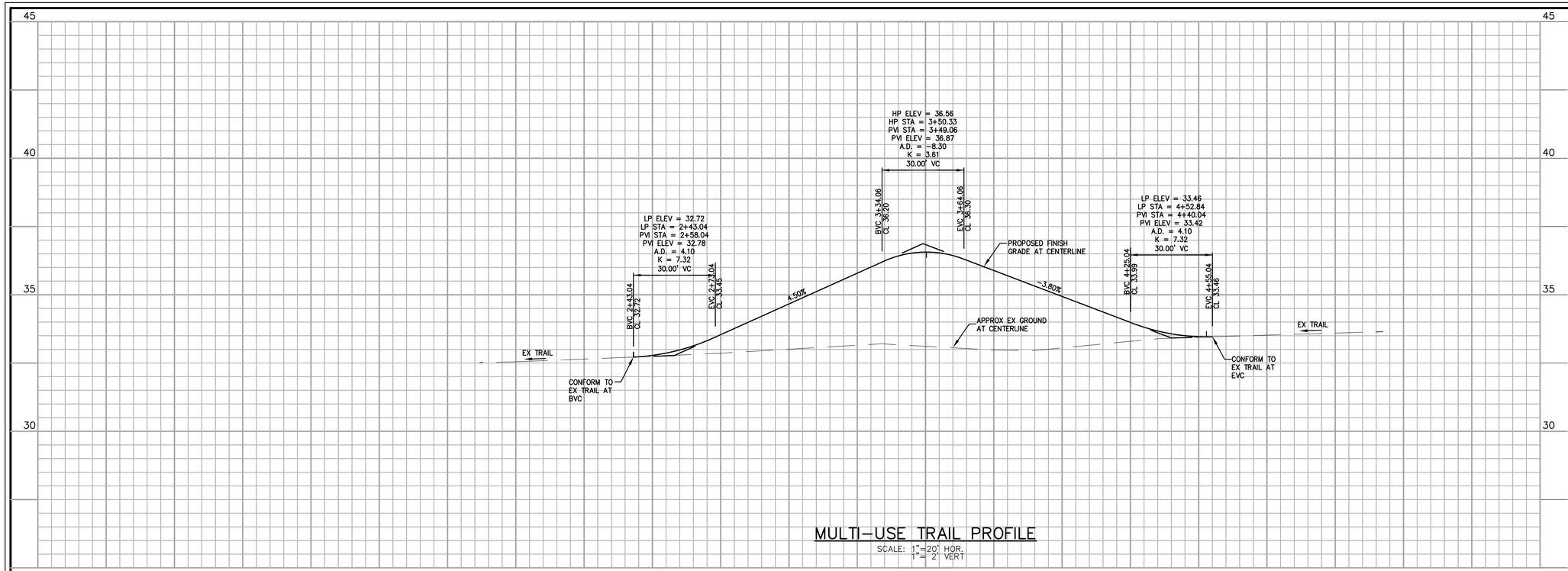
CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

NOTES

RECOMMENDED FOR BIDDING BY: _____ DATE: _____
MICHAEL SILVEIRA, PE CIP MANAGER

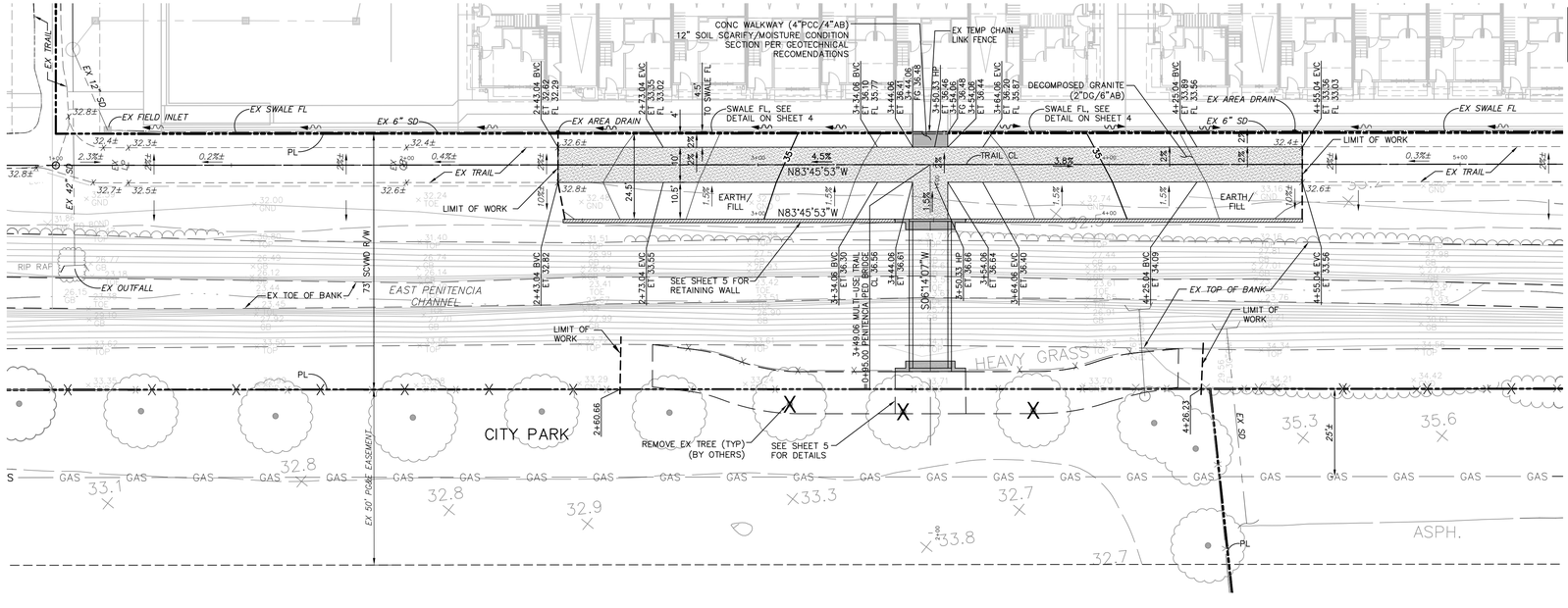
PROJECT NO. 2005
Rec. Dwg No.
SCALE: NONE
SHEET 2 OF 16

PLOT DATE: November 8, 2019
FILE PATH: W:\Jobs 12\12205\Drawings\Final\Offsite IP – Penitencia Pedestrian Bridge\Improvement Plans\2 NOTES.dwg



MULTI-USE TRAIL PROFILE

SCALE: 1"=20' HOR.
1"= 2' VERT



MULTI-USE TRAIL PLAN

SCALE: 1"=20'

ALL ELEVATIONS SHOWN ON THESE PLANS ARE BASED ON NGVD29

NOTES:
1. EXISTING FENCE REMOVAL AND TREE REMOVAL BY OTHERS WILL NEED TO BE COMPLETED PRIOR TO THE START OF CONSTRUCTION.
2. ALL TEMPORARY FENCING SHALL BE REMOVED AT THE END OF CONSTRUCTION.

LEGEND

- CONCRETE SIDEWALK/ABUTMENT
- DECOMPOSED GRANITE
- X — EXISTING TREE TO BE REMOVED (BY OTHERS)

N

0 20 40 60

SCALE IN FEET: 1"= 20'

BIGGS CARDOSA ASSOCIATES INC
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San Jose, California 95126
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Designer Stamp: LICENSED PROFESSIONAL ENGINEER — LUIS SANTIAGO-SOTELO — EXP. ___ — C79665 — CIVIL — STATE OF CALIFORNIA

Record Drawings

Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Utility/Facility Dept. Head: _____ Date: _____
Project Engineer: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____ Res. No. _____

Drawn By: RJA Date: 1/29/19
Checked By: RJA Date: 1/29/19
Designed By: RJA Date: 1/29/19

Revisions

Num.	Description	Engr. Apvd.	Date

NOT FOR CONSTRUCTION
100% SUBMITTAL
NOVEMBER 8, 2019

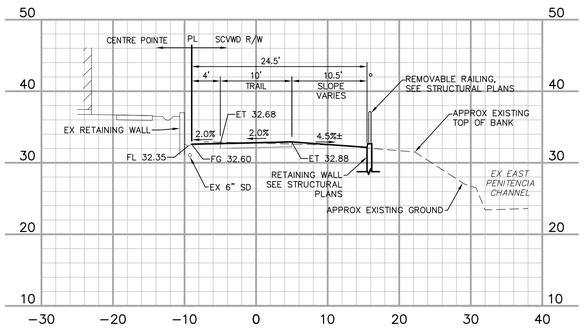
CITY OF MILPITAS
ENGINEERING DIVISION

CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

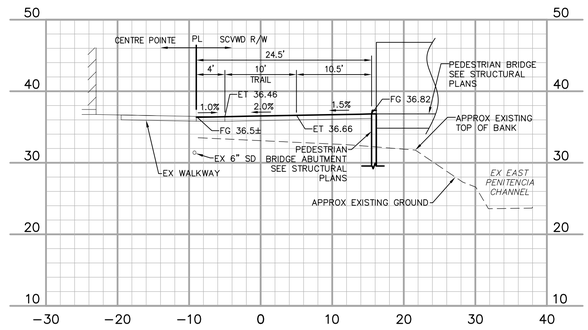
MULTI-USE TRAIL 2+43 TO 4+55

RECOMMENDED FOR BIDDING BY: _____ DATE: _____
MICHAEL SILVEIRA, PE CIP MANAGER

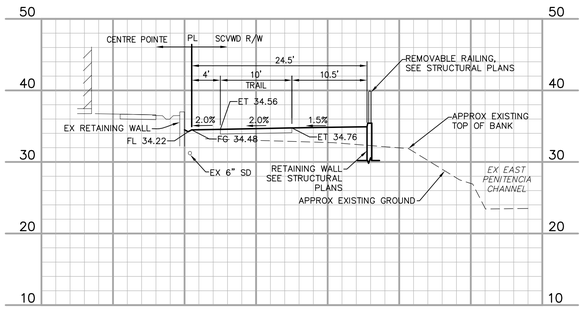
PROJECT NO. 2005
Rec. Dwg No.
SCALE: 1"=2' V 1"=20' H
SHEET 3 OF 16



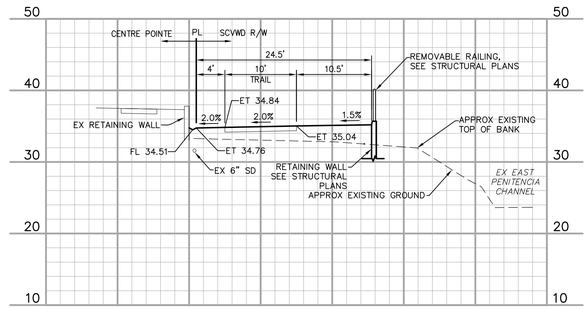
2+50.00



3+50.00



3+00.00



4+00.00

NOTE: ALL EXISTING RETAINING WALL, FENCE AND SWALE IMPROVEMENTS HAVE BEEN CONSTRUCTED BY DR HORTON CENTRE POINTE PROJECT. CONTRACTOR TO PROTECT EXISTING IMPROVEMENTS IN-PLACE AND RE-CONSTRUCT SWALE AS NEEDED

SWALE DETAIL
(SECTION AT STA. 2+43± TO 4+55±)
NO SCALE

4+50.00

ALL ELEVATIONS SHOWN ON THESE PLANS ARE BASED ON NGVD29

0 20 40 60
SCALE IN FEET: 1"= 10'

PLOT DATE: November 6, 2019
FILE PATH: W:\Jobs 12\122015\Drawings\Final\Offsite IP - Penitencia Pedestrian Bridge\Improvement Plans\4 MULTI-USE TRAIL SECTIONS.dwg

BIGGS CARDOSA ASSOCIATES INC
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BCA

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C79665
EXP. _____
CIVIL
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CITY OF MILPITAS
CALIFORNIA
JANUARY 26, 1954

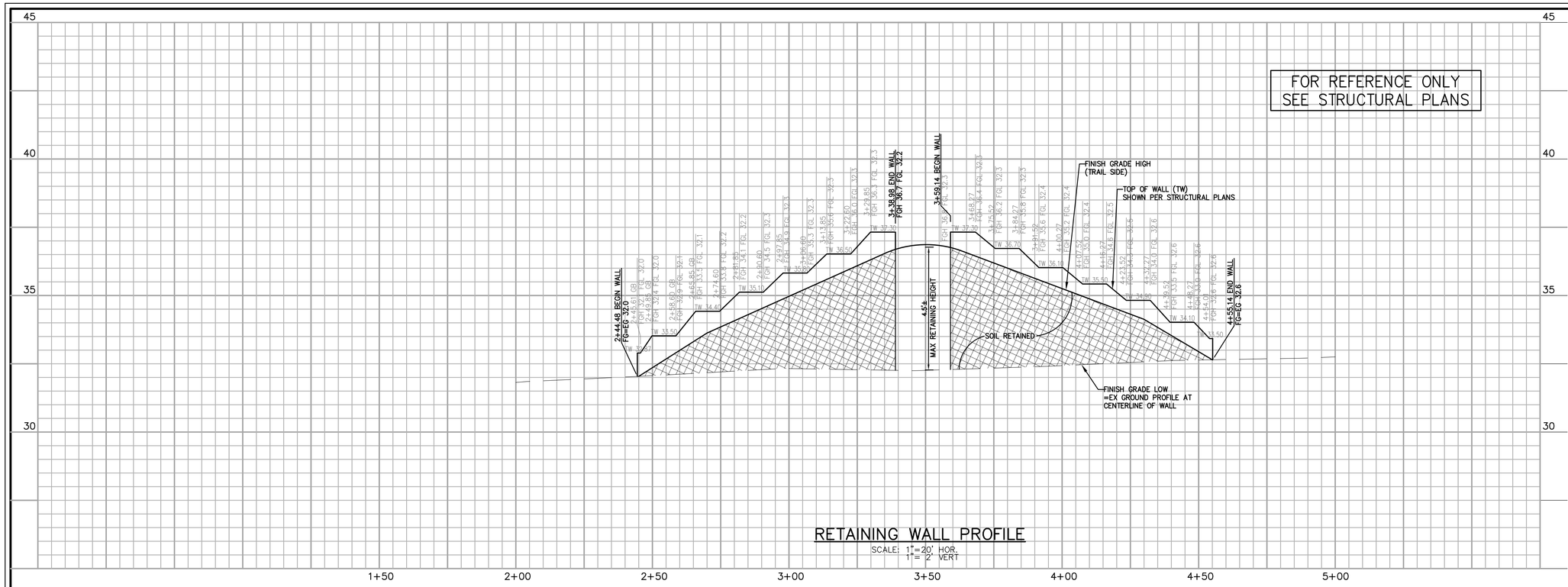
CITY OF MILPITAS
ENGINEERING DIVISION

CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

MULTI-USE TRAIL SECTIONS

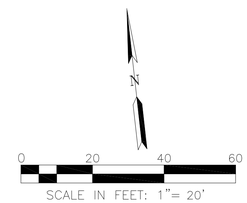
RECOMMENDED FOR BIDDING BY: _____ DATE: _____
MICHAEL SILVEIRA, PE CIP MANAGER

PROJECT NO. 2005
Rec. Dwg No.
SCALE: 1"=10'
SHEET 4 OF 16



RETAINING WALL PROFILE

SCALE: 1"=20' HOR.
1"= 2' VERT



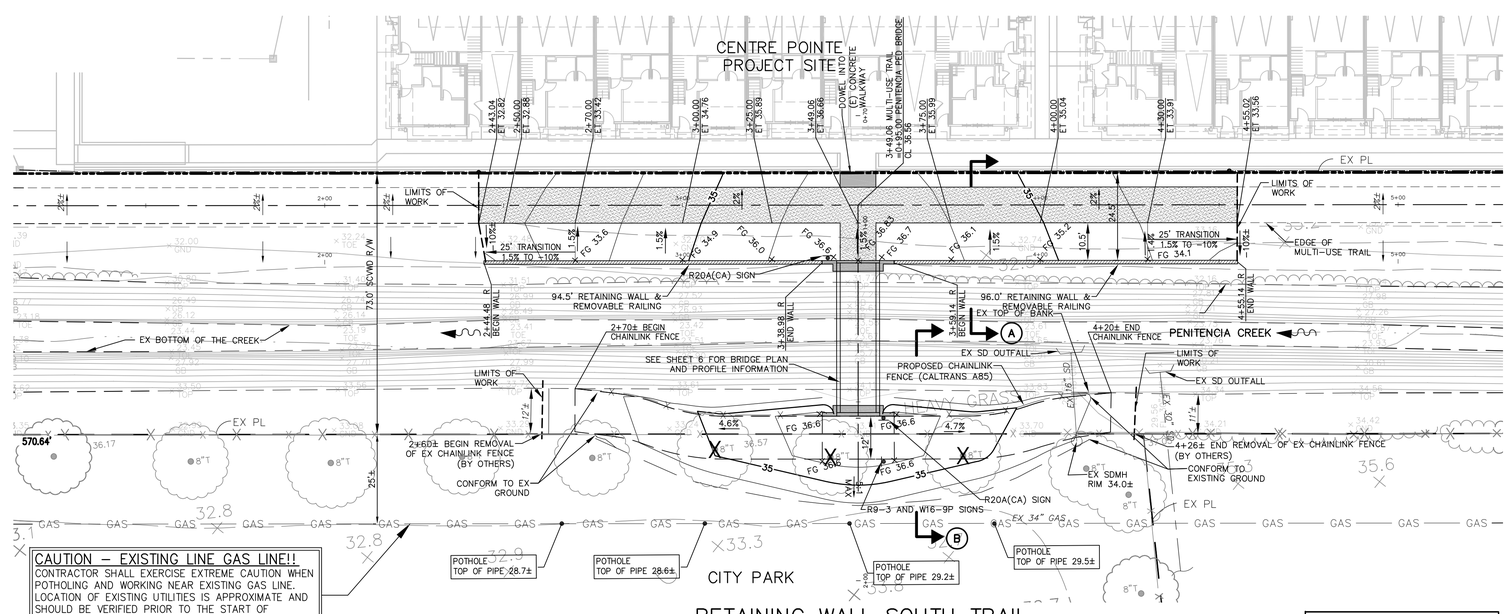
NOTES:
1. EXISTING FENCE REMOVAL AND TREE REMOVAL BY OTHERS WILL NEED TO BE COMPLETED PRIOR TO THE START OF CONSTRUCTION.

GENERAL SIGNING NOTES

1. ALL SIGNING SHALL CONFORM TO THE APPROPRIATE PROVISIONS OF PART 2 "SIGNS" AND PART 3 "MARKINGS" OF THE LATEST VERSION (2014) OF THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CAMUTCD) AND THE CITY STANDARDS AND DETAILS OR PER CITY STANDARD.

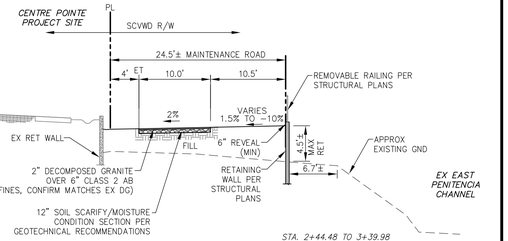
SIGN KEY

R3-17AP	"AHEAD" SIGN
R9-3	NO PEDESTRIAN ACCESS SIGN
R20A(CA)	VEHICLE WEIGHT LIMIT SITE (5-TON)



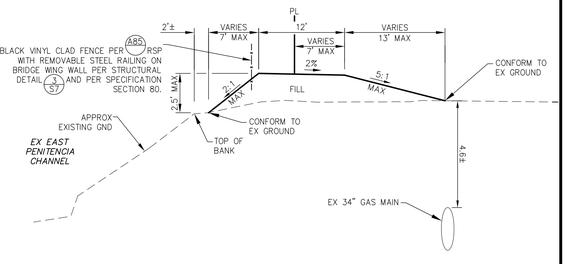
RETAINING WALL SOUTH TRAIL

SCALE: 1"=20'



A TYPICAL TRAIL SECTION

NO SCALE



B TYPICAL FILL SECTION

NO SCALE

FENCING NOTES:
1. FENCING SHALL CONFORM TO SECTION 80 OF THE STANDARD SPECIFICATION. TYPE CL-6 BLACK VINYL COATED FUSION BONDED SHALL BE USED FOR FENCES, GATES, POSTS, BARS, TENSION BARS AND APPURTENANCES. FENCE POSTS SHALL BE SET INTO THE HOLE WITHOUT BACKFILL AND FILLED WITH CLASS 3 CONCRETE PAVEMENT IN ACCORDANCE WITH SECTION 72-5.04.

ALL ELEVATIONS SHOWN ON THESE PLANS ARE BASED ON NGVD29

BIGGS CARDOSA ASSOCIATES INC
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BCA

Designer Stamp:

LICENSED PROFESSIONAL ENGINEER
LUIS SANTIAGO-SOTELO
C79665
EXP.
CIVIL
STATE OF CALIFORNIA

Record Drawings

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Public Works Inspector: _____ Date: _____
Utility/Facility Dept. Head: _____ Date: _____
Project Engineer: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____ Res. No. _____

Drawn By: RJA Date: 1/29/19
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100% SUBMITTAL
NOVEMBER 8, 2019

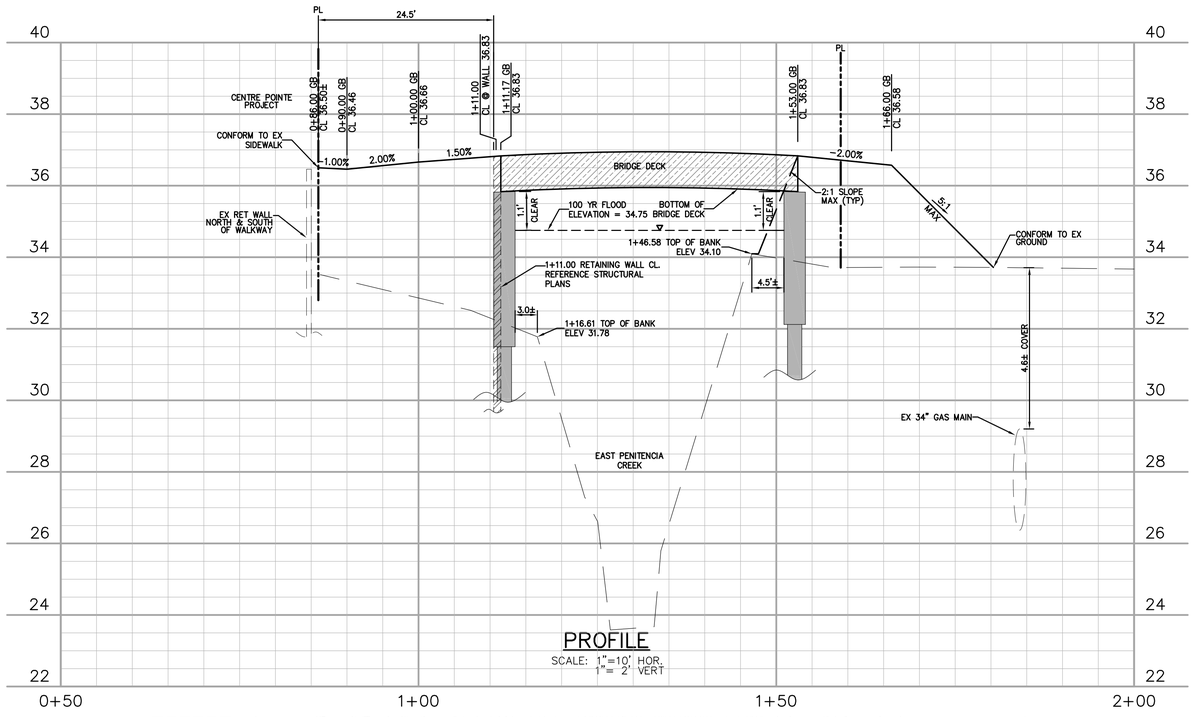
CITY OF MILPITAS
ENGINEERING DIVISION

CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

RETAINING WALL AND SOUTH TRAIL

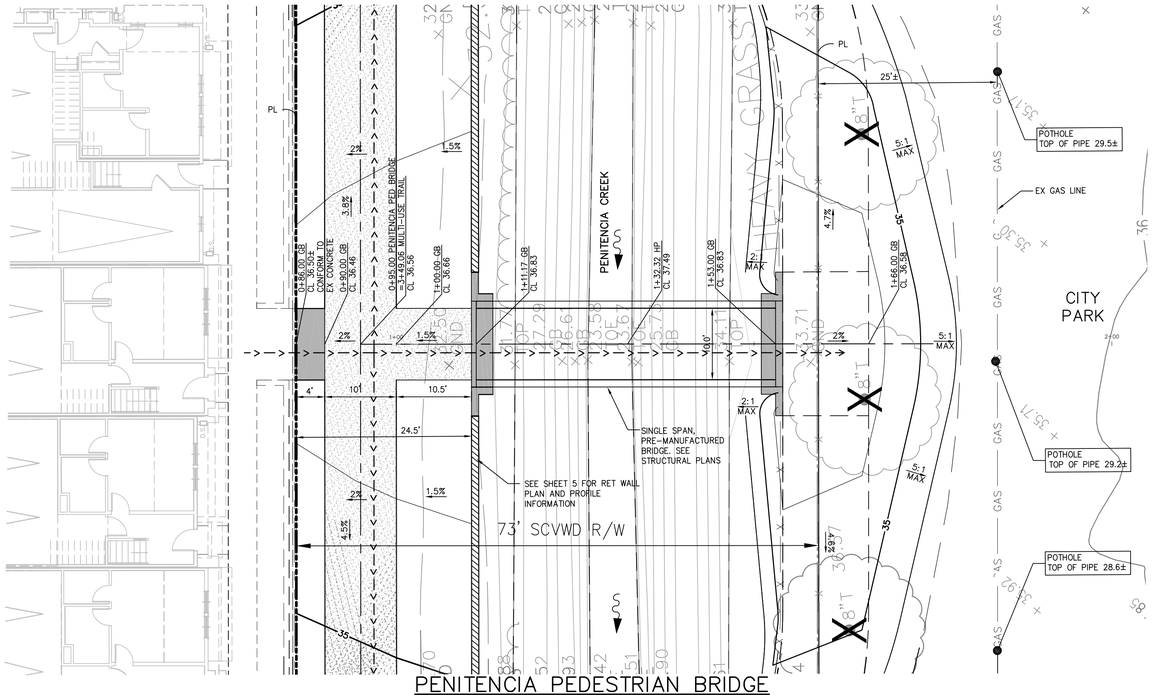
RECOMMENDED FOR BIDDING BY: _____ DATE: _____
MICHAEL SILVEIRA, PE CIP MANAGER

PROJECT NO. 2005
Rec. Dwg No.
SCALE: 1"=2' V 1"=20' H
SHEET 5 OF 16



PROFILE

SCALE: 1"=10' HOR.
1"= 2' VERT



PENITENCIA PEDESTRIAN BRIDGE

SCALE: 1"=10'

LEGEND

- ACCESSIBLE ROUTE
- CONCRETE SIDEWALK/ABUTMENT
- DECOMPOSED GRANITE

NOTE

ACCESSIBLE ROUTE TO AND FROM PARK TO BE PROVIDED AS PART OF THE PARK PROJECT. THE FILL SLOPE (5:1 MAX) WITHIN PARK IS INTERIM CONDITION.

ALL ELEVATIONS SHOWN ON THESE PLANS ARE BASED ON NGVD29

0 10 20 30

SCALE IN FEET: 1"= 10'

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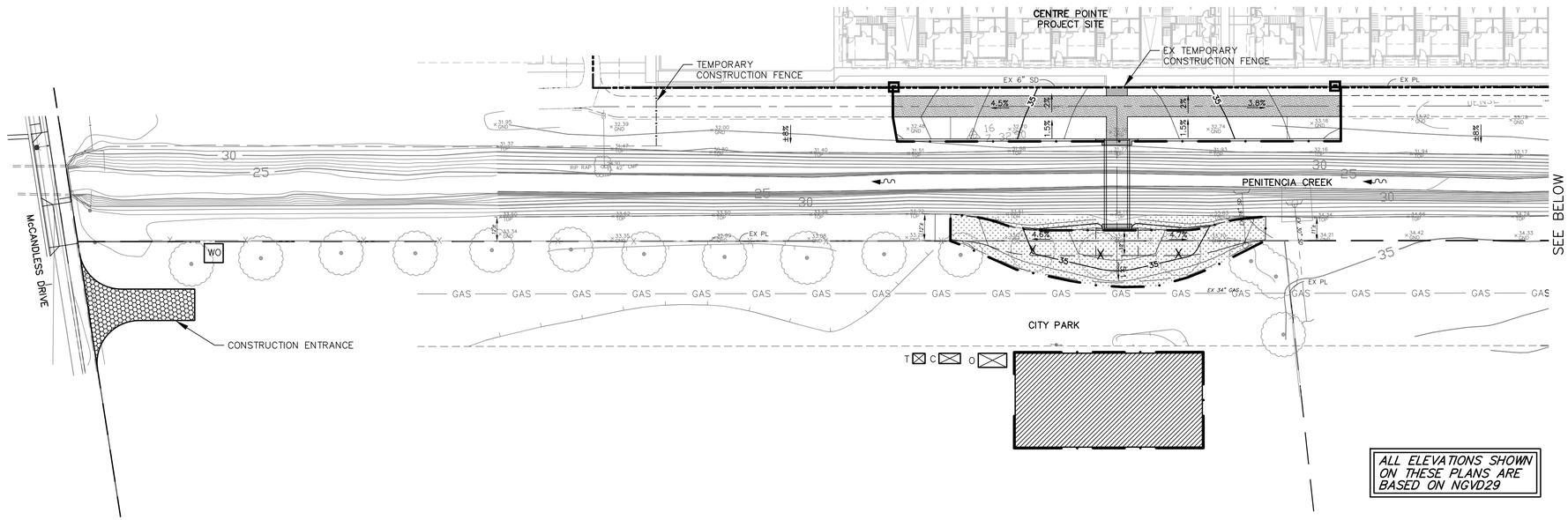
CITY OF MILPITAS
ENGINEERING DIVISION

CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

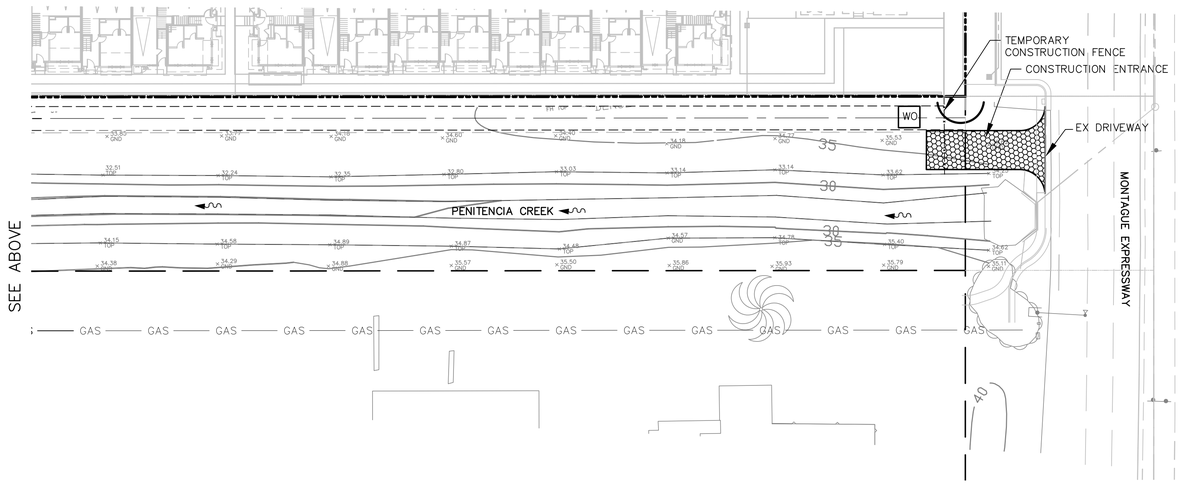
BRIDGE PLAN AND SOUTH TRAIL

RECOMMENDED FOR BIDDING BY: _____ DATE: _____
MICHAEL SILVEIRA, PE CIP MANAGER

PROJECT NO. 2005
Rec. Dwg No.
SCALE: 1"=2' V, 1"=10' H
SHEET 6 OF 16



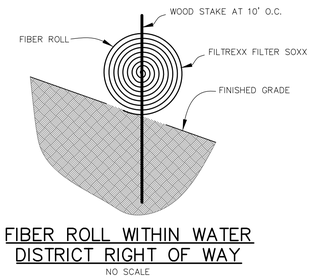
ALL ELEVATIONS SHOWN ON THESE PLANS ARE BASED ON NGVD29



NOTES:

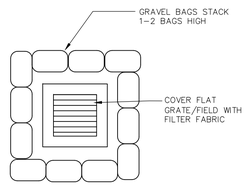
1. ALL TEMPORARY FENCING SHALL BE REMOVED AT THE END OF CONSTRUCTION.
2. CONTRACTOR SHALL REPAIR ANY DAMAGE TO DECOMPOSED GRANITE PATH AND/OR EXISTING IMPROVEMENTS CAUSED BY CONSTRUCTION ACTIVITIES. REPAIRS SHALL BE MADE TO CITY'S SATISFACTION.

NOTE: TEMPORARY STABILIZED CONSTRUCTION ENTRANCE TO BE REMOVED UPON COMPLETION OF IMPROVEMENTS AND AREA TO BE RESTORED TO ORIGINAL CONDITIONS.

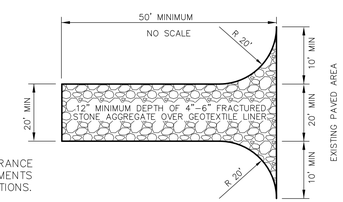


FIBER ROLL WITHIN WATER DISTRICT RIGHT OF WAY

NO SCALE



DRAIN INLET SEDIMENT BARRIER



*SEE CASQA BMP FACT SHEETS TC-1 & TC-3 FOR MORE INFORMATION.

TEMPORARY STABILIZED CONSTRUCTION ENTRANCE

NO SCALE

WATER POLLUTION CONTROL NOTES

1. General: Refer to the project specifications for more information regarding good site management "housekeeping", BMPs, and additional monitoring and reporting requirements. It is the responsibility of the contractor to ensure this Erosion Control Plan are properly implemented.
2. Revisions: This Erosion Control Plan may not cover all the situations that may arise during construction due to unanticipated field conditions. The contractor shall modify this plan as necessary to identify proper erosion and sediment controls for the current phase of work.
3. Drain Inlet Protection: Prior to beginning construction, install drain inlet sediment barriers per the detail on this plan on all drain inlets in the vicinity of construction operations.
4. Preserve Existing Property/Vegetative: Keep vehicles and equipment off exposed soil and preserve existing vegetation as much as possible.
5. Stockpile/Staging Management: All stockpiles and staging areas shown on this plan are conceptual. Actual stockpile and staging area locations will be dependent on the construction phase and work zone. The contractor shall identify actual staging areas on this plan. Cover all stockpiles with a plastic cover when not in use and prior to storm events. Store chemicals in watertight containers with appropriate secondary containments to prevent any spillage or leakage. Install and maintain sand bag barriers and/or fiber rolls around the base of all stockpiles at all times.
6. Material Delivery: All haul and delivery trucks with loose material shall be covered or a minimum two feet of freeboard maintained.
7. Street Cleaning: All paved areas shall be kept free and clear of earth material and debris. Streets shall be cleaned with a sweep vacuum truck as needed.
8. Vehicle Maintenance, Cleaning & Fueling: Vehicle maintenance, cleaning, and fueling is not allowed at the construction site and shall take place at designated offsite locations.
9. Concrete Waste Management: Washout of concrete wastes shall take place at designated onsite locations and in accordance with CASQA Handbook BMP WM-8.
10. Port-a-Pottie: Port-a-Pottie locations should be designated as far away from public access and storm drain inlets as possible. Inspect sanitation facilities regularly for leaks and spills and clean or replace as necessary to prevent discharges of pollutants to the storm water drainage system or receiving water.
11. Construction Traffic: Traffic speeds shall be limited to 15 mph.
12. Disturbed Area Management: Apply soil binder on disturbed areas where no work will commence within 14 days. Install and establish final stabilization measures (vegetation, pavement, etc.) as soon as possible on disturbed areas where work is complete. Utility trenches in existing streets that are not completely repaired to the final condition shall be covered with temporary pavement, plates, or other equivalent method.
13. BMP Inspection and Maintenance: Construction site BMPs shall be inspected weekly and once a day during extended storm events to ensure proper implementation and functionality. BMPs shall be repaired or replaced immediately after a deficiency has been identified. Refer to sheet BEST MANAGEMENT PRACTICES on sheet 8 for more information.
14. Dust Control: Water all active construction areas, unpaved access roads, and staging areas at least twice a day or more often as needed to prevent dust from becoming airborne and leaving the site.

SCVWD HYDROSEED NOTES

EROSION CONTROL OPTIONS FOR WORK SITES WITH EXISTING NATIVE PLANTS

These erosion control options should be followed in most areas along natural creeks where native trees, shrubs and herbs reside on or near the work site A site visit or referral of a good series of photos to a landscape professional familiar with native plants or a revegetation specialist may be needed to determine the best approach.

If no irrigation is available, if the slope is very steep, or if it's late in the season

- Use a non-biological method, such as straw with tackifier, erosion control blankets (jute netting with straw or coir filling), etc. instead of seeding.

Benefits

- This plant mix makes few if any seeds, so it cannot become a weed, and it usually lives only one year.
- The adjacent native plants can seed in thereafter.

Use if there is absolutely no time to investigate site conditions.

- Use a Failsage mix with 50 lb/ac 'Regreen' sterile wheat (Triticum X Elymus 'Regreen'), with 95% minimum purity, and minimum germination of 85%.

EROSION CONTROL OPTIONS FOR WORK SITES WITHOUT EXISTING NATIVE PLANTS

These erosion control options should be followed in areas where there is no remaining native vegetation for miles around. An example of such a site is the back slope of a levee in an urbanized area.

For Slopes 3:1 or Flatter

California Native Grass. Use a mix of:

- Prostrate Hordeum Californicum (Prostrate California Barley) @ 16 lb/ac, minimum purity 90%, minimum germination 80%
- Elymus glaucus 'Berkeley' ('Berkeley' Blue Wildrye)@ 12 lb/ac, minimum purity 95%, minimum germination 85%
- Bromus carinatus 'S.F. Bay Area' ('S.F. Bay Area' California Brome) @ 10 lb/ac, minimum purity 95%, minimum germination 85%

Failsafe Mix:

- 50lb/ac 'Regreen' sterile wheat (Triticum X Elymus Regreen"), minimum purity 95%, minimum germination 85%
- Non-biological method as outlined above

For Slopes 2:1 or Steeper

- California Native Grasses PLUS Mix. Use the mix for Slopes 3:1 or Flatter PLUS Vulpia microstachys (Three Weeks Fescue) @ 5 lb/ac, purity 95%, minimum germination 70%
- Failsafe Mix. 50 lb/ac 'Regreen' sterile wheat (Triticum X Elymus 'Regreen'), minimum purity 95%, minimum germination 85%.
- Non-biological method as outlined above.
- All erosion control items shall be maintained throughout construction of the project.

WINTERIZATION NOTES

When winter operations do take place, the following measures must be taken to prevent accelerated erosion. Additional measures may be required.

1. Between October 15th and April 15th, disturbed surfaces not involved in immediate operations must be protected by mulching and/or other effective means of soil protection.
2. All surfaces shall have drainage facilities sufficient to prevent erosion on or adjacent to creek. Erosion-proof surfacing may be required in areas of high erosion hazard.
3. Runoff from a site shall be filtered by fire rolls to prevent the escape of sediment from the site. These drainage controls must be maintained by the permittee and/or property owner as necessary to achieve their purpose throughout the life of the project.
4. Erosion control measures shall be in-place at the end of each working day.
5. The Director of Building Inspection shall stop operations during periods of inclement weather if he/she determines that erosion problems are not be adequately controlled.

LEGEND

- FIBER ROLL
- SLOPE EROSION PROTECTION (HYDROSEED PER SCVWD STANDARDS)
- DRAIN INLET SEDIMENT BARRIER
- POTENTIAL STAGING AREA
- STABILIZED CONSTRUCTION ENTRANCE
- O — TEMPORARY OFFICE
- C — CONSTRUCTION CONTAINER
- T — TEMPORARY TOILET WITH SECONDARY CONTAINMENT
- WO — CONCRETE WASHOUT

N

0 30 60 90

SCALE IN FEET: 1"= 30'

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NOVEMBER 8, 2019

CITY OF MILPITAS — CALIFORNIA — JANUARY 26, 1954

CITY OF MILPITAS
ENGINEERING DIVISION

CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

WATER POLLUTION CONTROL AND EROSION CONTROL PLAN

RECOMMENDED FOR BIDDING BY: _____ DATE: _____
MICHAEL SILVEIRA, PE CIP MANAGER

PROJECT NO. 2005
Rec. Dwg No.
SCALE: 1"=30'
SHEET 7 OF 16

Fresh Concrete and Mortar Application

Who should use this information?

- Masons and Bricklayers
- Sidewalk Construction Crews
- Patio Construction Workers
- Construction Inspectors
- General Contractors
- Home Builders
- Developers
- Concrete Delivery/Pumping Workers

Storm Drain Pollution from Fresh Concrete And Mortar Applications

Fresh concrete and cement-related mortars that wash into lakes, streams, or estuaries are toxic to fish and the aquatic environment. Disposing of these materials to the storm drains or creeks can block storm drains, causes serious problems, and is prohibited by law.

Doing the Job Right
General Business Practices

- ❑ Wash out concrete mixers only in designated wash-out areas in your yard, away from storm drains and waterways, where the water will flow into a temporary waste pit in a dirt area. Let water percolate through soil and dispose of settled, hardened concrete as garbage. Whenever possible, recycle washout by pumping back into mixers for reuse.
- ❑ Wash out chutes onto dirt areas at site that do not flow to streets or drains.
- ❑ Always store both dry and wet materials under cover, protected from rainfall and runoff and away from storm drains or waterways. Protect dry materials from wind.
- ❑ Secure bags of cement after they are open. Be sure to keep wind-blown cement powder away from streets, gutters, storm drains, rainfall, and runoff.
- ❑ Do not use diesel fuel as a lubricant on concrete forms, tools, or trailers.

During Construction

- ❑ Don't mix up more fresh concrete or cement than you will use in a two-hour period.
- ❑ Set up and operate small mixers on tarps or heavy plastic drop cloths.
- ❑ When cleaning up after driveway or sidewalk construction, wash fines onto dirt areas, not down the driveway or into the street or storm drain.
- ❑ Protect applications of fresh concrete and mortar from rainfall and runoff until the material has dried.
- ❑ Wash down exposed aggregate concrete only when the wash water can (1) flow onto a dirt area; (2) drain onto a bermed surface from which it can be pumped and disposed of properly; or (3) be vacuumed from a catchment created by blocking a storm drain inlet. If necessary, divert runoff with temporary berms. Make sure runoff does not reach gutters or storm drains.
- ❑ When breaking up pavement, be sure to pick up all the pieces and dispose of properly. Recycle large chunks of broken concrete at a local recycling facility.
- ❑ Never bury waste material. Dispose of small amounts of excess dry concrete, grout, and mortar in the trash.
- ❑ Never dispose of washout into the street, storm drains, drainage ditches, or streams.

Heavy Equipment Operation

Who should use this information?

- Vehicle and Equipment Operators
- Site Supervisors
- General Contractors
- Home Builders
- Developers

Stormwater Pollution from Heavy Equipment on Construction Sites

Poorly maintained vehicles and heavy equipment that leak fuel, oil, antifreeze or other fluids on the construction site are common sources of storm drain pollution. Prevent spills and leaks by isolating equipment from runoff channels, and by watching for leaks and other maintenance problems. Remove construction equipment from the site as soon as possible.

Doing the Job Right
Site Planning and Preventive Vehicle Maintenance

- ❑ Designate one area of the construction site, well away from streams or storm drain inlets, for auto and equipment parking, refueling, and routine vehicle and equipment maintenance. Contain the area with berms, sand bags, or other barriers.
- ❑ Maintain all vehicles and heavy equipment. Inspect frequently for and repair leaks.
- ❑ Perform major maintenance, repair jobs, and vehicle and equipment washing off site where cleanup is easier.
- ❑ If you must drain and replace motor oil, radiator coolant, or other fluids on site, use drip pans or drop clot hs to catch drips and spills. Collect all spent fluids, store in separate containers. Recycle them wherever possible, otherwise, dispose of them as hazardous wastes.
- ❑ Do not use diesel oil to lubricate equipment parts, or clean equipment. Use only water for any onsite cleaning.
- ❑ Cover exposed fifth wheel hitches and other oily or greasy equipment during rain events.
- ❑ Use as little water as possible for dust control. Ensure water used doesn't leave silt or discharge to storm drains.

Spill Cleanup

- ❑ Clean up spills immediately when they happen.
- ❑ Never hose down "dirty" pavement or impermeable surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags) whenever possible and properly dispose of absorbent materials.
- ❑ Sweep up spilled dry materials immediately. Never attempt to "wash them away" with water, or bury them.
- ❑ Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- ❑ Report significant spills to the appropriate local spill response agencies immediately. In Milpitas, dial 9-1-1 if hazardous materials might enter the storm drain.

Earth-Moving and Dewatering Activities

Who should use this information?

- Bulldozer, Back Hoe, and Grading Machine Operators
- Dump Truck Drivers
- Site Supervisors
- General Contractors
- Home Builders
- Developers

Storm Drain Pollution from Earth-Moving Activities

Soil excavation and grading operations loosen large amounts of soil that can flow or blow into storm drains when handled improperly. Sediments in runoff can clog storm drains, smother aquatic life, and destroy habitats in creeks and the Bay. Effective erosion control practices reduce the amount of runoff crossing a site and slow the flow with check dams or roughened ground surfaces.

Contaminated groundwater is a common problem in the Santa Clara Valley. Depending on soil types and site history, groundwater pumped from construction sites may be contaminated with toxics (such as oil or solvents) or laden with sediments. Any of these pollutants can harm wildlife in creeks or the Bay, or interfere with wastewater treatment plant operation. Discharging sediment-laden water from a dewatering site into any water of the state without treatment is prohibited.

Doing the Job Right
General Business Practices

- ❑ Schedule excavation and grading work during dry weather.
- ❑ Perform major equipment repairs away from the job site.
- ❑ When refueling or vehicle/equipment maintenance must be done on site, designate a location away from storm drains.
- ❑ Do not use diesel oil to lubricate equipment parts, or clean equipment.

Practices During Construction

- ❑ Remove existing vegetation only when absolutely necessary. Plant temporary vegetation for erosion control on slopes or where construction is not immediately planned.
- ❑ Protect downslope drainage courses, streams, and storm drains with wattles, or temporary drainage swales. Use check dams or ditches to divert runoff around excavations. Refer to the Regional Water Quality Control Board's Erosion and Sediment Control Field Manua l for proper erosion and sediment control measures, and California Stormwater Quality Associatio s Stormwater Best Management Practice Handbook (construction, 2003).
- ❑ Cover stockpiles and excavated soil with secured tarps or plastic sheeting.

Dewatering Operations
Check for Toxic Pollutants

- ❑ Check for odors, discoloration, or an oily sheen on groundwater.
- ❑ Call your local wastewater treatment agency and ask whether the groundwater must be tested.
- ❑ If contamination is suspected, have the water tested by a certified laboratory.
- ❑ Depending on the test results, you may be allowed to discharge pumped groundwater to the storm drain (if no sediments present) or sanitary sewer. OR, you may be required to collect and haul pumped groundwater offsite for treatment and disposal at an appropriate treatment facility.

Check for Sediment Levels

- ❑ If the water is clear, the pumping time is less than 24 hours, and the flow rate is less than 20 gallons per minute, you may pump water to the street or storm drain.
- ❑ If the pumping time is more than 24 hours and the flow rate greater than 20 gpm, call your local wastewater treatment plant for guidance.
- ❑ If the water is not clear, solids must be filtered or settled out by pumping to a settling tank prior to discharge. Options for filtering include:
  - Pumping through a perforate pipe sunk part way into a small pit filled with gravel;
  - Pumping from a bucket placed below water level using a submersible pump;
  - Pumping through a filtering device such as a swimming pool filter or filter fabric wrapped around end of suction pipe.
- ❑ When discharging to a storm drain, protect the inlet using a barrier of burlap bags filled with drain rock, or cover inlet with filter fabric anchored under the grate, OR pump water through a grassy swale prior to discharge.

Detecting Contaminated Soil or Groundwater

Contaminated groundwater is a common problem in the Santa Clara Valley. It is essential that all contractors and subcontractors involved know what to look for in detecting contaminated soil or groundwater, and testing ponded groundwater before pumping. Watch for any of these conditions:

1. Unusual soil conditions, discoloration or odor.
2. Abandoned under-ground tanks.
3. Abandoned wells.
4. Buried barrels, debris or trash.

If any of these are found follow the procedures below.

Roadwork and Paving

Who should use this information?

- Road Crews
- Driveway/Sidewalk/Parking Lot Construction Crews
- Seal Coat Contractors
- Operators of Grading Equipment, Paving Machines, Dump Trucks, Concrete Mixers
- Construction Inspectors
- General Contractors
- Developers
- Home Builders

Storm Drain Pollution from Roadwork

Road paving, surfacing, and pavement removal happen right in the street, where there are numerous opportunities for asphalt, sawcut slurry, or excavated material to illegally enter storm drains. Extra planning is required to store and dispose of materials properly and guard against pollution of storm drains, creeks, and the Bay.

Doing the Job Right
General Business Practices

- ❑ Develop and implement erosion/sediment control plans for roadway embankments.
- ❑ Schedule excavation and grading work during dry weather.
- ❑ Check for and repair leaking equipment.
- ❑ Perform major equipment repairs at designated areas in your maintenance yard, where cleanup is easier. Avoid performing equipment repairs at construction sites.
- ❑ When refueling or when vehicle/equipment maintenance must be done on site, designate a location away from storm drains and creeks.
- ❑ Do not use diesel oil to lubricate equipment parts or clean equipment.
- ❑ Recycle used oil, concrete, broken asphalt, etc. whenever possible, or dispose of properly.

During Construction

- ❑ Avoid paving and seal coating in wet weather, or when rain is forecast, to prevent fresh materials from contacting stormwater runoff.
- ❑ Cover and seal catch basins and manholes when applying seal coat, slurry seal, fog seal, or similar materials.
- ❑ Protect drainage ways by using earth dikes, sand bags, or other controls to divert or trap and filter runoff.
- ❑ Never wash excess material fr om exposed aggregate concrete or similar treatments into a street or storm drain. Collect and recycle, or dispose to dirt area.
- ❑ Cover stockpiles (asphalt, sand, etc.) and other construct on materials with plastic tarps. Protect from rainfall and prevent runoff with temporary roofs or plastic sheets and berms.
- ❑ Park paving machines over drip pans or absorbent material (cloth, rags, etc.) to catch drips when not in use.
- ❑ Clean up all spills and leaks using "dry" methods (with absorbent materials and/or rags) Dig up, remove, and properly dispose of contaminated soil.
- ❑ Collect and recycle or appropriately dispose of excess abrasive gravel or sand.
- ❑ Avoid over-application by water trucks for dust control.

Asphalt/Concrete Removal

- ❑ Avoid creating excess dust when breaking asphalt or concrete.
- ❑ After breaking up old pave ment, be sure to remove all chunks and pieces. Make sure broken pavement does not come in contact with rainfall or runoff.
- ❑ When making saw cuts, use as little water as possible. Shovel or vacuum saw-cut slurry and remove from the site. Cover or protect storm drain inlets during saw-cutting. Sweep up, and properly dispose of, all residues.
- ❑ Sweep, never hose down streets to clean up tracked dirt. Use a street sweeper or vacuum truck. Do not dump vacuumed liquor in storm drains.

Painting and Application of Solvents and Adhesives

Who should use this information?

- Painters
- Paperhangers
- Plasterers
- Graphic Artists
- Dry Wall Crews
- Floor Covering Installers
- General Contractors
- Home Builders
- Developers
- Homeowners

Storm Drain Pollution from Paints, Solvents, and Adhesives

All paints, solvents, and adhesives contain chemicals that are ha rmful to wildlife in local creeks, San Francisco Bay, and the Pacific Ocean. Toxic chemicals may come from liquid or solid products or from cleaning residues or rags. Paint material and wastes, adhesives and cleaning fluids should be recycled when possible, or disposed of properly to prevent these materials from flowing into storm drains and watercourses.

Doing the Job Right
Handling Paint Products

- ❑ Keep all liquid paint products and wastes away from the gutter, street, and storm drains. Liquid residues from paints, thinners, solvents, glues, and cleaning fluids are hazardous wastes and must be disposed of as hazardous.
- ❑ Wash water from painted buildings constructed before 1978 can contain high amounts of lead, even if paint chips are not present. Before you begin stripping paint or cleaning pre-1978 building exteriors with water under high pressure, test paint for lead by taking paint scrapings to a local laboratory. See Yellow Pages for a state-certified laboratory.
- ❑ If there is loose paint on the building, or if the paint tests positive for lead, block storm drains. Check with the wastewater treatment plant to determine whether you may discharge water to the sanitary sewer, or if you must send it offsite for disposal as hazardous waste.

Paint Removal

- ❑ Paint chips and dust from non-hazardous dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash.
- ❑ Chemical paint stripping residue and chips and dust from marine paints or paints containing lead, mercury or tributyl tin must be disposed of as hazardous wastes. Lead based paint removal requires a state-certified contractor.
- ❑ When stripping or cleaning building exteriors with high-pressure water, block storm drains. Direct wash water onto a dirt area to find out if you can collect (mop or vacuum) building cleaning water and dispose to the sanitary sewer. Sampling of the water may be required to assist the wastewater treatment authority in making its decision.

Painting Cleanup

- ❑ Never clean brushes or rinse paint containers into a street, gutter, storm drain, French drain, or stream.
- ❑ For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary sewer. Never pour paint down a storm drain. Dispose of excess liquids and residue as hazardous waste.
- ❑ For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids and residue as hazardous waste.
- ❑ When thoroughly dry, empty paint cans, used brushes, rags, and drop cloths may be disposed of as garbage in a sanitary landfill. Leave lids off paint cans so the refuse collector can see that they are empty. Empty, dry paint cans also may be recycled as metal.
- ❑ Dispose of empty aerosol paint cans as hazardous waste or at household hazardous waste collection events.

Recycle/Reuse Leftover Paints Whenever Possible

- ❑ Donate excess water-based (latex) paint for reuse.
- ❑ Reuse leftover oil-based paint. Dispose of non-recyclable thinners, sludge and unwanted paint, as hazardous waste.
- ❑ Unopened cans of paint may be able to be returned to the paint vendor. Check with the vendor regarding its "buy-back" policy.

BLUEPRINT FOR A CLEAN BAY

Best Management Practices for the Construction Industry

Remember: The property owner and the contractor share ultimate responsibility for the activities that occur on a construction site. You may be held responsible for any environmental damage caused by your subcontractors or employees.

Preventing Pollution: It's Up to Us

In the Santa Clara Valley, storm drains transport water directly to local creeks and San Francisco Bay without treatment. Stormwater pollution is a serious problem for wildlife dependent on our creeks and bays and for the people who live near polluted streams or baylands. Common sources of this pollution include spilled oil, fuel, and fluids from vehicles and heavy equipment; construction debris; sediment created by erosion; landscaping runoff containing pesticides or weed killers; and materials such as used motor oil, antifreeze, and paint products that people pour or spill into a street or storm drain.

Santa Clara Valley Urban Runoff Pollution Prevention Program

Thirteen valley municipalities have joined together with Santa Clara County and the Santa Clara Valley Water District to educate local residents and businesses and fight stormwater pollution. This "blueprint" summarizes "Best Management Practices "(BMPs) for stormwater pollution prevention.

Spill Response Agencies:

1. Dial 911
2. Santa Clara County Environmental Health Services (408) 299-6930
3. Governor's Office of Emergency Services Warning Center (800) 852-7550 (24 hours).

Small Business Hazardous Waste Disposal Program

Santa Clara County businesses that generate less than 27 gallons or 220 pounds of hazardous waste per month are eligible to use Santa Clara County's Small Business Hazardous Waste Disposal Program. Call (408) 299-7300 for a quote, more information or guidance on disposal.

Local Pollution Control Agencies

Santa Clara County Office of Toxics and Solid Waste Management (408) 441-1195

Santa Clara Valley Water District (408) 265-2600

San Jose/Santa Clara Water Pollution Control Plant (408) 945-5300 Serving Milpitas, Cupertino, Los Gatos, Milpitas, Monte Sereno, San Jose, Santa Clara and Saratoga

General Construction and Site Supervision

Who should use this information?

- General Contractors
- Site Supervisors
- Inspectors
- Home Builders
- Developers
- Homeowners

Storm Drain Pollution from Construction Activities

Construction sites are common sources of storm water pollution. Materials and wastes that blow or wash into a storm drain, gutter, or street have a direct impact on local creeks and the Bay.

As a contractor, or site supervisor, owner or operator of a site, you may be responsible for any environmental damage caused by your subcontractors or employees.

Doing the Job Right
General Principles

- ❑ Keep an orderly site and ensure good housekeeping practices are used.
- ❑ Maintain equipment properly.
- ❑ Cover materials when they are not in use.
- ❑ Keep materials away from streets, storm drains and drainage channels.
- ❑ Ensure dust control water doesn't leave site or discharge to storm drains.

Advance Planning To Prevent Pollution

- ❑ Schedule excavation and grading activities for dry weather periods. To reduce soil erosion, plant temporary vegetation or place other erosion controls before rain begins. Use the Erosion and Sediment Control Field Manual , available form the Regional Water Quality Control Board San Francisco Bay Region, as a reference.
- ❑ Control the amount of runoff crossing your site (especially during excavation!) by using berms or temporary or permanent drainage ditches to divert water flow around the site. Reduce stormwater runoff velocities by constructing temporary check dams or berms where appropriate.
- ❑ Train your employees and subcontractors. Make these brochures available to everyone who works on the construction site. Inform subcontractors about the stormwater requirements and their own responsibilities.

Good Housekeeping Practices

- ❑ Designate one area of the site for auto parking, vehicle refueling, and routine equipment maintenance. The designated area should be well away from streams or storm drain inlets, bermed if necessary. Make major repairs off site.
- ❑ Keep materials out of the rain – prevent runoff contamination at the source. Cover exposed piles of soil or construction materials with plastic sheeting or temporary roofs. Before it rains, sweep and remove materials from surfaces that drain to storm drains, creeks, or channels.
- ❑ Keep pollutants off exposed surfaces. Place trash cans and recycling receptacles around the site to minimize litter.
- ❑ Clean up leaks, drips and other spills immediately so they do not contaminate soil or groundwater or leave residue on paved surfaces.
- ❑ Never hose down "dirty" pavement or surfaces where materials have spilled.
- ❑ Use dry cleanup methods whenever possible. If you must use water, use just enough to keep the dust down.
- ❑ Cover and maintain dumpsters. Check frequently for leaks. Place dumpsters under roofs or cover with tarps or plastic sheeting secured around the outside of the dumpster. Never clean out a dumpster by hosing it down on the construction site.
- ❑ Place portable toilets away from storm drains. Make sure portable toilets are in good working order. Check frequently for leaks .

Materials/Waste Handling

- ❑ Practice Source Reduction -- minimize waste when you order materials. Order only the amount you need to finish the job.
- ❑ Use recyclable materials whenever possible. Arrange for pick-up of recyclable materials such as concrete, asphalt, scrap metal, solvents, degreasers, cleared vegetation, paper, rock, and vehicle maintenance materials such as used oil, antifreeze, batteries, and tires.
- ❑ Dispose of all wastes properly. Many construction materials and wastes, including solvents, water-based paints, vehicle fluids, broken asphalt and concrete, wood, and cleared vegetation can be recycled.
  Materials that cannot be recycled must be taken to an appropriate landfill or disposed of as hazardous waste.
  Never bury waste materials or leave them in the street or near a creek or stream bed.

Permits

- ❑ In addition to local grading and building permits, you will need to obtain coverage under the State's General Construction Activity Stormwater Permit if your construction site's disturbed area totals 1 acre or more. Information on the General Permit can be obtained from the Regional Water Quality Control Board.

Landscaping, Gardening, And Pool Maintenance

Who should use this information?

- Landscapers
- Gardeners
- Swimming Pool/Spa Service and Repair Workers
- General Contractors
- Home Builders
- Developers
- Homeowners

Storm Drain Pollution from Landscaping and Swimming Pool Maintenance

Many landscaping activities expose soils and increase the likelihood that earth and garden chemicals will run off into the storm drains during irrigation or when it rains. Swimming pool water containing chlorine and copper-based algaecides should never be discharged to storm drains. These chemicals are toxic to aquatic life.

Doing the Job Right
General Business Practices

- ❑ Protect stockpiles (e.g. asphalt, sand, or soil) and landscaping materials from wind and rain by storing them under tarps or secured plastic sheeting.
- ❑ Store pesticides, fertilizers, and other chemicals indoors or in a shed or storage cabinet.
- ❑ Schedule grading and excavation projects during dry weather.
- ❑ Use temporary check dams or ditches to divert runoff away from storm drains.
- ❑ Protect storm drains with sandbags or other sediment controls.
- ❑ Revegetation is an excellent form of erosion control for any site. Replant as soon as possible with temporary vegetation such as grass seed.

Landscaping/Garden Maintenance

- ❑ Consider using Integrated Pest Management Techniques. Use pesticides sparingly, according to instructions on the label. Rinse empty containers, and use rinsewater as product. Dispose of rinsed, empty containers in the trash.
- ❑ Dispose of unused pesticides as hazardous waste.
- ❑ Collect lawn and garden clippings, pruning waste, and tree trimmings. Chip if necessary, and compost if possible.
- ❑ Do not blow or rake leaves, etc. into the street, or place yard waste in gutters or on dirt shoulders. Sweep up any leaves, litter or residue in gutters or on street.

Pool/Fountain/Spa Maintenance
Draining pools or spas

- ❑ When it's time to drain a pool, spa, or fountain, please be sure to call your local wastewater treatment plant before you start for further guidance on flow rate restrictions, backflow prevention, and handling special cleaning waste (such as acid wash). Discharge flows should be kept to the low levels typically possible through a garden hose. Higher flow rates may be prohibited by local ordinance.
- ❑ Never discharge pool or spa water to a street or storm drain; discharge to a sanitary sewer cleanout.
- ❑ If possible, when emptying a pool or spa, let chlorine dissipate for a few days and then recycle/ reuse water by draining it gradually onto a landscaped area. OR
- ❑ San Jose/Santa Clara Water Pollution Control Plant (408) 945-5300. You may be able to discharge to the sanitary sewer by running the hose to a utility sink or sewer pipe clean-out.
- ❑ Do not use copper-based algaecides Control algae with chlorine or other alternatives, such as sodium bromide.

Filter Cleaning

- ❑ Never clean a filter in the street or near a storm drain. Rinse cartridge and diatomaceous earth filters onto a dirt area, and spade filter residue into soil. Dispose of spent diatomaceous earth in the garbage.
- ❑ If there is no suitable dirt call San Jose/Santa Clara Water Pollution Control Plant (408) 945-5300 for instructions on discharging filter backwash or rinse water to the sanitary sewer.

Milpitas Municipal Code (MMC) 2014

XI-16-11 Accidental Discharge - Notification of Discharge

(a) All persons shall notify the City by telephone immediately by dialing 911 upon accidentally discharging any material other than an acceptable discharge into a storm drain or watercourse to enable countermeasures to be taken by the City to minimize damage to storm drains and the receiving waters. Prohibited discharges include but are not limited to:
(1) Sewage;
(2) Discharges of wash water resulting from the cleaning of exterior surfaces and pavement, or the equipment and other facilities of any commercial business, or any other public or private facility;
(3) Discharges of runoff from material storage areas, including containing chemicals, fuels, or other potentially polluting or hazardous materials;
(4) Discharges of pool or fountain water containing chlorine, biocides, or other chemicals; discharges of pool or fountain filter backwash water;
(5) Discharges of sediment, pet waste, vegetation clippings, or other landscape or construction-related wastes; and
(6) Discharges of food-related wastes (e.g., grease, fish processing, and restaurant kitchen mat and trash bin wash water, etc.).
The City, at its sole option, may direct the person or persons responsible for the discharge to perform cleanup activities when it is deemed by the City that the person or persons have the capability to perform such activities. All violations shall be corrected in a timely manner before the next rain event, but no longer than ten (10) business days after the violations are discovered.
(b) The person deemed by the City responsible for the discharge shall, within five (5) days of the date of occurrence, provide a detailed written statement to the City Manager or his or her designee describing the causes of the accidental discharge and the measures being taken to prevent future occurrences. Such notification will not relieve persons of liability for violations of this Chapter or for any fines imposed on the City on account thereof under Section 13350 of the California Water Code, or for violation of Section 5650 of the California Fish and Wildlife Code, or any other applicable provisions of State or federal law.
(c) Persons deemed by the City responsible for the discharge are responsible for all expenses resulting from the discharge, including, but not limited to, damages, fines, and costs of clean-up, whether performed by their own efforts, City efforts, or the efforts of a third party. Reimbursement of City efforts shall be determined by the number of personnel required and amount of time necessary for the coordination of City efforts and actual clean-up. All personnel costs shall be charged at their current fully burdened rate, including overtime, plus any and all other direct costs.

XI-16-14 Enforcement and Penalties

(a) Criminal Penalties. Violations of the provisions of this Chapter shall be subject to criminal penalties as provided in Section I-1-4.09-1 of this Code.

(b) Judicial Civil Penalties. Any person who intentionally or negligently violates any provision of this Chapter or any provision of any permit or certificate issued pursuant to this Chapter shall be civilly liable to the city in a sum not to exceed twenty-five thousand dollars per day for each day in which such violation occurs.

(c) Administrative Citations. When the City Manager and/or his or her designee determines that one or more violations of this Chapter have occurred an administrative citation may be issued pursuant to the procedures set forth in Sections V-500-8.00 through V-500-8.06. The schedule of fines for administrative citations issued for violations of this Chapter shall be set forth in the schedule of fines established by resolution of the City Council.

(d) Notice of Noncompliance. If the severity of the violation warrants immediate action, a Notice of Noncompliance or Stop Work Notice shall be issued, permits may be suspended or revoked, Stormwater Pollution Prevention Plans may be found in noncompliance, and corrective actions may be implemented in accordance with Section 11 of this Chapter. For all other cases, including those sites or projects where a stormwater pollution prevention plan is not required, the City Manager or his or her designee shall issue a Notice of Noncompliance that shall enumerate the violations found. The City Manager or his or her designee shall order compliance by a date or hour certain at his or her discretion. If the violations are not abated in the time period identified in the Notice of Noncompliance, the site shall be deemed to be in noncompliance with federal, State and local laws and the City Manager or his or her designee shall have the authority to issue a Stop Work Notice and/or deem the Stormwater Pollution Prevention Plan inadequate. If a Stop Work Notice is issued, corrective actions must be performed until the site has achieved compliance. Corrective actions may include revision and resubmission of any Plan, including, but not limited to, Stormwater Pollution Prevention Plan, Erosion Control Plan or Grading Plan. The City Manager or his or her designee may also require a discharger that has violated any discharge limits contained in this Chapter to install a temporary system for the capture, testing, and release of stormwater.

(e) Suspension of Utility Service. The City may, without prior notice, suspend water service, sanitary sewer service, and/or storm drain discharge access to a person discharging to the storm drain system when such suspension is necessary to stop an actual or threatened discharge which presents, or may present, imminent and substantial danger to the environment or to the health or welfare of persons; or presents, or may present, imminent and substantial danger to the storm drain system.

(f) For construction projects where a total of three or more Stop Work Notices and Notices of Noncompliance for urban runoff violations have been issued, the City Manager or his or her designee may require the contractor to hire a Qualified SWPPP Developer (QSD) or Qualified SWPPP Practitioner (QSP) within three business days. The QSD/QSP shall establish effective BMPs, provide guidance for improvement for the duration of the project, and certify compliance. A Stop Work Notice shall be issued for failure to comply.

(g) Remedies Cumulative. The remedies provided in this section are cumulative and not exclusive, and shall be in addition to any other penalty provided for in this Chapter and shall be in addition to all other remedies available to the City under State and federal law.

BIGGS CARDOSA ASSOCIATES INC
STRUCTURAL ENGINEERS
865 The Alameda
San Jose, California 95126
408-296-5515

BCA

RJA
RUGGERI-JENSEN-AZAR
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Designer Stamp:

LICENSED PROFESSIONAL ENGINEER
LUIS SANTIAGO-OTERO
C79665
EXP. ____
CIVIL
STATE OF CALIFORNIA

Record Drawings

Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Utility/Facility Dept. Head: _____ Date: _____
Project Engineer: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____ Res. No. _____

Drawn By: RJA Date: 1/29/19
Checked By: RJA Date: 1/29/19
Designed By: RJA Date: 1/29/19

Revisions

Num.	Description	Engr. Aprv.	Date

NOT FOR CONSTRUCTION
100% SUBMITTAL
NOVEMBER 8, 2019

CITY OF MILPITAS
CALIFORNIA
JANUARY 26, 1954

CITY OF MILPITAS
ENGINEERING DIVISION

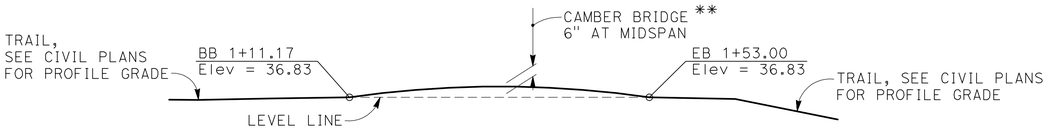
CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

BEST MANAGEMENT PRACTICES

RECOMMENDED FOR BIDDING BY: _____ DATE: _____
MICHAEL SILVEIRA, PE CIP MANAGER

PROJECT NO. 2005
Rec. Dwg No.
SCALE: NONE
SHEET 8 OF 16

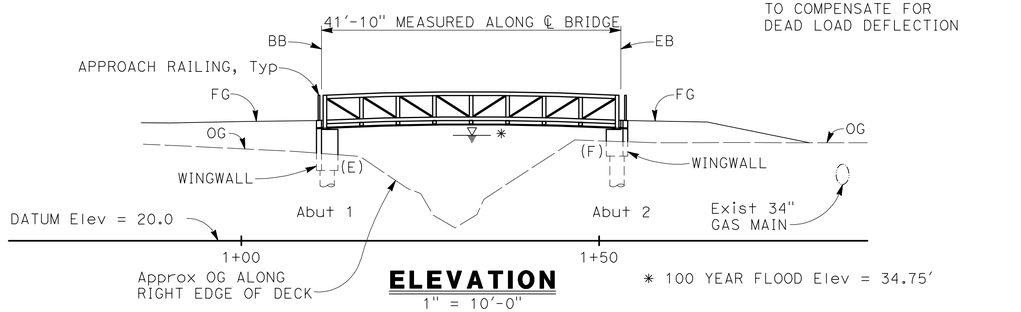
PLOT DATE: November 6, 2019
FILE PATH: W:\Jobs 12\12015\Drawings\Final\Offsite IP - Penitencia Pedestrian Bridge\Improvement Plans\8 BEST MANAGEMENT PRACTICES.dwg



PROFILE GRADE

NO SCALE

** CAMBER SHOWN IS NET AND DOES NOT INCLUDE ADDITIONAL CAMBER REQUIRED TO COMPENSATE FOR DEAD LOAD DEFLECTION



ELEVATION

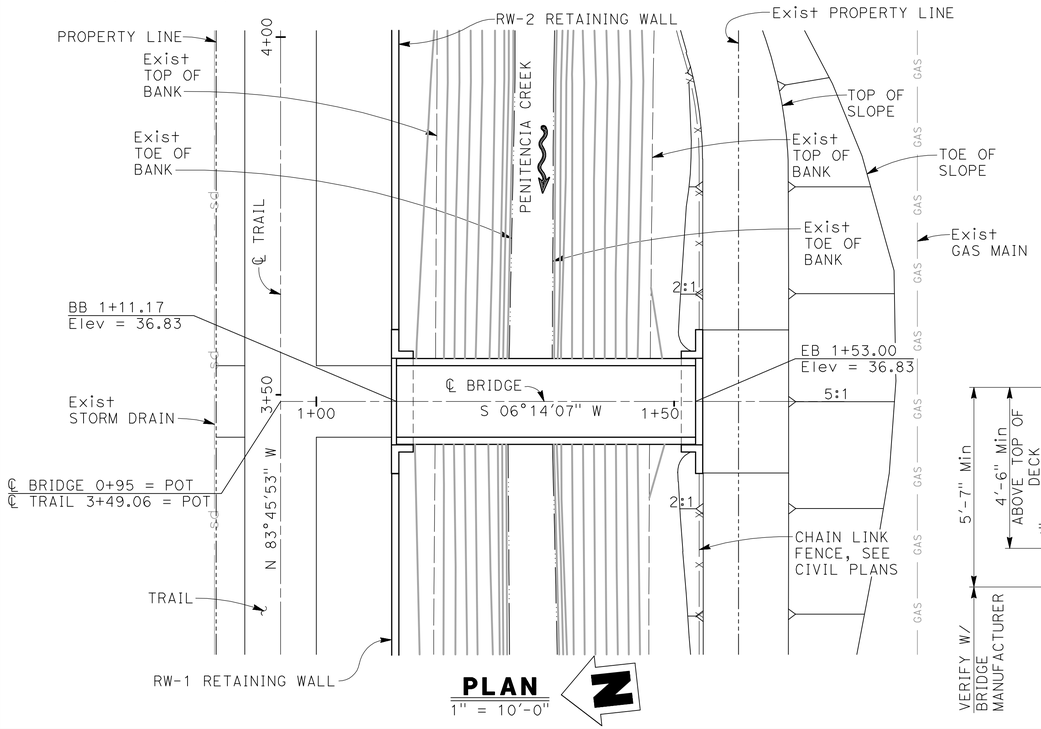
1" = 10'-0"

* 100 YEAR FLOOD Elev = 34.75'

CIDH PILE DATA TABLE

Location	Pile Type	Design Loading (Service)	Nominal Resistance		Design Tip Elev	Specified Tip Elev
			Compression	Tension		
Abutment 1	30" dia CIDH	45 Kips	85 Kips	0	16.00 (1);11.00 (3)	11.00
Abutment 2	30" dia CIDH	40 Kips	72 Kips	0	18.00 (1);10.00 (3)	10.00
Retaining Wall	24" dia CIDH	18 Kips	35 Kips	0	4.25 (3)	4.25

NOTES:
1. Design tip elevation is controlled by the following demands: (1) Compression; (2) Tension; (3) Lateral Loads
2. The Specified Tip must not be raised.



PLAN

1" = 10'-0"

NOTES:
1. See Civil Plans for proposed finished grade contours, retaining wall layout and profile, chain link fence layout, etc.
2. Bridge railings and wall railings shall not allow a sphere 6" or larger to pass through.
3. (E) Indicates bridge superstructure's expansion end.
4. (F) Indicates bridge superstructure's fixed end.
5. Special Inspection is required.
6. Contractor shall coordinate all embedded item locations and bearing plate sizes with Bridge Manufacturer prior to placing abutment diaphragm concrete. Any discrepancies with dimensional requirements shown shall be brought to the attention of the Engineer immediately.
7. Contractor shall field verify bridge length with in-place location of anchor bolts prior to bridge fabrication.
8. See Approach Railing Detail on sheet S-7 for safety rails, steel toe plates and steel rubrails at bridge end posts.
9. Bridge is to be painted.
10. Vertical Datum NAVD88.

HYDROLOGIC SUMMARY

Hydrologic information provided by Schaaf & Wheeler, March 2018

Drainage Area: 1.70 square miles

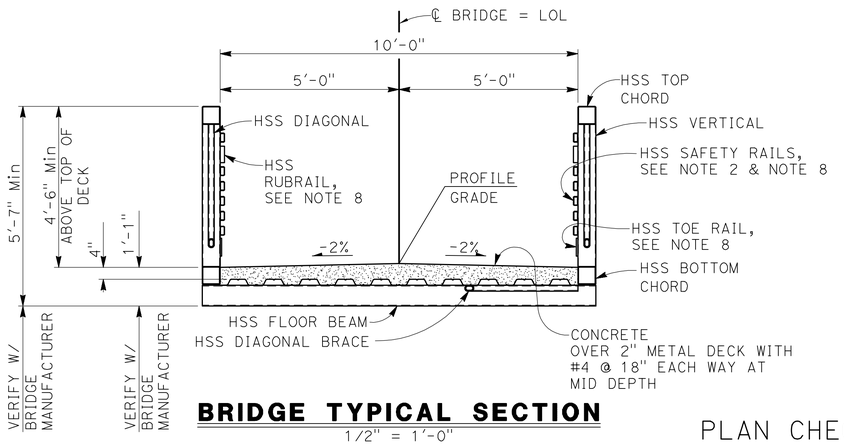
	DESIGN FLOOD
Frequency (years)	100
Discharge (cubic feet per second)	1174*
Water surface (elevation at bridge)	34.75'
Velocity (feet per second)	5

* Peak Discharge is affected by upstream spills.

Flood plain data are based upon information available when the plans were prepared and are shown to meet federal requirements. The accuracy of said information is not warranted by the City and interested or affected parties should make their own investigation.

INDEX TO PEDESTRIAN BRIDGE PLANS

SHEET No.	TITLE
S1	GENERAL PLAN
S2	ABUTMENT DETAILS No. 1
S3	ABUTMENT DETAILS No. 2
S4	RW-1 RETAINING WALL - PLAN & ELEVATION
S5	RW-2 RETAINING WALL - PLAN & ELEVATION
S6	RETAINING WALL DETAILS
S7	RAILING DETAILS
S8	STRUCTURAL AND GEOTECHNICAL SPECIAL INSPECTION AND TESTING



BRIDGE TYPICAL SECTION

1/2" = 1'-0"

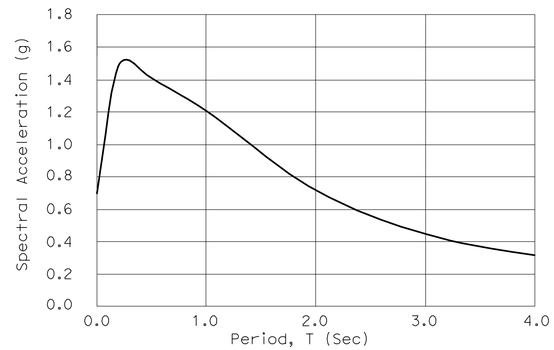
GENERAL NOTES - LOAD FACTOR DESIGN

DESIGN:	AASHTO Guide Specifications for Design of Pedestrian Bridges (2009 with 2015 Interim Revisions)
BRIDGE DEAD LOAD:	Total Dead Load for bridge superstructure shall not exceed 40,000 lbs
BRIDGE LIVE LOADING:	One 10,000 lb vehicle load (H5 Truck) or 90 psf pedestrian load
BRIDGE LIVE LOAD DEFLECTION LIMIT:	L/360
BRIDGE SEISMIC LOADING DESIGN:	Caltrans Seismic Design Criteria (SDC) v1.7, April 2013
RETAINING WALL LIVE LOADING:	100 PSF LATERAL LOAD

CALTRANS STANDARD PLANS DATED MAY 2015

	A3A	ABBREVIATIONS (SHEET 1 OF 3)
	A3B	ABBREVIATIONS (SHEET 2 OF 3)
	A3C	ABBREVIATIONS (SHEET 3 OF 3)
	A62B	LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL SURCHARGE AND WALL
	A62C	LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL-BRIDGE
	B0-1	BRIDGE DETAILS
	B0-3	BRIDGE DETAILS
	B2-3	16" AND 24" CAST-IN-DRILLED HOLE CONCRETE PILE
RSP	B9-6	STRUCTURE APPROACH DRAINAGE DETAILS
	B11-51	TUBULAR HANDRAILING

LOADING: Caltrans SDC (v 1.7, June 2013), Figure B.8, (Mw = 6.9, Soil Profile Type D, PGA = 0.69g) with the following modifications:
1. No change of Sa for structural periods < 0.5 sec
2. 20% increase of Sa for structural periods > 1 sec
3. Linear interpolation for structural periods between 0.5 and 1 sec



ARS DESIGN CURVE

NO SCALE

REINFORCED CONCRETE:	fy = 60,000 psi (ASTM A706) f'c = 4,000 psi n = 8
PREFABRICATED BRIDGE & PEDESTRIAN RAILING:	fy = 46,000 psi (ASTM A500 GRADE B), OR fy = 50,000 psi (ASTM A500 GRADE C)

LENGEND

(1 / S3) Indicates detail no. / Indicates sheet no. shown on

(B0-3 / 3-5) Indicates Caltrans Standard Plan sheet No. / Indicates detail No.

PLAN CHECK SET/NOT FOR CONSTRUCTION (11/5/19)

BIGGS CARDOSA ASSOCIATES INC
STRUCTURAL ENGINEERS
865 The Alameda
San Jose, California 95126
408-296-5515

Designer Stamp: REGISTERED PROFESSIONAL ENGINEER, MARVASH M HARMS, No. 2639, Exp. 12/31/20, STRUCTURAL, STATE OF CALIFORNIA

Record Drawings

Designer: MMH Date:
Public Works Inspector: Date:
Utility/Facility Dept. Head: Date:
Project Engineer: JDV Date:
Public Improvements Initially Accepted by the City Council on: Res. No.

Drawn By: RLQ Date:04/16/18
Checked By: JAA Date:03/04/19
Designed By:SAR Date:04/16/18

Revisions

Num.	Description	Engr. Aprv.	Date
1			

CITY OF MILPITAS ENGINEERING DIVISION

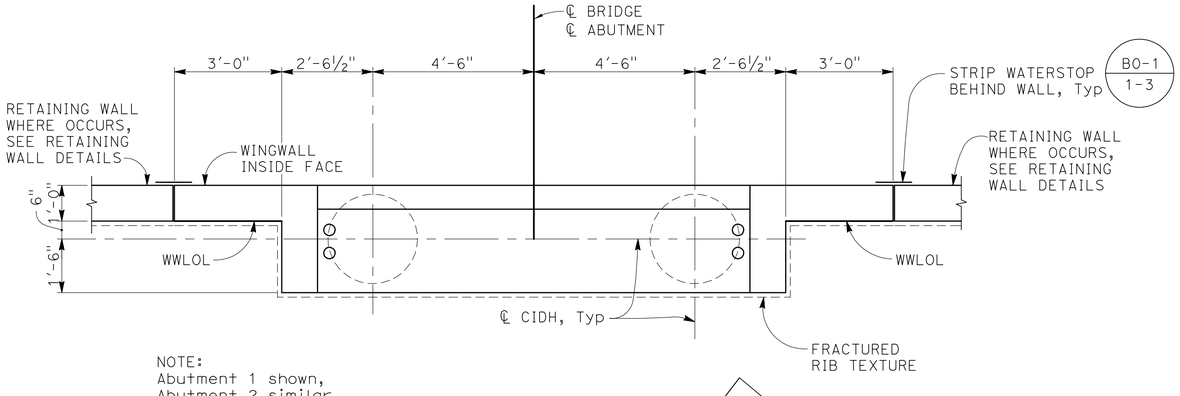
CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

GENERAL PLAN

RECOMMENDED FOR BIDDING BY: DATE:

PROJECT NO. 2005
Rec. Dwg No. 2-
SCALE: AS SHOWN
S1
SHEET 9 OF 16

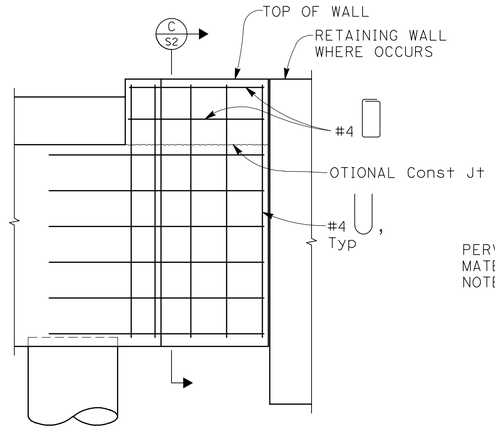
(2017213S1) 2017213



NOTE:
Abutment 1 shown,
Abutment 2 similar

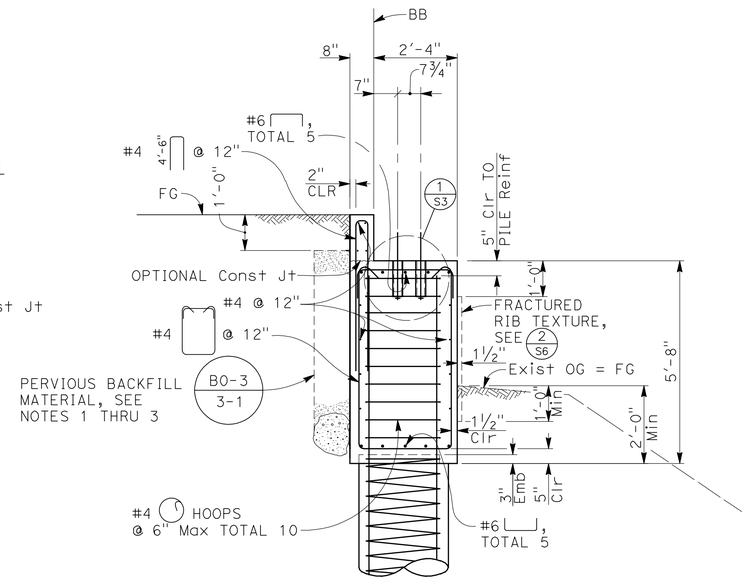
ABUTMENT PLAN

1/2" = 1'-0"



TYPICAL WINGWALL ELEVATION

1/2" = 1'-0"



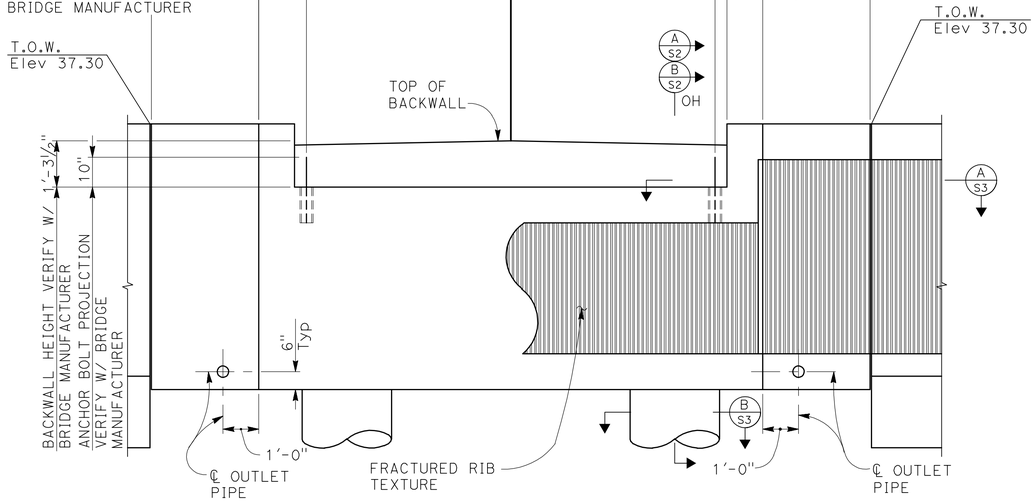
ABUTMENT 1

SECTION A S2

1/2" = 1'-0"

NOTES:

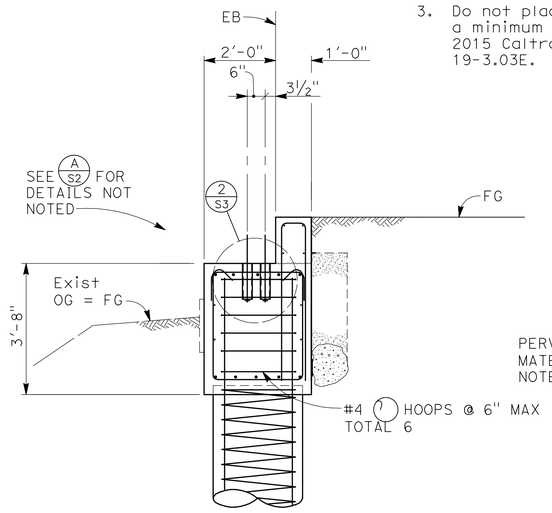
1. Geocomposite drain may be used as an alternative to pervious backfill material. See 4 S6 for details.
2. Backfill material must comply with 2015 Caltrans Standard Specifications Section 19-3.02C.
3. Do not place backfill until concrete has attained a minimum compressive strength of 2,500 psi per 2015 Caltrans Standard Specifications Section 19-3.03E.



NOTE:
Abutment 1 shown,
Abutment 2 similar

ABUTMENT ELEVATION

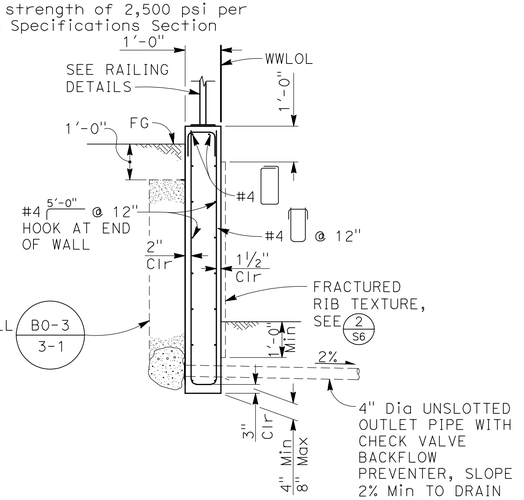
1/2" = 1'-0"



ABUTMENT 2

SECTION B S2

1/2" = 1'-0"



SECTION C S2

1/2" = 1'-0"

PLAN CHECK SET/NOT FOR CONSTRUCTION (11/5/19)

BIGGS CARDOSA ASSOCIATES INC
STRUCTURAL ENGINEERS
865 The Alameda
San Jose, California 95126
408-296-5515

Designer Stamp:
REGISTERED PROFESSIONAL ENGINEER
MARVASH M HABASH
No. 2639
Exp. 12/31/20
STATE OF CALIFORNIA STRUCTURAL

Record Drawings

Designer: MMH Date:
Public Works Inspector: Date:
Utility/Facility Dept. Head: Date:
Project Engineer: JDV Date:
Public Improvements Initially Accepted by the City Council on: Res. No.

Drawn By: RLO Date: 04/16/18
Checked By: JAA Date: 03/04/19
Designed By: SAR Date: 04/16/18

Revisions

Num.	Description	Engr. Aprv.	Date
1			

CITY OF MILPITAS
ENGINEERING DIVISION

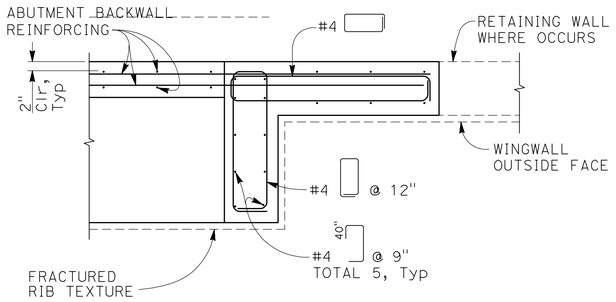
CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

ABUTMENT DETAILS No. 1

RECOMMENDED FOR BIDDING BY: DATE:

PROJECT NO. 2005
Rec. Dwg No. 2-
SCALE: AS SHOWN
S2
SHEET 10 OF 16

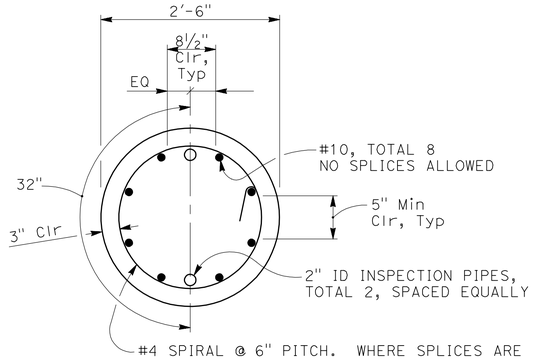
(2017213S2) 2017213



REINFORCING AT ABUTMENT SHEAR KEY

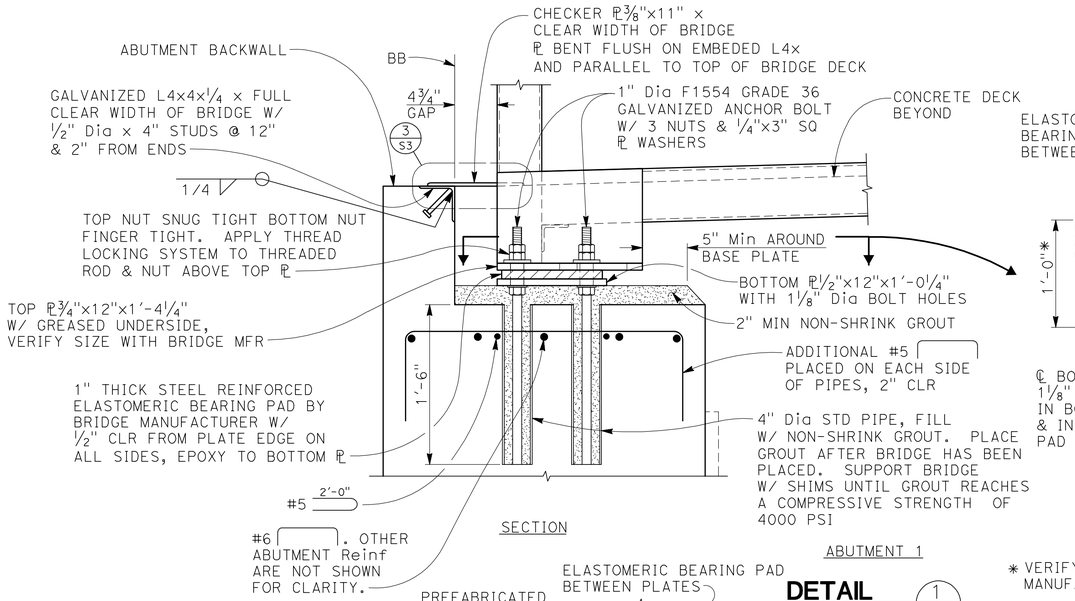
SECTION (A / S3)
3/4" = 1'-0"

NOTE:
Abutment 1 shown,
Abutment 2 similar



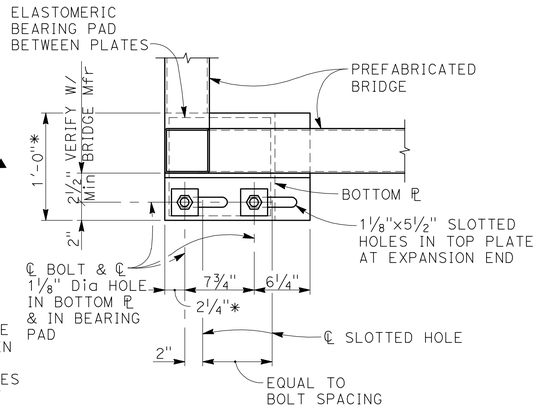
#4 SPIRAL @ 6" PITCH. WHERE SPLICES ARE REQUIRED, SPIRAL REINFORCEMENT SHALL BE LAPPED 80 DIAMETERS MINIMUM. A 135° HOOK WITH A 6" TAIL THAT IS HOOKED AROUND A LONGITUDINAL BAR SHALL BE USED TO TERMINATE THE ENDS OF THE SPIRAL REINFORCEMENT AT LAPPED SPLICES AND AT TOP AND BOTTOM OF THE PILE

SECTION (B / S3)
1" = 1'-0"



SECTION

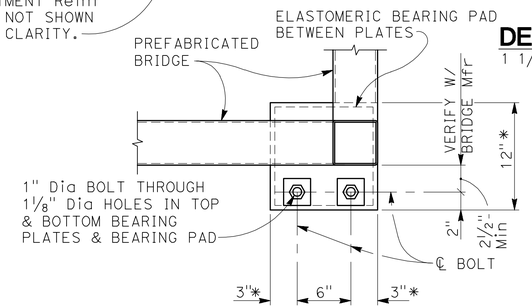
ABUTMENT 1



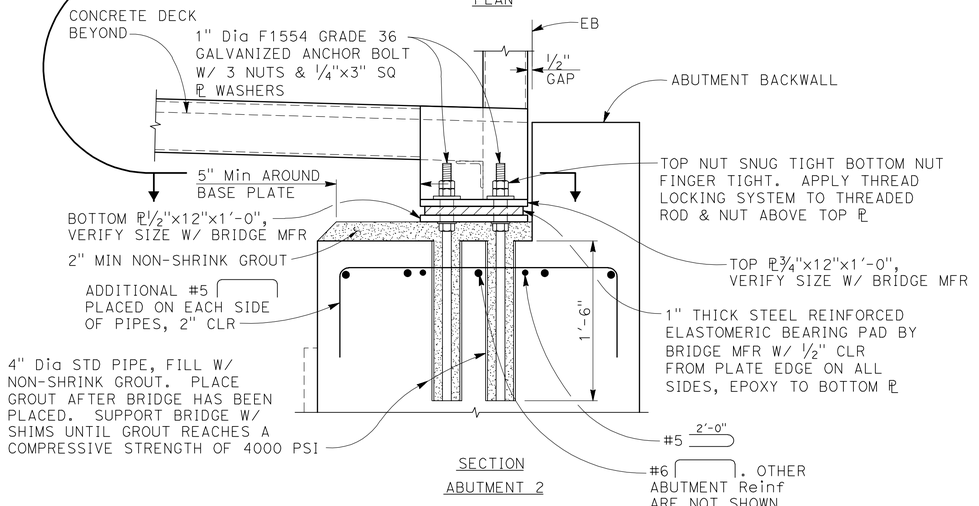
PLAN

* VERIFY DIMENSIONS WITH BRIDGE MANUFACTURER

DETAIL (1 / S3)
1 1/2" = 1'-0"



PLAN

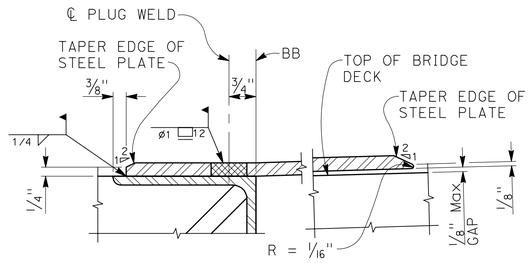


SECTION

ABUTMENT 2

* VERIFY DIMENSIONS WITH BRIDGE MANUFACTURER

DETAIL (2 / S3)
1 1/2" = 1'-0"



DETAIL (3 / S3)
NO SCALE

PLAN CHECK SET/NOT FOR CONSTRUCTION (11/5/19)

BIGGS CARDOSA ASSOCIATES INC
STRUCTURAL ENGINEERS
865 The Alameda
San Jose, California 95126
408-296-5515

Designer Stamp: REGISTERED PROFESSIONAL ENGINEER, MARVASH M HARRIS, No. 2639, Exp. 12/31/20, STRUCTURAL, STATE OF CALIFORNIA

Record Drawings

Designer: MMH Date:
Public Works Inspector: Date:
Utility/Facility Dept. Head: Date:
Project Engineer: JDV Date:
Public Improvements Initially Accepted by the City Council on: Res. No.

Drawn By: RLQ Date: 04/16/18
Checked By: JAA Date: 03/04/19
Designed By: SAR Date: 04/16/18

Revisions

Num.	Description	Engr. Aprv.	Date
1			

CITY OF MILPITAS
ENGINEERING DIVISION

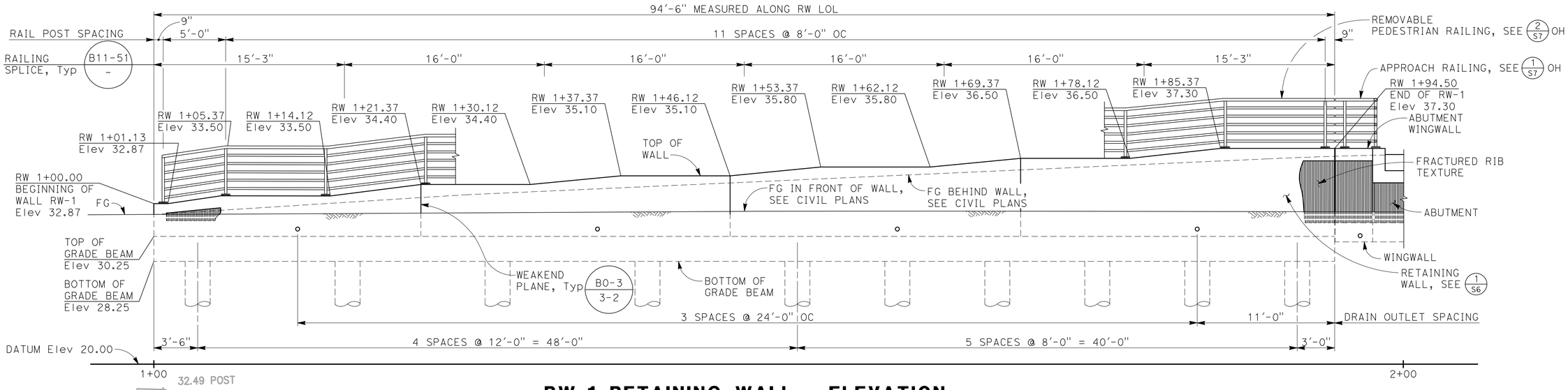
CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

ABUTMENT DETAILS No. 2

RECOMMENDED FOR BIDDING BY: DATE:

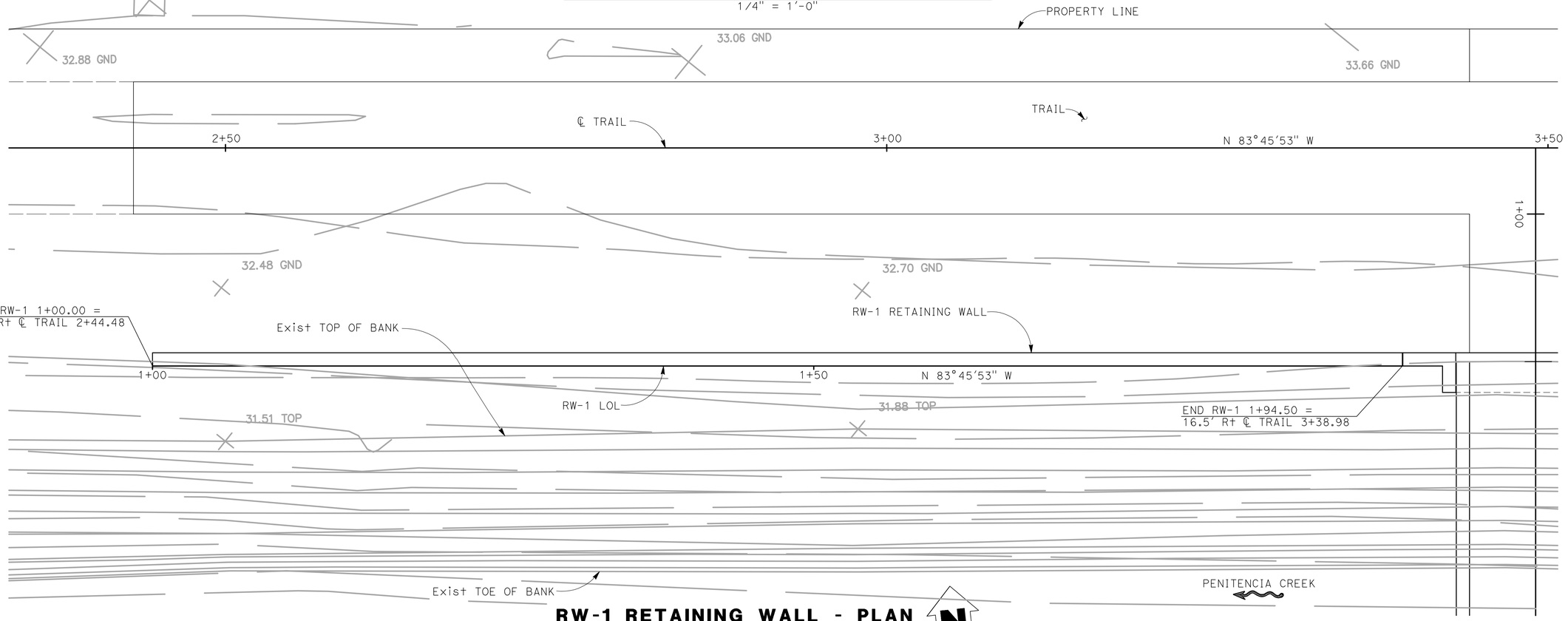
PROJECT NO. 2005
Rec. Dwg No. 2-
SCALE: AS SHOWN
S3
SHEET 11 OF 16

(2017213S3) 2017213



RW-1 RETAINING WALL - ELEVATION

1/4" = 1'-0"



RW-1 RETAINING WALL - PLAN

1/4" = 1'-0"

N

PLAN CHECK SET/NOT FOR CONSTRUCTION (11/5/19)

BIGGS CARDOSA ASSOCIATES INC
STRUCTURAL ENGINEERS

865 The Alameda
San Jose, California 95126
408-296-5515

Designer Stamp:

REGISTERED PROFESSIONAL ENGINEER
MARVASH M HAKIMS
No. 2639
Exp. 12/31/20
STRUCTURAL
STATE OF CALIFORNIA

Record Drawings

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Revisions

Num.	Description	Engr. Aprv.	Date
△			

CITY OF MILPITAS
ENGINEERING DIVISION

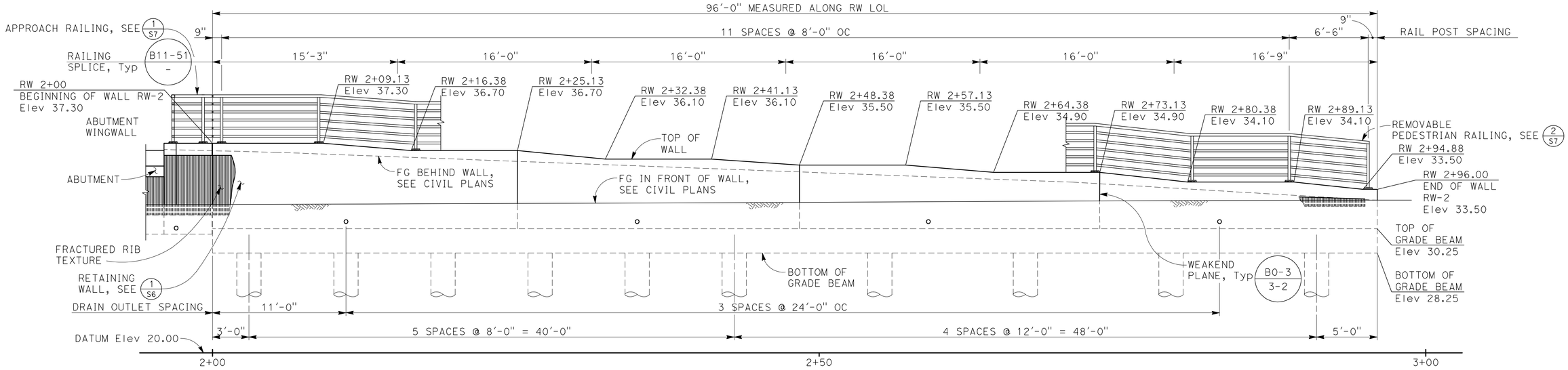
CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

RW-1 RETAINING WALL - PLAN & ELEVATION

RECOMMENDED FOR BIDDING BY: _____ DATE: _____

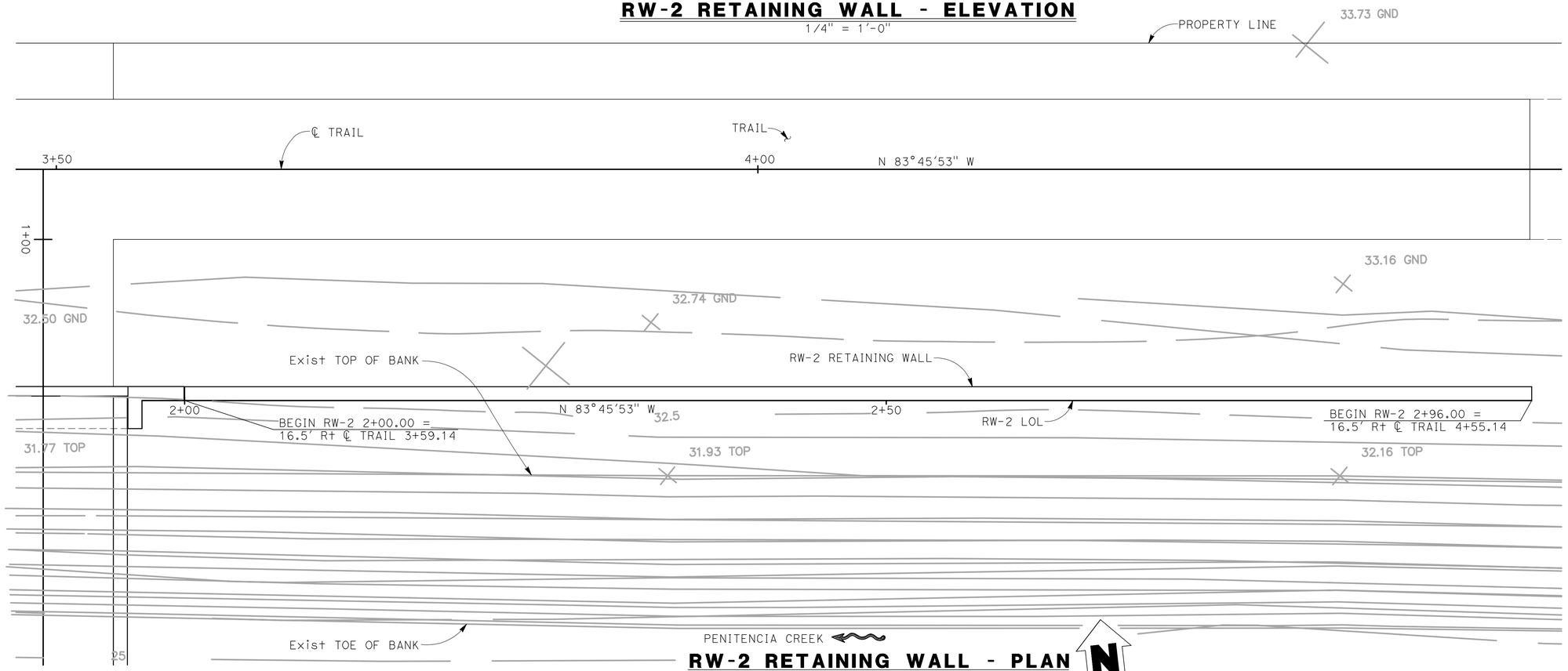
PROJECT NO. 2005
Rec. Dwg No. 2-
SCALE: AS SHOWN
S4
SHEET 12 OF 16

(2017213S4) 2017213



RW-2 RETAINING WALL - ELEVATION

1/4" = 1'-0"



RW-2 RETAINING WALL - PLAN

1/4" = 1'-0"

PLAN CHECK SET/NOT FOR CONSTRUCTION (11/5/19)

BIGGS CARDOSA ASSOCIATES INC
STRUCTURAL ENGINEERS

865 The Alameda
San Jose, California 95126
408-296-5515

Designer Stamp:

REGISTERED PROFESSIONAL ENGINEER
MAHVASH M HARMS
No. 2639
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STATE OF STRUCTURAL CALIFORNIA

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Designer: MMH Date:
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Revisions

Num.	Description	Engr. Aprv.	Date
1			

CITY OF MILPITAS
ENGINEERING DIVISION

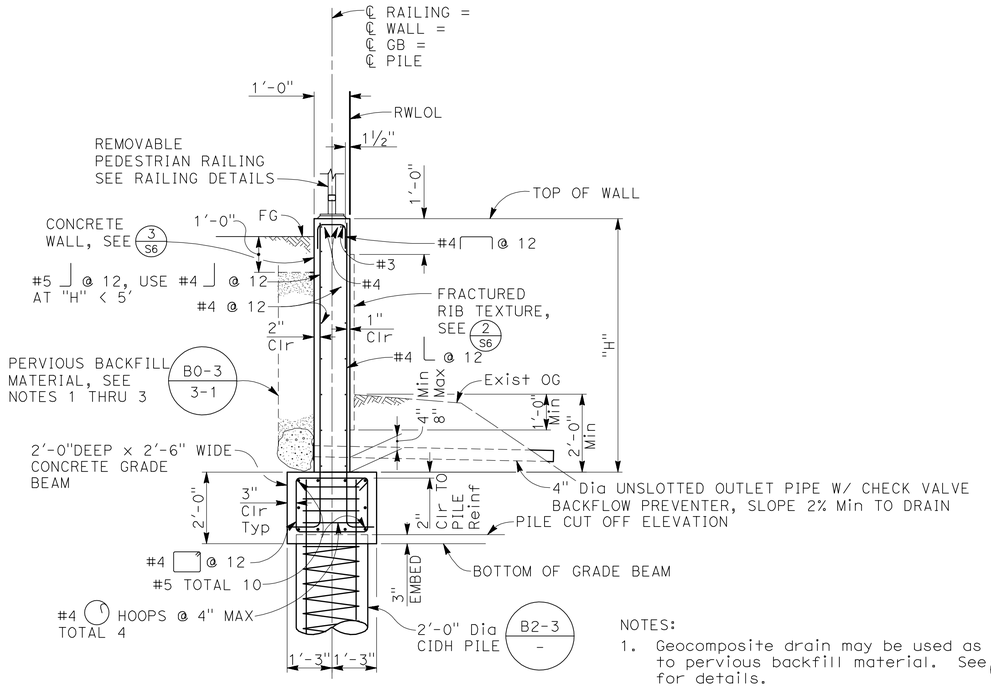
CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

RW-2 RETAINING WALL - PLAN & ELEVATION

RECOMMENDED FOR BIDDING BY: _____ DATE: _____

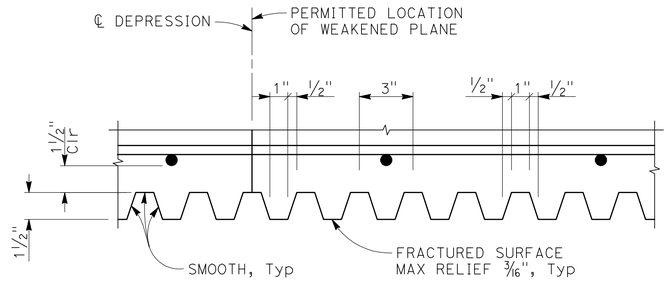
PROJECT NO. 2005
Rec. Dwg No. 2-
SCALE: AS SHOWN
S5
SHEET 13 OF 16

(2017213S5) 2017213

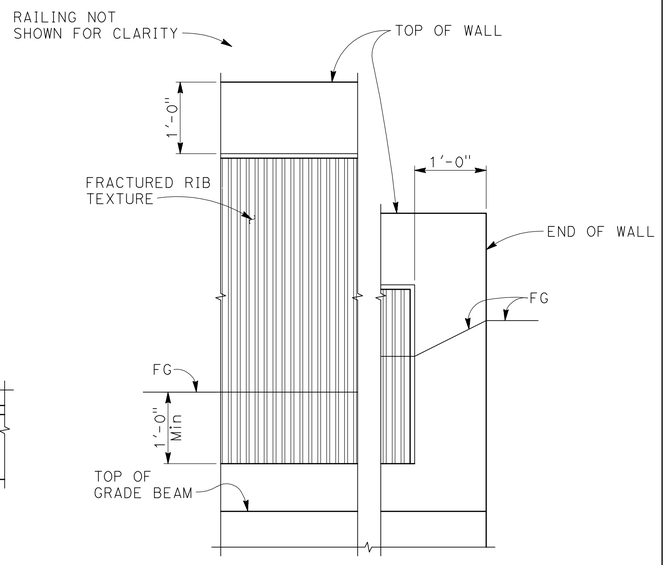


RETAINING WALL DETAIL 1/S6
1/2" = 1'-0"

NOTES:
1. Geocomposite drain may be used as an alternative to pervious backfill material. See 4/S6 for details.
2. Backfill material must comply with 2015 Caltrans Standard Specifications Section 19-3.02C.
3. Do not place backfill until concrete has attained a minimum compressive strength of 2,500 psi per 2015 Caltrans Standard Specifications Section 19-3.03E.

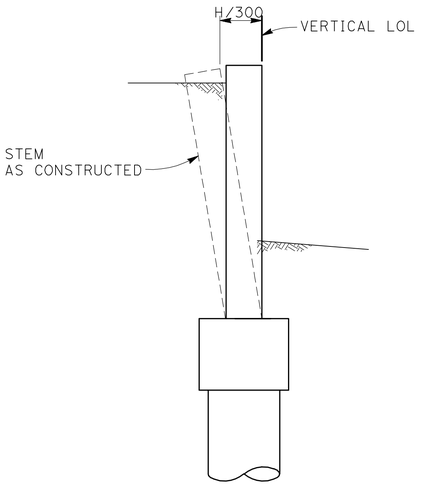


PLAN

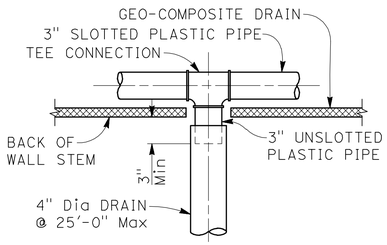


ELEVATION

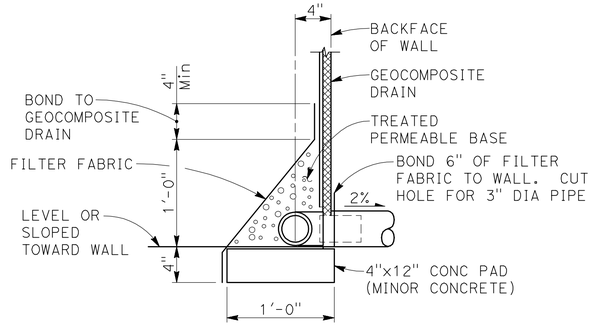
FRACTURED RIB TEXTURE 2/S6
1" = 1'-0"



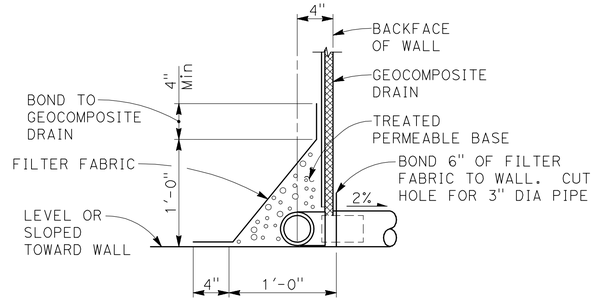
APPROXIMATE WALL OFFSET 3/S6
NO SCALE



TEE CONNECTION



WITHOUT FOOTING



WITH FOOTING

ALTERNATIVE DRAINAGE DETAILS 4/S6
1 1/2" = 1'-0"

PLAN CHECK SET/NOT FOR CONSTRUCTION (11/5/19)

BIGGS CARDOSA ASSOCIATES INC
STRUCTURAL ENGINEERS
865 The Alameda
San Jose, California 95126
408-296-5515

Designer Stamp: REGISTERED PROFESSIONAL ENGINEER MARVASH M HARMS No. 2639 Exp. 12/31/20 STRUCTURAL STATE OF CALIFORNIA

Record Drawings

Designer: MMH Date:
Public Works Inspector: Date:
Utility/Facility Dept. Head: Date:
Project Engineer: JDV Date:
Public Improvements Initially Accepted by the City Council on: Res. No.

Drawn By: RLQ Date: 04/16/18
Checked By: JAA Date: 03/04/19
Designed By: SAR Date: 04/16/18

Revisions

Num.	Description	Engr. Aprv.	Date
△			

CITY OF MILPITAS
ENGINEERING DIVISION

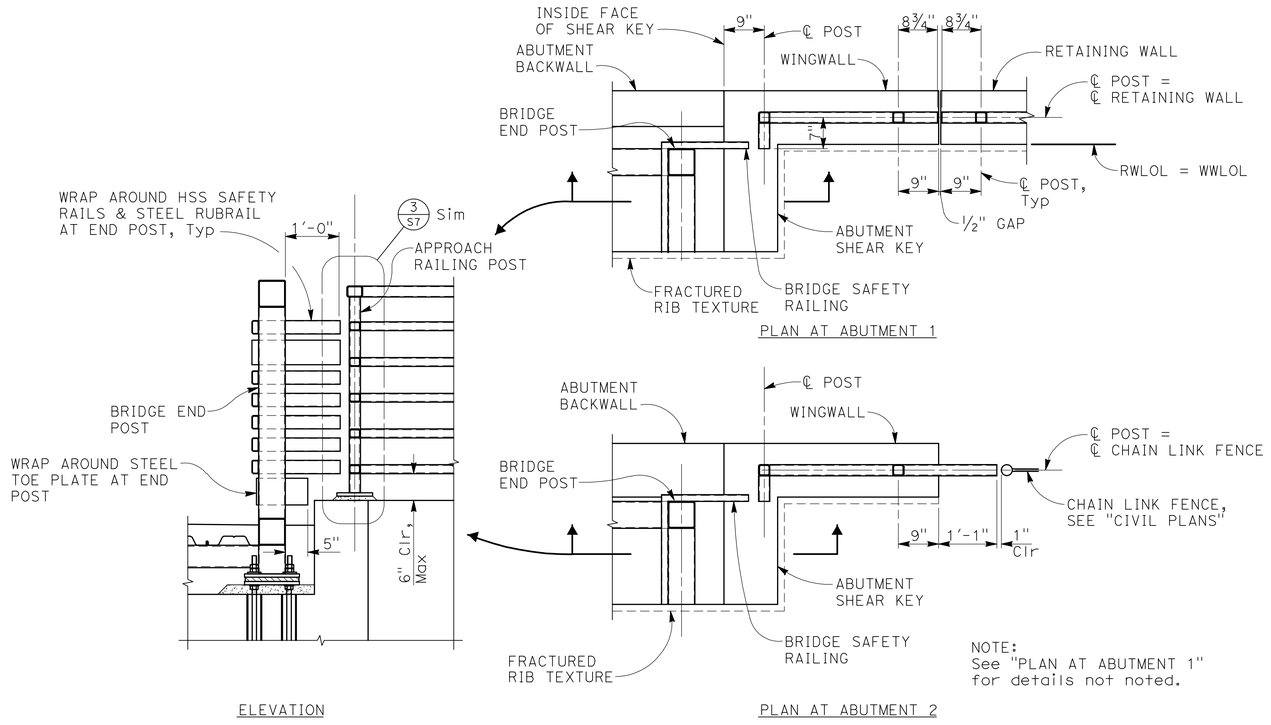
CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

RETAINING WALL DETAILS

RECOMMENDED FOR BIDDING BY: DATE:

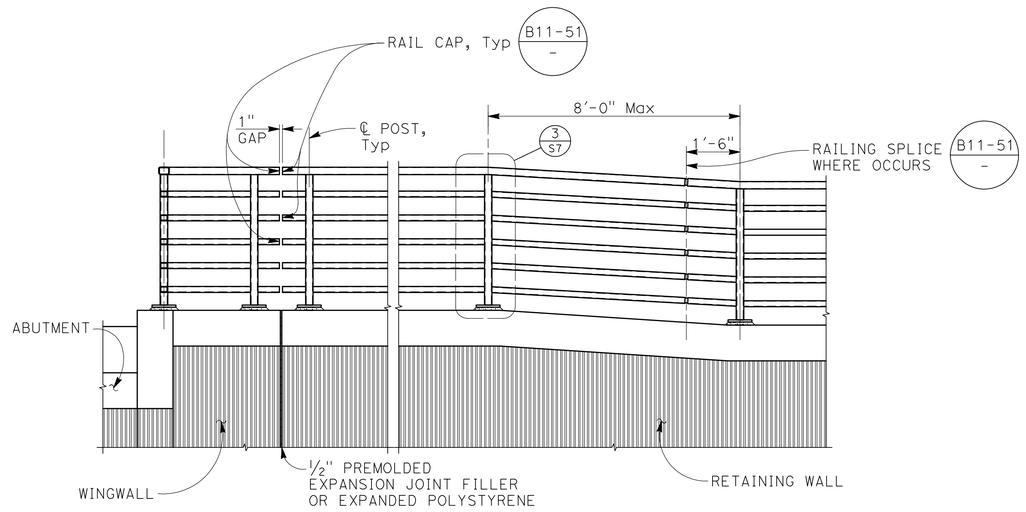
PROJECT NO. 2005
Rec. Dwg No. 2-
SCALE: AS SHOWN
S6
SHEET 14 OF 16

(2017213S6) 2017213



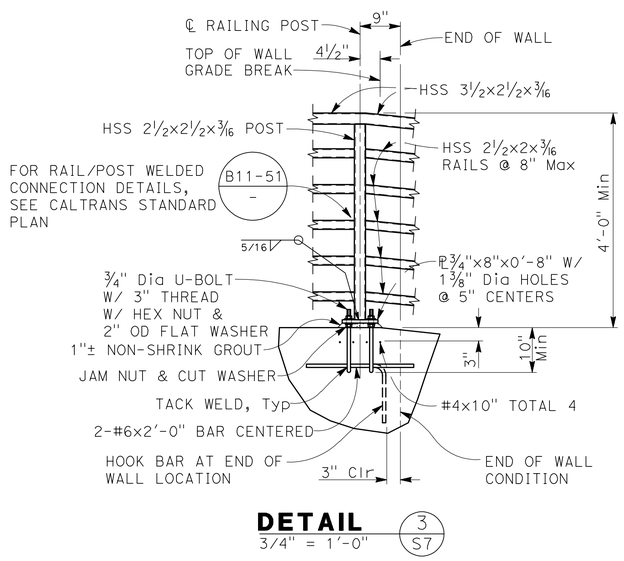
APPROACH RAILING DETAIL 1/S7

3/4" = 1'-0"



PEDESTRIAN RAILING 2/S7

1/2" = 1'-0"



DETAIL 3/S7

3/4" = 1'-0"

NOTES:
1. Use and attach lift strap at each rail post when lifting removable pedestrain railing for installation and remval.
2. Lift straps must be rated for 1500 Lbs minimum capacity and must not mar or scratch the railing.

PLAN CHECK SET/NOT FOR CONSTRUCTION (11/5/19)

BIGGS CARDOSA ASSOCIATES INC
STRUCTURAL ENGINEERS
865 The Alameda
San Jose, California 95126
408-296-5515
BCA

Designer Stamp:
REGISTERED PROFESSIONAL ENGINEER
MARVASH M HARMS
No. 2639
Exp. 12/31/20
STRUCTURAL
STATE OF CALIFORNIA

Record Drawings

Designer: MMH Date:
Public Works Inspector: Date:
Utility/Facility Dept. Head: Date:
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Public Improvements Initially Accepted by the City Council on: Res. No.

Drawn By: RLQ Date: 04/16/18
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Revisions

Num.	Description	Engr. Aprv.	Date
△			

CITY OF MILPITAS
ENGINEERING DIVISION

CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

RAILING DETAILS

RECOMMENDED FOR BIDDING BY: DATE:

PROJECT NO. 2005
Rec. Dwg No. 2-
SCALE: AS SHOWN
S7
SHEET 15 OF 16

(2017213S7) 2017213

STRUCTURAL AND GEOTECHNICAL SPECIAL INSPECTION AND TESTING

CONSTRUCTION QUALITY CONTROL / SPECIAL INSPECTION

CONSTRUCTION QUALITY CONTROL OF THE STRUCTURES WILL BE IMPLEMENTED THROUGH SPECIAL INSPECTIONS. CONSTRUCTION QUALITY CONTROL IS TO BE PERFORMED BY THE STRUCTURAL ENGINEER OF RECORD (BIGGS CARDOSA ASSOCIATES, INC.) TO MAINTAIN AND CERTIFY THAT THE STRUCTURAL WORK HAS BEEN CONSTRUCTED AS INDICATED, SPECIFIED AND INTENDED PER THE PROJECT PLAN AND SPECIFICATIONS. SPECIAL INSPECTIONS ENTAIL AND REQUIRED DURING CONSTRUCTION ON THE FOLLOWING TYPE OF WORK:

STRUCTURAL AND GEOTECHNICAL SPECIAL INSPECTION AND TESTING

GENERAL

THESE PROVISIONS SHALL GOVERN THE QUALITY, WORKMANSHIP, AND REQUIREMENTS FOR WORK COVERED. MATERIALS OF CONSTRUCTION AND TESTS SHALL CONFORM TO THE APPLICABLE STANDARDS LISTED. THE CONTRACTOR SHALL PROVIDE A MINIMUM 48 HOUR NOTICE TO THE SPECIAL INSPECTION AGENCY FOR WORK THAT REQUIRES SPECIAL INSPECTION. THE CONTRACTOR SHALL PROVIDE THE SPECIAL INSPECTOR WITH THE USE OF A LIFT OR OTHER EQUIPMENT AS REQUIRED TO ALLOW ACCESS TO THE WORK THAT REQUIRES INSPECTION. THE CONTRACTOR SHALL PROVIDE THE SPECIAL INSPECTOR ACCESS TO THE APPROVED PLANS AND SPECIFICATIONS AND RETAIN SPECIAL INSPECTION RECORDS AT THE JOB-SITE.

PRECONSTRUCTION MEETING

A PRECONSTRUCTION MEETING THAT INCLUDES PROJECT SUPERINTENDENT, INSPECTOR & ENGINEER IS REQUIRED. MEETING MINUTES MUST BE REVIEWED & APPROVED BY THE ENGINEER OF RECORD PRIOR TO BEGINNING WORK.

DEFINITIONS

CONTINUOUS SPECIAL INSPECTION: THE FULL-TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED.

PERIODIC SPECIAL INSPECTION: THE PART-TIME OR INTERMITTENT OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT THE COMPLETION OF THE WORK.

REFERENCE STANDARDS (EDITIONS)

- CALTRANS 2015 STANDARD SPECIFICATIONS
- CALTRANS 2015 STANDARD PLANS
- AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH EDITION AND CALIFORNIA AMENDMENTS PREFACE DATED JAN 2014, SUPPLEMENTED BY AASHTO LFRD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGE DATED 2009 WITH 2015 INTERIM REVISIONS.
- AISC 341 – SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS; AMERICAN INSTITUTE OF STEEL CONSTRUCTION
- AISC 360 – SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS; AMERICAN INSTITUTE OF STEEL CONSTRUCTION INC
- RCSC – SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS; RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS
- AWS – AMERICAN WELDING SOCIETY
- ASTM – ASTM INTERNATIONAL

REPORT REQUIREMENTS

SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS, AND SHALL FURNISH INSPECTION REPORTS TO CITY OF MILPITAS ENGINEERING DIVISION OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT THE WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF CITY OF MILPITAS ENGINEERING DIVISION OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE PRIOR TO THE COMPLETION OF THAT PHASE OF THE WORK. A FINAL REPORT DOCUMENTING THE REQUIRED SPECIAL INSPECTIONS AND CORRECTION OF ANY DISCREPANCIES NOTED IN THE INSPECTIONS SHALL BE SUBMITTED AT A POINT IN TIME AGREED UPON PRIOR TO THE START OF THE WORK.

SCHEDULE OF STRUCTURAL INSPECTION AND TESTING

STEEL

•STRUCTURAL STEEL:	
– CONFIRM IDENTIFICATION MARKINGS CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS	AISC 360 N5.2
– REVIEW MANUFACTURER'S CERTIFICATE OF COMPLIANCE INCLUDING CERTIFIED TEST REPORTS	
– PERIODICALLY INSPECT STEEL CONNECTION DETAILS FOR COMPLIANCE WITH THE DETAILS SHOWN ON THE APPROVED CONSTRUCTION DOCUMENTS	AISC 360 & AISC 341
* WELDING (SHOP AND FIELD):	
– VERIFY WELDERS QUALIFICATIONS, PROCEDURE QUALIFICATION RECORDS (PQR) AND WELDING PROCEDURE SPECIFICATIONS (WPS) PRIOR TO THE START OF WORK	AISC 341 J6, AWS D1.3, AWS D1.4
– CONFIRM IDENTIFICATION MARKINGS OF WELD FILLER MATERIALS CONFORM TO AWS DESIGNATION LISTED IN THE WPS	AISC 360 N5.2
– REVIEW MANUFACTURER'S CERTIFICATE OF COMPLIANCE OF WELD FILLER MATERIALS	
– CONTINUOUSLY INSPECT COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS	AWS D1.1 6.9, AISC 341 J6
– CONTINUOUSLY INSPECT MULTIPASS FILLET WELDS	AWS D1.1 6.9, AISC 341 J6
– CONTINUOUSLY INSPECT PLUG AND SLOT WELDS	AWS D1.1 6.9, AISC 341 J6
– CONTINUOUSLY INSPECT MULTILE PASS FILLET WELDS	AWS D1.1 6.9, AISC 341 J6
– PERIODICALLY INSPECT SINGLE PASS FILLET WELDS	AWS D1.1 6.9, AISC 341 J6
– PERFORM CHEMICAL TESTING OF REINFORCING STEEL OTHER THAN ASTM A706 TO VERIFY WELDABILITY	AWS D1.4
– CONTINUOUSLY INSPECT WELDING OF REINFORCING STEEL	
– PERIODICALLY INSPECT INSTALLATION OF WELDED STUDS	AWS D1.1

CONCRETE

* CONCRETE	
– VERIFY USE OF ENGINEER OF RECORD REVIEWED MIX DESIGN AND MATERIAL CERTIFICATE	
– CONTINUOUSLY INSPECT CONCRETE PLACEMENT	
– PERIODICALLY INSPECT CURING MATERIAL FOR CONFORMANCE WITH APPROVED CONTRACT DOCUMENTS AND PLACEMENT	
– PERIODICALLY INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS	
– VERIFY CONCRETE STRENGTH PRIOR TO REMOVAL OF FORMS	
– FABRICATE 6" DIAMETER x 12" CYLINDER TEST SPECIMENS	ASTM C31
– PERFORM SLUMP TESTING AT THE TIME CONCRETE IS SAMPLED	ASTM C143
– PERFORM AIR CONTENT TESTING AT THE TIME CONCRETE IS SAMPLED	ASTM C173
– RECORD TEMPERATURE OF CONCRETE AT THE TIME CONCRETE IS SAMPLED	ASTM C1064
– PERFORM CONCRETE COMPRESSION TESTING	ASTM C39
* REINFORCING	
– REVIEW CERTIFIED MILL TEST REPORTS FOR REINFORCING STEEL	
– PERIODICALLY INSPECT REINFORCING STEEL AND PLACEMENT	

POST-INSTALLED ANCHORS

* GROUTED ANCHORS IN CONCRETE	
– CONTINUOUSLY INSPECT ANCHOR TYPE, DIAMETER, LENGTH AND CLEANLINESS	
– CONTINUOUSLY INSPECT HOLE LOCATION, DIAMETER, DEPTH AND CLEANLINESS	
– CONTINUOUSLY INSPECT ANCHOR EMBEDMENT, SPACING AND EDGE DISTANCE	
– CONTINUOUSLY INSPECT ANCHOR AND GROUT INSTALLATION	

NONSHRINK/EXPANSIVE GROUT

– CONFIRM MATERIALS COMPLY TO SPECIFICATIONS	
– CONTINUOUSLY INSPECT INSTALLATION	
– FABRICATE TESTING SAMPLES	ASTM C109
– PERFORM COMPRESSION TESTING	ASTM C109

MECHANICAL SPLICE COUPLERS

- PERIODICALLY INSPECT GRADE AND SIZE OF REINFORCEMENT, BAR INSERTION LENGTH AND PLACEMENT OF SPLICES
- PERIODICALLY INSPECT GRADE, SIZE AND THREAD QUALITY OF RODS, ROD INSERTION LENGTH AND PLACEMENT OF SPLICES
- PERIODICALLY INSPECT COUPLER IDENTIFICATION AND POSITION OF COUPLER

CAST-IN-PLACE DEEP FOUNDATION ELEMENTS (INSPECTIONS REQUIRED IN ADDITION TO THOSE REQUIRED FOR CONCRETE)

- CONTINUOUSLY INSPECT DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT
- CONTINUOUSLY INSPECT PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM ELEMENT DIAMETERS AND LENGTHS. RECORD CONCRETE VOLUMES.
- PERFORM ADDITIONAL INSPECTIONS AS REQUIRED BY GEOTECHNICAL ENGINEER AND PER APPROVED GEOTECHNICAL REPORT.
- INSPECT AND TEST INSTALLATION OF INSPECTION PIPES AS REQUIRED
- PERFORM GAMMA-GAMMA LOGGING PER CALIFORNIA TEST 233 AS REQUIRED

SOILS

– PERIODICALLY VERIFY DEPTH OF SOIL FOUNDATION EXCAVATIONS	
– PERIODICALLY PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS	ASTM D-1557
– CONTINUOUSLY VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	
– PERIODICALLY INSPECT CLEARED AREAS AND SUBGRADES PREPARED TO RECEIVE FILL PRIOR TO PLACEMENT OF COMPACTED FILL	
– PERIODICALLY INSPECT DRAINAGE SYSTEM	
– PERFORM ADDITIONAL INSPECTIONS AS REQUIRED BY GEOTECHNICAL ENGINEER AND PER APPROVED GEOTECHNICAL REPORT	

PREFABRICATED BRIDGE

- PERIODICALLY INSPECT BRIDGE ERECTION AND INSTALLATION

PLAN CHECK SET/NOT FOR CONSTRUCTION (11/5/19)

BIGGS CARDOSA ASSOCIATES INC
STRUCTURAL ENGINEERS

865 The Alameda
San Jose, California 95126
408-296-5515

BCA

Designer Stamp:

REGISTERED PROFESSIONAL ENGINEER
MANVASH M HAKIMS
No. 2639
Exp. 12/31/20
STRUCTURAL
STATE OF CALIFORNIA

Record Drawings

Designer: MMH Date:
Public Works Inspector: Date:
Utility/Facility Dept. Head: Date:
Project Engineer: JDV Date:
Public Improvements Initially Accepted by the City Council on: Res. No.

Drawn By: RLQ Date:04/16/18
Checked By: JAA Date:03/04/19
Designed By:SAR Date:04/16/18

Revisions

Num.	Description	Engr. Aprv.	Date
1			

CITY OF MILPITAS
CALIFORNIA
JANUARY 26, 1954

CITY OF MILPITAS
ENGINEERING DIVISION

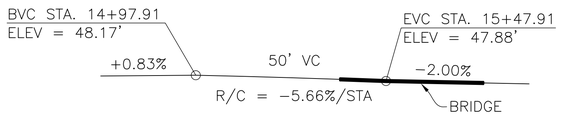
CENTRE POINTE - PENITENCIA CREEK PEDESTRIAN BRIDGE
ACROSS EAST PENITENCIA CREEK BETWEEN McCANDLESS DRIVE AND MONTAGUE EXPRESSWAY

STRUCTURAL & GEOTECHNICAL SPECIAL INSPECTION AND TESTING

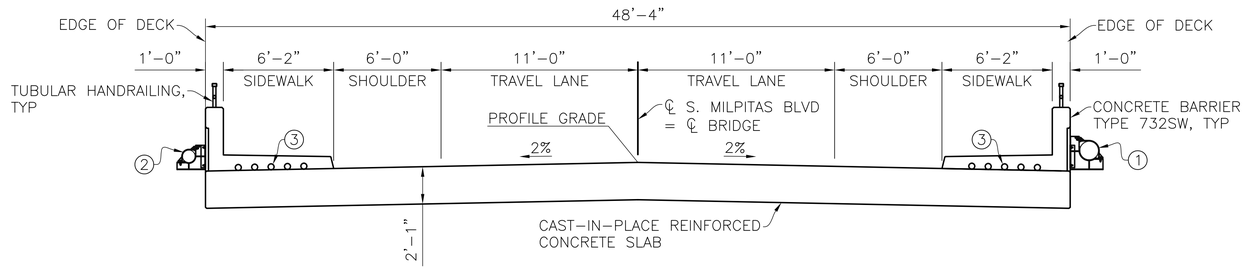
RECOMMENDED FOR BIDDING BY: _____ DATE: _____

PROJECT NO. 2005
Rec. Dwg No. 2-
SCALE: AS SHOWN
S8
SHEET 16 OF 16

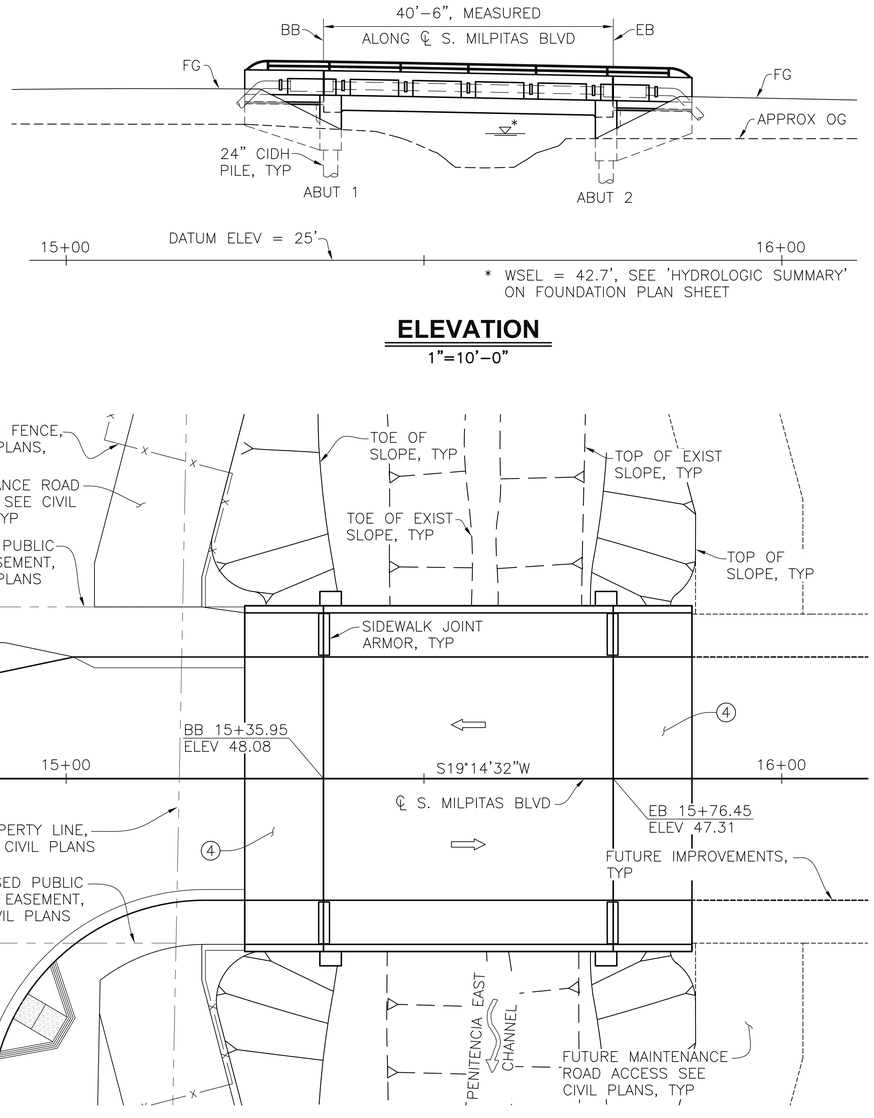
(2017213S8) 2017213



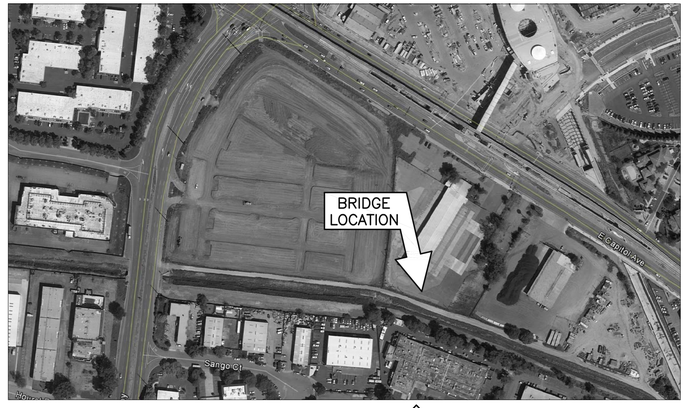
PROFILE GRADE
NO SCALE



TYPICAL SECTION
1/4"=1'−0"



ELEVATION
1"=10'−0"



SITE PLAN
NO SCALE

PLAN
1"=10'−0"

INDEX TO BRIDGE PLANS

SHEET NO.	TITLE
S1	GENERAL PLAN
S2	DECK CONTOURS
S3	FOUNDATION PLAN
S4	ABUTMENT LAYOUT
S5	ABUTMENT DETAILS
S6	TYPICAL SECTION
S7	STRUCTURE APPROACH SLAB
S8	UTILITY DETAILS

LEGEND:
- (1) 12" DIA. WATER, SEE CIVIL PLANS
- (2) 8" DIA. RECYCLED WATER, SEE CIVIL PLANS
- (3) 5−4" DIA. FUTURE UTILITY OPENING
- (4) STRUCTURE APPROACH SLAB
- ⇦ INDICATES DIRECTION OF TRAFFIC

ALL FUTURE UTILITY OPENINGS SHALL CONSIST OF SCH 40 PVC AND SHALL HAVE EXPANSION JOINTS AT BOTH ABUTMENT JOINTS, SEE "UTILITY DUCT EXPANSION JOINT" ON B11−58

ALL FUTURE UTILITY OPENINGS TO BE FURNISHED AND INSTALLED BY BRIDGE CONTRACTOR, UNLESS NOTED OTHERWISE.

- B0−1 / 1−2 — B0−1: INDICATES CALTRANS STANDARD PLAN SHEET NO.; 1−2: INDICATES DETAIL NO.
- A / S3 — A: INDICATES SECTION NO.; S3: INDICATES SHEET NO. SHOWN ON
- 1 / S5 — 1: INDICATES DETAIL NO.; S5: INDICATES SHEET NO. SHOWN ON
- x — x — INDICATES CHAIN−LINK FENCE, SEE CIVIL PLANS

CALTRANS 2018 STANDARD PLANS

	A3A	ABBREVIATIONS (SHEET 1 OF 3)
	A3B	ABBREVIATIONS (SHEET 2 OF 3)
	A3C	ABBREVIATIONS (SHEET 3 OF 3)
	A10A	LEGEND − LINES AND SYMBOLS (SHEET 1 OF 5)
	A10B	LEGEND − LINES AND SYMBOLS (SHEET 2 OF 5)
	A10C	LEGEND − LINES AND SYMBOLS (SHEET 3 OF 5)
	A10D	LEGEND − LINES AND SYMBOLS (SHEET 4 OF 5)
	A10E	LEGEND − LINES AND SYMBOLS (SHEET 5 OF 5)
	A62C	LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL − BRIDGE
RSP	B0−1	BRIDGE DETAILS
	B0−13	BRIDGE DETAILS
	B6−21	JOINT SEALS (MAXIMUM MOVEMENT RATING = 2")
RSP	B11−51	TUBULAR HANDRAILING
	B11−58	CONCRETE BARRIER TYPE 732SW (SHEET 1 OF 2)
	B11−59	CONCRETE BARRIER TYPE 732SW (SHEET 2 OF 2)

NOTES:
1. THE WORK EMBRACED HEREIN SHALL BE DONE IN ACCORDANCE WITH THE STATE OF CALIFORNIA 2018 STANDARD SPECIFICATIONS, REVISED STANDARD SPECIFICATIONS, STANDARD PLANS, AND REVISED STANDARD PLANS AND IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS.
2. THE CONTRACTOR SHALL VERIFY ALL EXISTING FIELD CONDITIONS, LAYOUT, DIMENSIONS AND COORDINATION WITH CIVIL PLANS PRIOR TO START OF CONSTRUCTION OR ORDERING OR FABRICATING ANY MATERIAL. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
3. SEE CIVIL PLANS FOR ELEVATION CONTROL, FINISHED GRADE LIMITS, ADDITIONAL DETAILS, LAYOUT INFORMATION, AND NOTES.
4. A FOUNDATION EXPLORATION REPORT BY ENGEO DATED MARCH 26, 2020 HAS BEEN PREPARED FOR THIS PROJECT. CONTRACTOR SHALL CONFORM TO ALL REQUIREMENTS THEREIN.
5. THE CONTRACTOR WILL BE RESPONSIBLE FOR CONFORMING TO THE APPLICABLE CONSTRUCTION SAFETY ORDERS OF THE DIVISION OF INDUSTRIAL SAFETY OF THE STATE OF CALIFORNIA AND OSHA REQUIREMENTS.
6. FOR 'GENERAL NOTES', SEE DECK CONTOURS SHEET.

REGISTERED PROFESSIONAL ENGINEER — JOHN P. JENSEN — No. C82745 — CIVIL — STATE OF CALIFORNIA

DESIGNED BY: JPJ
DRAWN BY: JPJ
CHECKED BY: NRZ
DATE: 04/01/2020

REV.	DATE	DESCRIPTION	BY

CORNERSTONE structural engineering group
986 W Alluvial Ave – Suite 201
Fresno, California 93711
559.320.3200
fax 559.320.3201

GENERAL PLAN

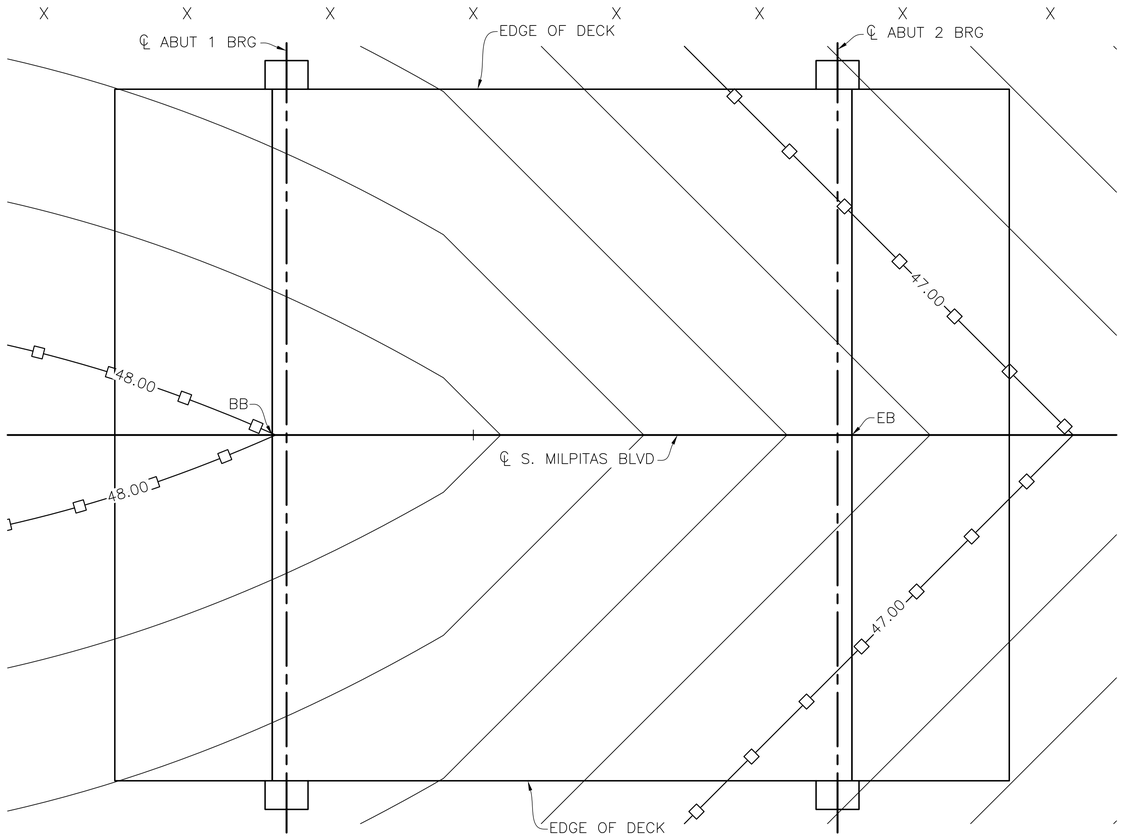
S. MILPITAS BOULEVARD BRIDGE OVER PENITENCIA EAST CHANNEL

MILPITAS CALIFORNIA

SHEET NUMBER S1 OF 8 SHEETS

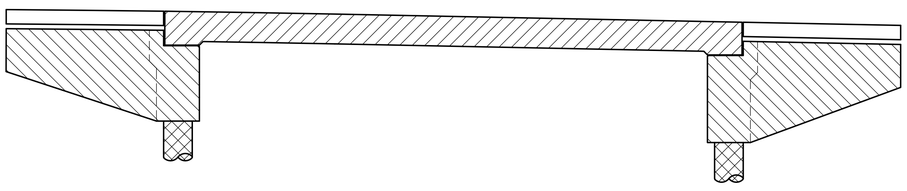
DRAWING NO. 2015024BS1

W:\2015\2015024 450 Montague Bridges\Vehicular Bridge\2015024BS1.dwg – 3/31/2020 6:13 PM



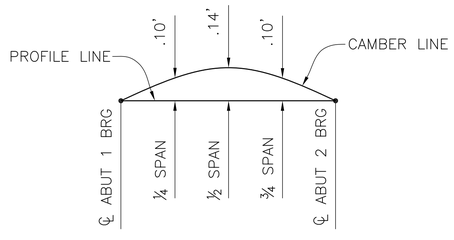
DECK GRADES
1"=5'-0"

NOTES:
1. CONTOURS INDICATE TOP OF CAST-IN-PLACE CONCRETE SLAB ELEVATION.
2. □ INDICATES ONE FOOT CONTOURS.
3. X INDICATES 10 FT INTERVALS MEASURED ALONG ℄ S. MILPITAS BOULEVARD
4. CONTOUR INTERVAL = 0.20 FT.
5. CONTOURS DO NOT INCLUDE CAMBER OR FALSEWORK DEFLECTION AND SETTLEMENT.
6. THIS SHEET SHALL NOT BE USED TO SCALE BRIDGE GRADES. A LARGE SCALE (1/4"=1'-0") DECK CONTOURS SHEET SHALL BE REQUESTED FROM THE ENGINEER FOR THIS PURPOSE.



- INDICATES CIDH PILING (f'c = 3,600 PSI AT 28 DAYS)
- INDICATES STRUCTURAL CONCRETE, BRIDGE (f'c = 3,600 PSI AT 28 DAYS)
- INDICATES STRUCTURAL CONCRETE, BRIDGE (POLYMER FIBER) (f'c = 4,000 PSI AT 28 DAYS)
- INDICATES STRUCTURAL CONCRETE, APPROACH SLAB (f'c = 4,000 PSI AT 28 DAYS)

CONCRETE STRENGTH & TYPE LIMITS
NO SCALE

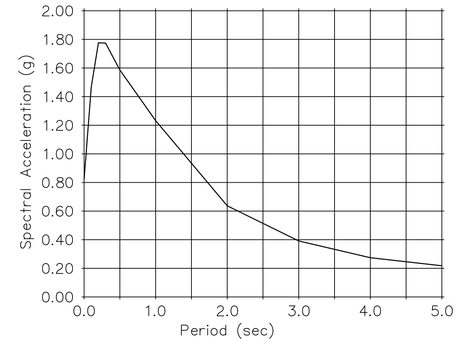


(DOES NOT INCLUDE ALLOWANCE FOR FALSEWORK SETTLEMENT OR DEFLECTION)

CAMBER DIAGRAM
NO SCALE

GENERAL NOTES
LOAD AND RESISTANCE FACTOR DESIGN

DESIGN:	AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION WITH CALIFORNIA AMENDMENTS
SEISMIC DESIGN:	CALTRANS SEISMIC DESIGN CRITERIA (SDC) VERSION 2.0
DEAD LOAD:	INCLUDES 35 PSF FOR FUTURE WEARING SURFACE.
LIVE LOADING:	HL93 W/ "LOW-BOY" AND PERMIT DESIGN VEHICLE
SEISMIC LOADING:	V_{S30} = 300 M/S PEAK GROUND ACCELERATION = 0.82G 5% DAMPING



ACCELERATION RESPONSE SPECTRUM

REINFORCED CONCRETE:	fy = 60 ksi f'c = SEE 'CONCRETE STRENGTH & TYPE LIMITS' THIS SHEET n = 8.0
SOIL CRITERIA FOR DESIGN:	PER ENGEO'S FOUNDATION EXPLORATION VEHICULAR BRIDGE REPORT DATED MARCH 26, 2020: SOIL UNIT WEIGHT = 120 PCF ACTIVE DRAINED EQUIVALENT FLUID PRESSURE = 36 PCF* AT-REST DRAINED EQUIVALENT FLUID PRESSURE = 70 PCF* SEISMIC ACTIVE INCREMENT PRESSURE = 34 PCF

NOTE:
* FOR BACKFILL MATERIAL CONFORMING TO CALTRANS 2018 STANDARD SPECIFICATIONS SECTION 19-3.02C "STRUCTURE BACKFILL"

REGISTERED PROFESSIONAL ENGINEER * JOHN P. JENSEN * No. C82745 * CIVIL * STATE OF CALIFORNIA

DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:
JPJ	JPJ	NRZ	04/01/2020

REV.	DATE	DESCRIPTION	BY

CORNERSTONE structural engineering group
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Fresno, California 93711
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fax 559.320.3201

DECK CONTOURS

S. MILPITAS BOULEVARD BRIDGE OVER PENITENCIA EAST CHANNEL

MILPITAS CALIFORNIA

SHEET NUMBER S2 OF 8 SHEETS

DRAWING NO. 2015024BS2

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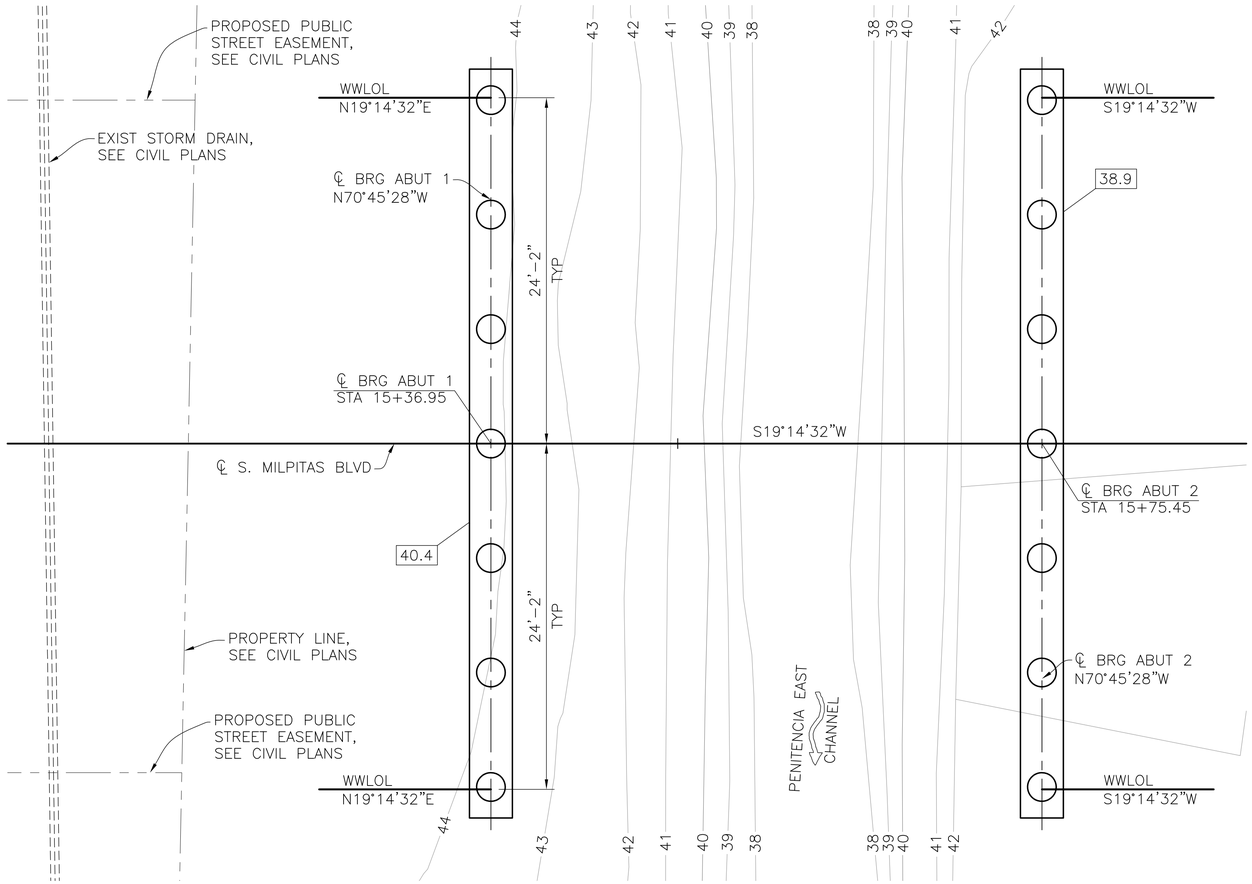


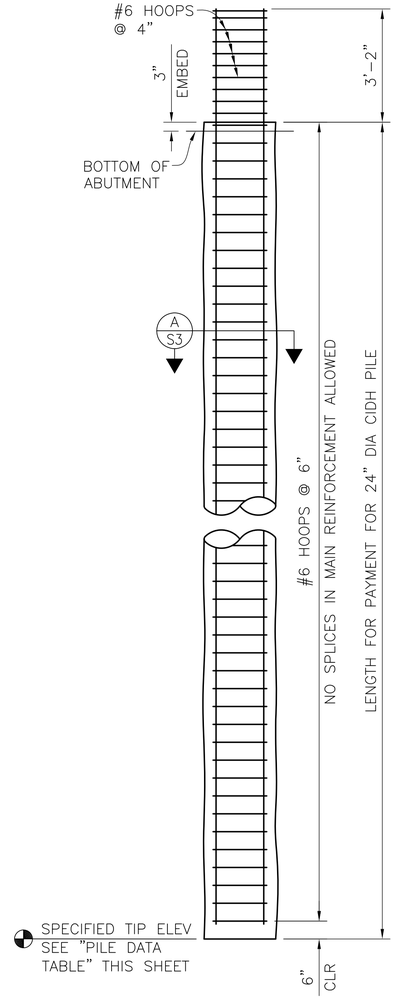
FOUNDATION PLAN
1"=5'-0"

NOTES:

◯ INDICATES 24" DIA CIDH PILES

40.4 INDICATES BOTTOM OF ABUTMENT ELEVATION

1. A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER OF RECORD SHALL BE ON SITE AT ALL TIMES DURING THE PILE INSTALLATION OPERATION. UPON COMPLETION, THE GEOTECHNICAL ENGINEER OF RECORD SHALL PROVIDE THE OWNER AND STRUCTURAL ENGINEER OF RECORD WITH A LETTER STATING THAT THE PILE INSTALLATION HAS MET THE PROJECT REQUIREMENTS.
2. -42- INDICATES CONTOUR ELEVATION.
3. CONTOUR INTERVAL = 1'
4. CONTRACTOR SHALL VERIFY ALL EXISTING CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.
5. CONTOURS SHOWN INDICATE EXISTING CONDITIONS. FOR FINISHED GRADE LIMITS, SEE CIVIL PLANS.
6. SEE CIVIL PLANS FOR ELEVATION CONTROL.



CIDH PILE ELEVATION
1/2"=1'-0"

PILE DATA TABLE

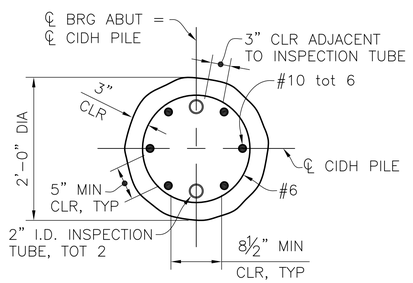
SUPPORT LOCATION	PILE TYPE	NOMINAL RESISTANCE (KIPS)		DESIGN TIP ELEVATIONS (FT)	SPECIFIED TIP ELEVATION (FT)
		COMPRESSION	TENSION		
ABUT. 1	24" CIDH	300	–	(1) -14.0; (4) 10.4	-14.0
ABUT. 2	24" CIDH	300	–	(1) -15.0; (4) 8.9	-15.0

NOTES:
1. DESIGN TIP ELEVATION IS CONTROLLED BY THE FOLLOWING DEMANDS: (1) COMPRESSION (2) TENSION (3) SETTLEMENT (4) LATERAL
2. THE SPECIFIED TIP ELEVATION SHALL NOT BE RAISED ABOVE THE DESIGN TIP ELEVATIONS FOR TENSION, LATERAL, OR TOLERABLE SETTLEMENT
3. REQUIRED CAPACITY IS BASED ON LRFD METHOD FOR THE ABUTMENTS

HYDROLOGIC SUMMARY

FREQUENCY (YEARS)	100
DISCHARGE (CUBIC FEET PER SECOND)	340
WATER SURFACE (ELEVATION AT BRIDGE IN FEET)	42.7

FLOOD PLAIN DATA ARE BASED UPON CALCULATIONS PREPARED BY SCHAAF AND WHEELER DATED JULY 9, 2015 PROVIDED BY CARLSON, BARBEE & GIBSON AND ARE SHOWN TO MEET FEDERAL REQUIREMENTS. THE ACCURACY OF SAID INFORMATION IS NOT WARRANTED BY CORNERSTONE STRUCTURAL ENGINEERING GROUP AND INTERESTED OR AFFECTED PARTIES SHOULD MAKE THEIR OWN INVESTIGATION.



SECTION A S3
1"=1'-0"

NOTES:
1. INSPECTION TUBES ONLY REQUIRED IF CONCRETE IS PLACED UNDER SLURRY.
2. ALL HOOP REINFORCING SHALL UTILIZE "ULTIMATE LEVEL" SPLICES.

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REGISTERED PROFESSIONAL ENGINEER JOHN P. JENSEN No. C82745 CIVIL STATE OF CALIFORNIA

DESIGNED BY: JPJ | DRAWN BY: JPJ | CHECKED BY: NRZ | DATE: 04/01/2020

REV.	DATE	DESCRIPTION	BY

FOUNDATION PLAN

S. MILPITAS BOULEVARD BRIDGE OVER PENITENCIA EAST CHANNEL

MILPITAS CALIFORNIA

SHEET NUMBER S3
OF 8 SHEETS
DRAWING NO. 2015024BS3

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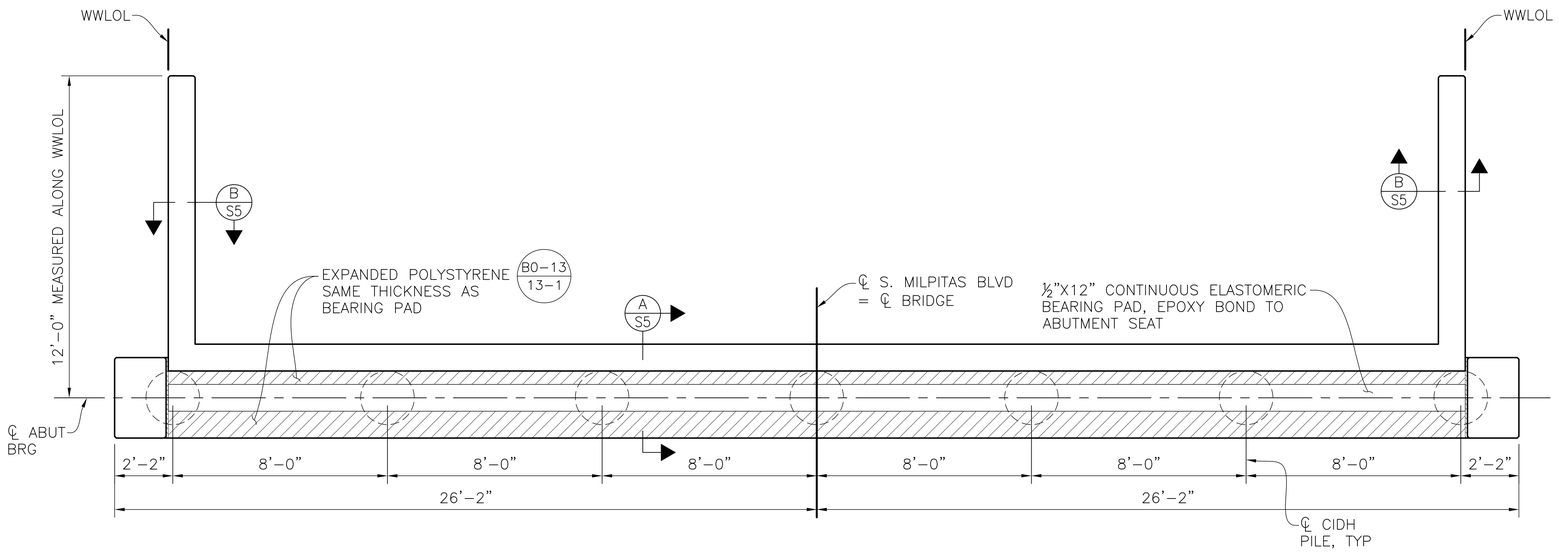
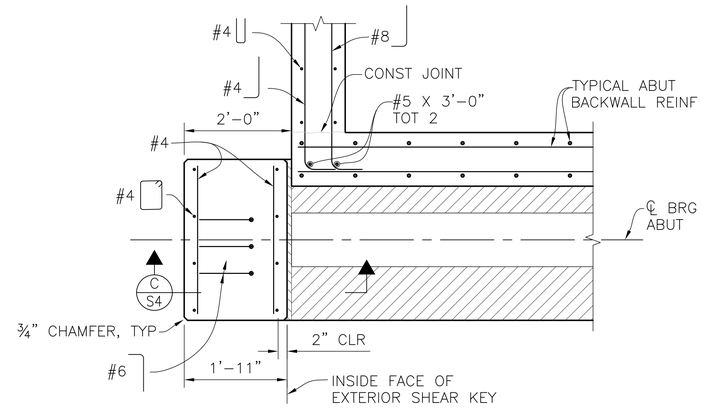
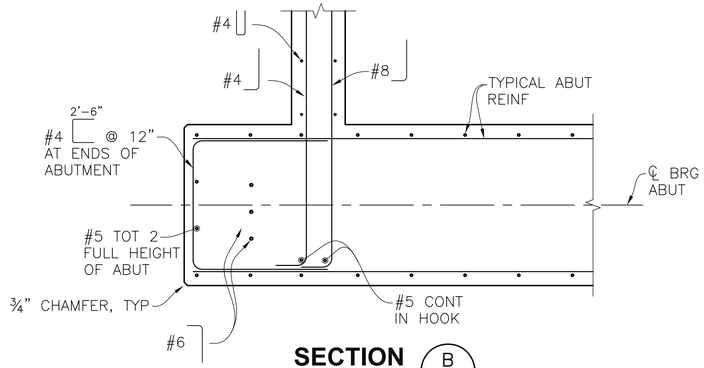


ABUTMENT PLAN
3/8"=1'-0"

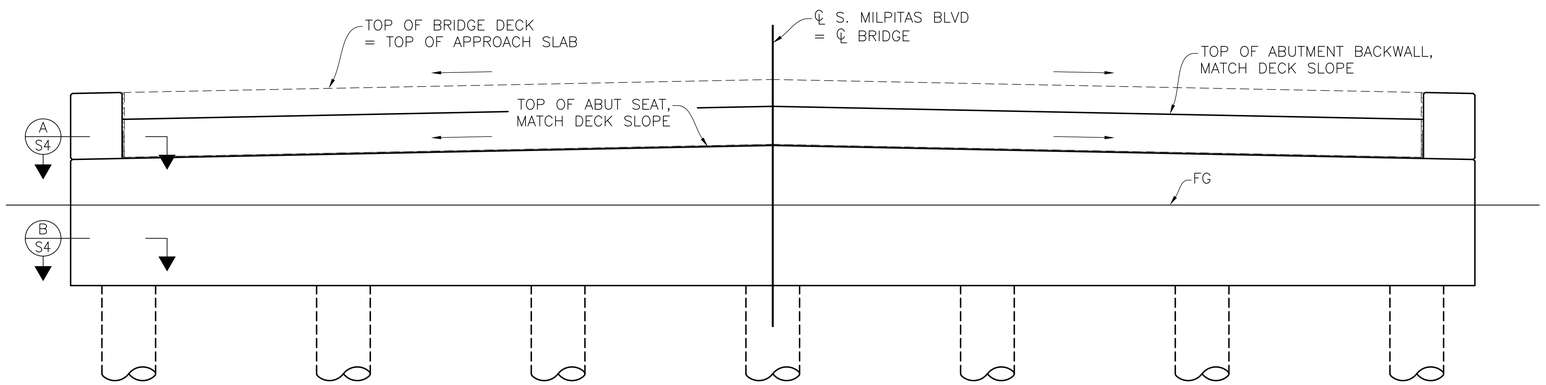
NOTE:
ABUT 1 SHOWN,
ABUT 2 SIMILAR



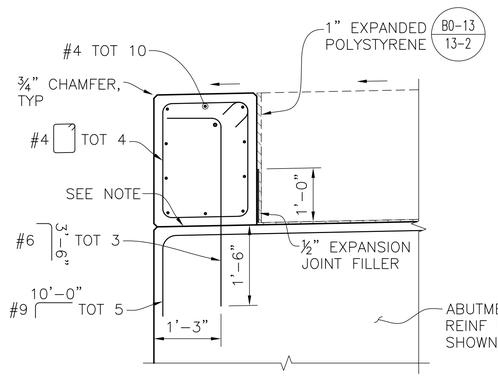
SECTION
3/4"=1'-0" A S4



SECTION
3/4"=1'-0" B S4



ABUTMENT ELEVATION
3/8"=1'-0"



SECTION
3/4"=1'-0" C S4

NOTE:
MANDATORY SMOOTH UNBONDED CONSTRUCTION JOINT. SMOOTH TROWEL FINISH WITH TWO LAYERS 15 LBS BUILDING PAPER.

REGISTERED PROFESSIONAL ENGINEER JONATHAN P. JENSEN No. C82745 CIVIL STATE OF CALIFORNIA

DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:
JPJ	JPJ	NRZ	04/01/2020

REV.	DATE	DESCRIPTION	BY

CORNERSTONE structural engineering group
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ABUTMENT LAYOUT

S. MILPITAS BOULEVARD BRIDGE OVER PENITENCIA EAST CHANNEL

MILPITAS CALIFORNIA

SHEET NUMBER S4
OF 8 SHEETS
DRAWING NO. 2015024BS4

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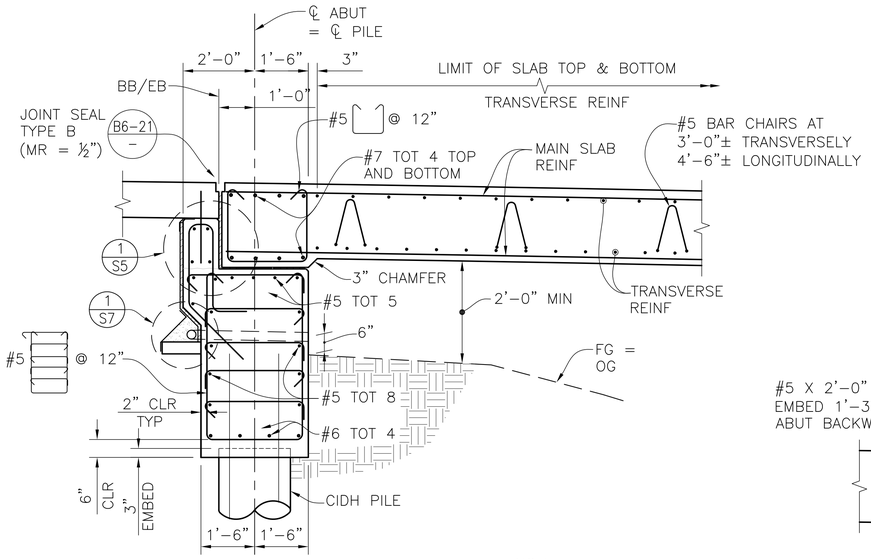
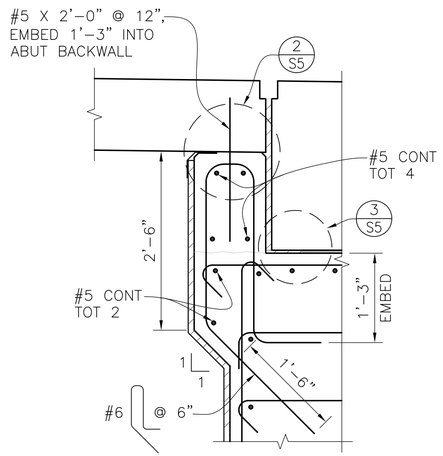
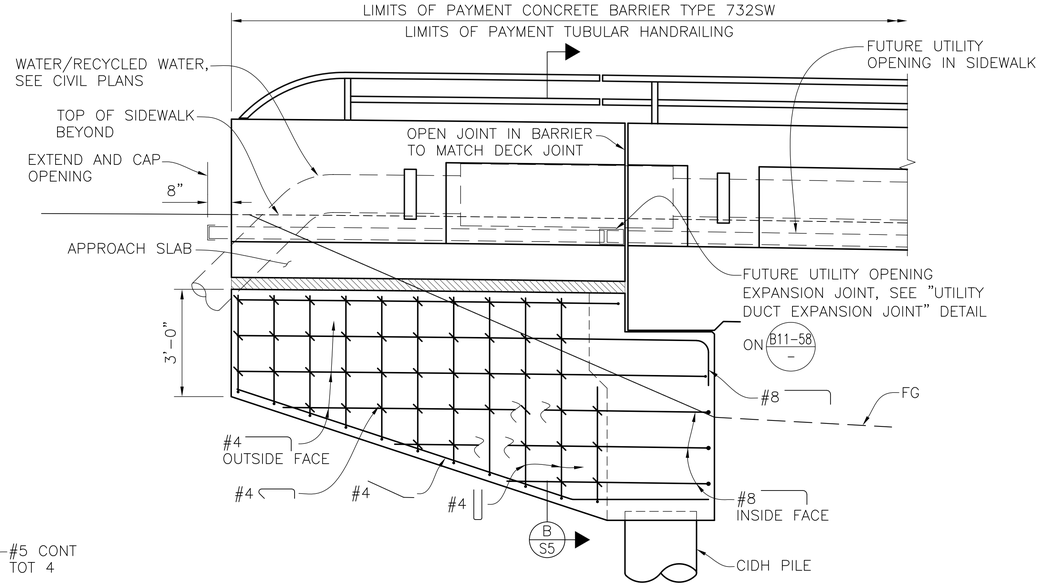


SECTION A S5
1/2"=1'–0"

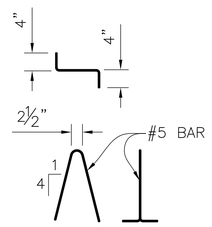
NOTE:
ABUT 1 SHOWN,
ABUT 2 SIMILAR



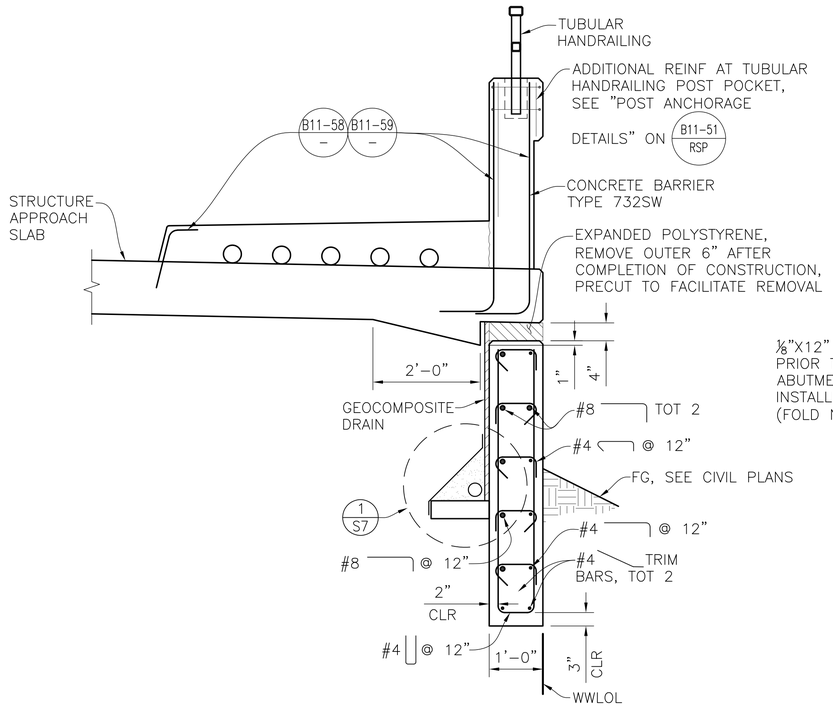
DETAIL 1 S5
1" = 1'–0"



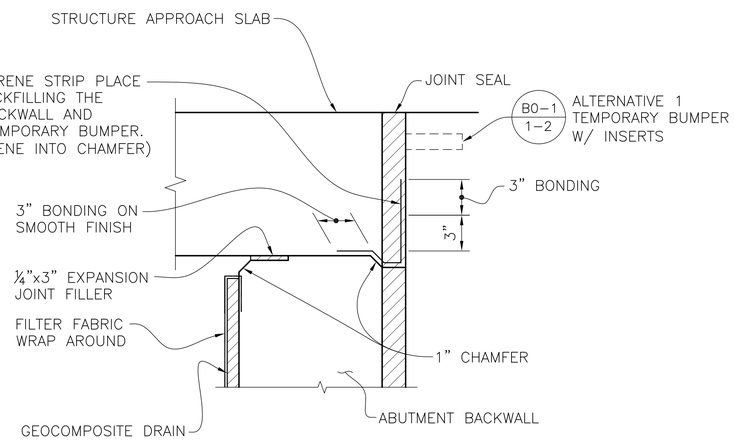
WINGWALL ELEVATION
1/2" = 1'–0"



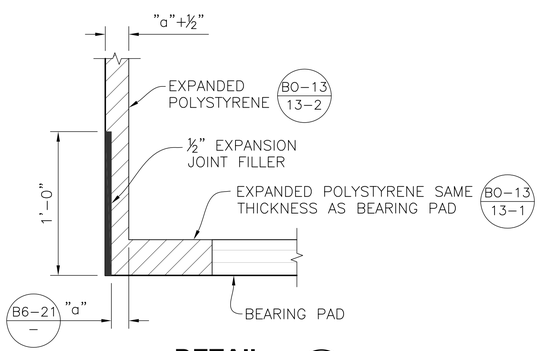
BAR CHAIR DETAIL
NO SCALE



SECTION B S5
3/4"=1'–0"



DETAIL 2 S5
NO SCALE



DETAIL 3 S5
NO SCALE

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REGISTERED PROFESSIONAL ENGINEER
JONATHAN P. JENSEN
No. C82745
CIVIL
STATE OF CALIFORNIA

DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:
JPJ	JPJ	NRZ	04/01/2020

REV.	DATE	DESCRIPTION	BY

CORNERSTONE structural engineering group
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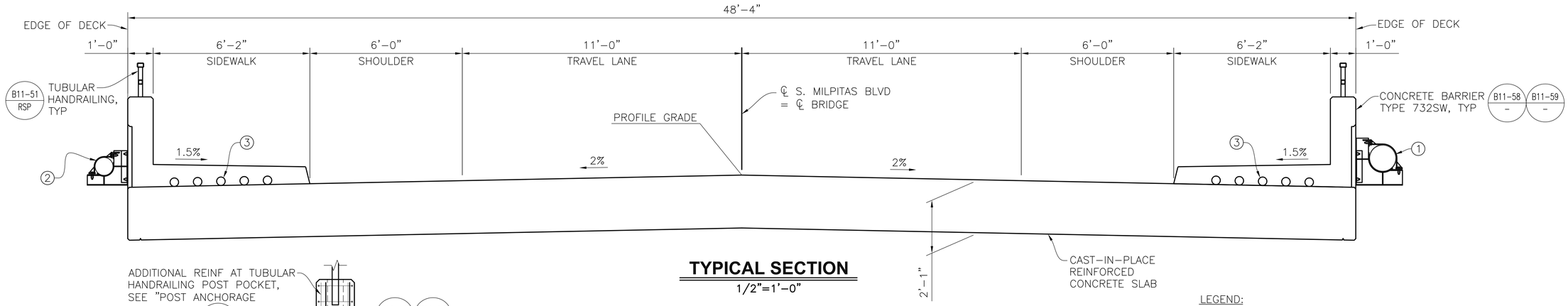
ABUTMENT DETAILS

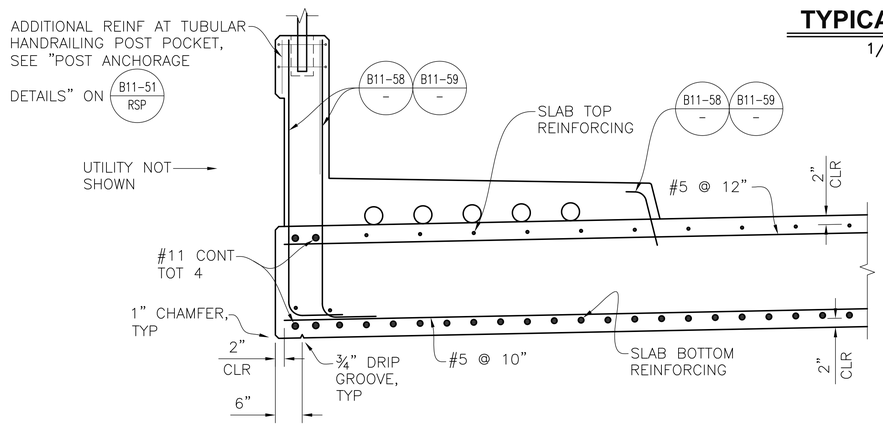
S. MILPITAS BOULEVARD BRIDGE
OVER PENITENCIA EAST CHANNEL
MILPITAS CALIFORNIA

SHEET NUMBER
S5
OF 8 SHEETS
DRAWING NO.
2015024BS5



TYPICAL SECTION

1/2"=1'-0"



PARTIAL TYPICAL SECTION

3/4"=1'-0"

LEGEND:

① 12" DIA. WATER, SEE CIVIL PLANS

② 8" DIA. RECYCLED WATER, SEE CIVIL PLANS

③ 5-4" DIA. FUTURE UTILITY OPENING

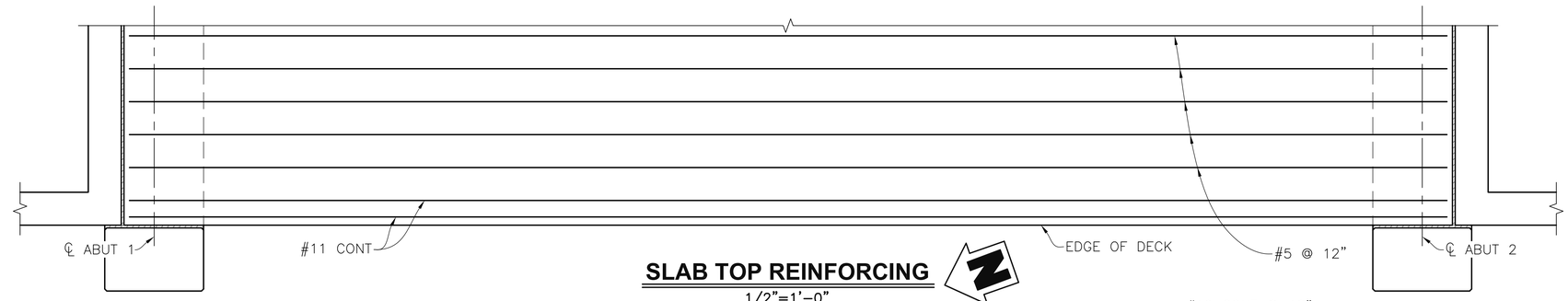
ALL FUTURE UTILITY OPENINGS SHALL CONSIST OF SCH 40 PVC AND SHALL HAVE EXPANSION JOINTS AT BOTH ABUTMENT JOINTS,

SEE "UTILITY DUCT EXPANSION JOINT" ON B11-58 -

ALL FUTURE UTILITY OPENINGS TO BE FURNISHED AND INSTALLED BY BRIDGE CONTRACTOR, UNLESS NOTED OTHERWISE.

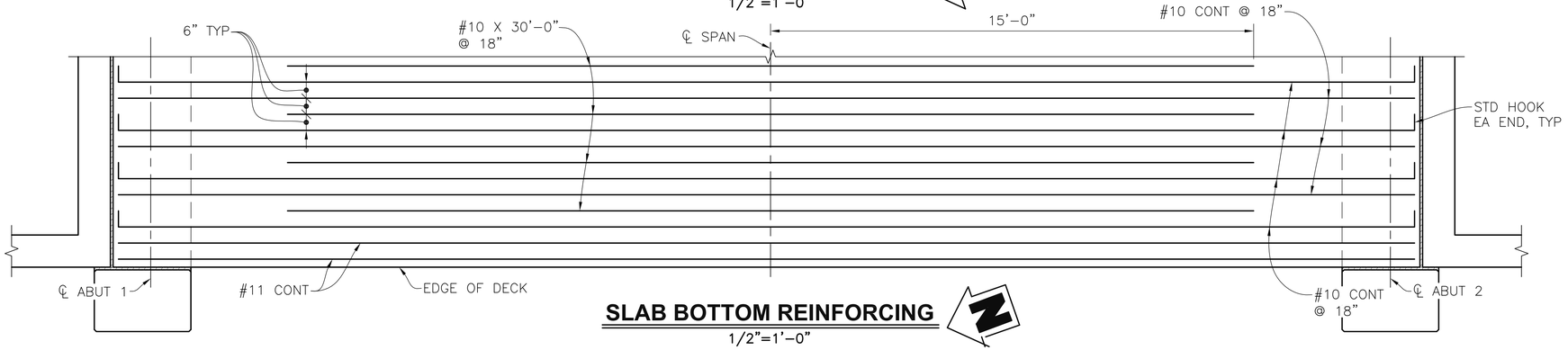
BAR SPLICE LENGTH

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
TOP & BOTTOM LONGITUDINAL SLAB REINFORCEMENT (IN)	24	30	36	39	45	69	78	87



SLAB TOP REINFORCING

1/2"=1'-0"



SLAB BOTTOM REINFORCING

1/2"=1'-0"

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DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:
JPJ	JPJ	NRZ	04/01/2020

REV.	DATE	DESCRIPTION	BY

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TYPICAL SECTION

S. MILPITAS BOULEVARD BRIDGE OVER PENITENCIA EAST CHANNEL

MILPITAS CALIFORNIA

SHEET NUMBER S6 OF 8 SHEETS

DRAWING NO. 2015024BS6

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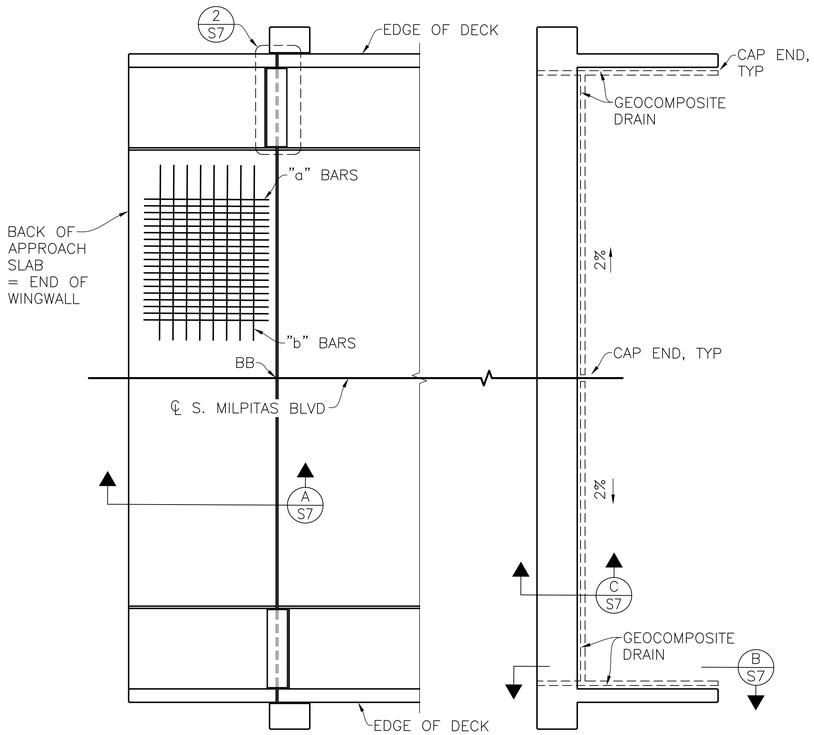
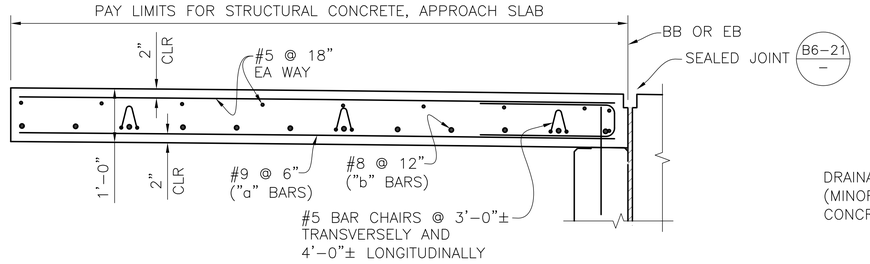
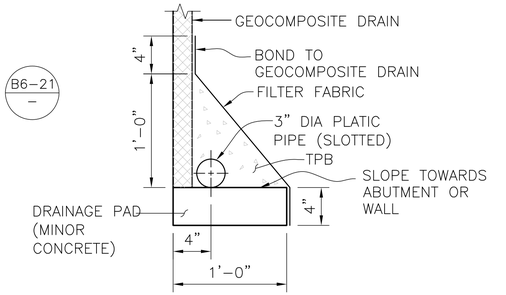


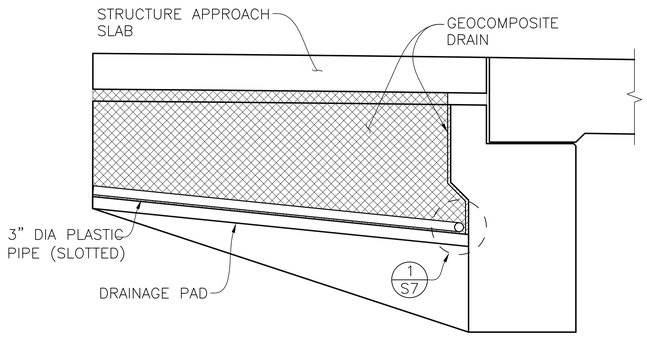
PLAN
3/16" = 1'–0"



SECTION A S7
3/4" = 1'–0"



DETAIL 1 S7
NO SCALE



SECTION B S7
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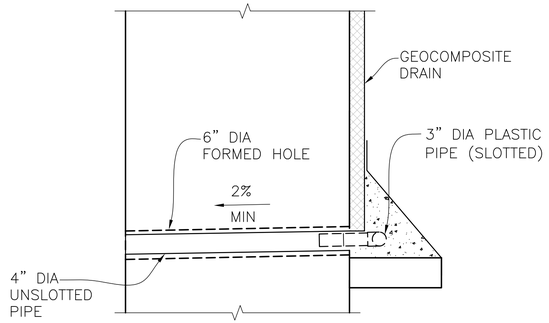
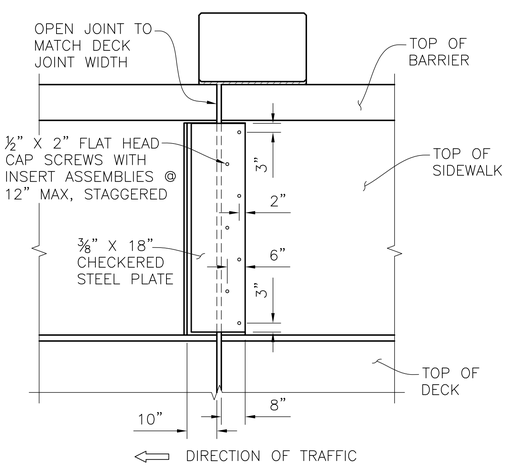
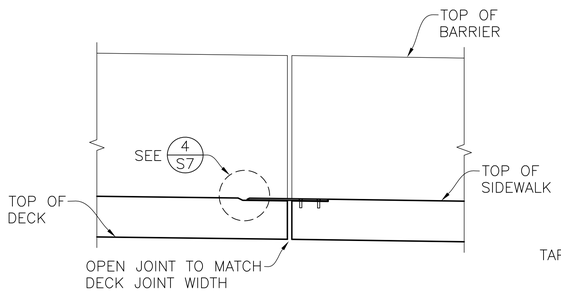


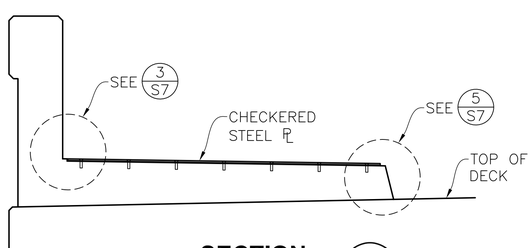
SECTION C S7
NO SCALE



DETAIL 2 S7
1/2" = 1'–0"



ELEVATION
NO SCALE



SECTION D S7
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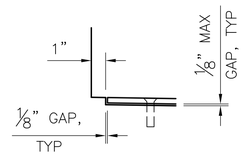
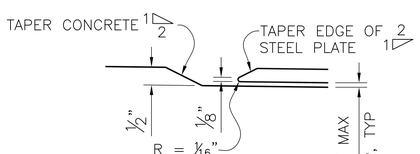


DETAIL 3 S7
NO SCALE



DETAIL 4 S7
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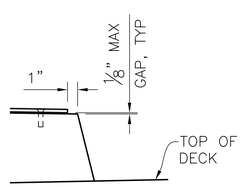

DETAIL 5 S7
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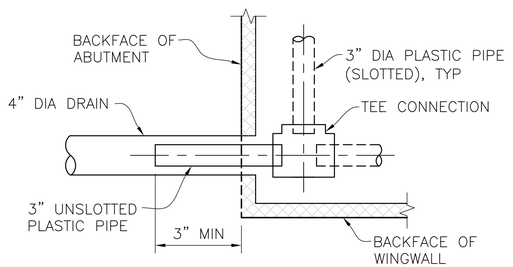
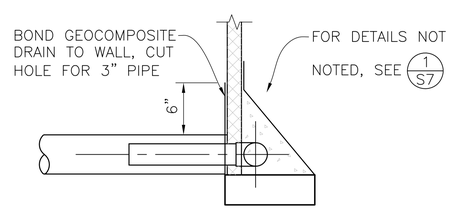


"T" DETAIL



AT "T" DETAIL

DRAINAGE DETAILS
NO SCALE

DESIGNED BY: JPJ
DRAWN BY: JPJ
CHECKED BY: NRZ
DATE: 04/01/2020

REV.	DATE	DESCRIPTION	BY

CORNERSTONE structural engineering group
986 W Alluvial Ave – Suite 201, Fresno, California 93711, 559.320.3200, fax 559.320.3201

STRUCTURE APPROACH SLAB
S. MILPITAS BOULEVARD BRIDGE OVER PENITENCIA EAST CHANNEL
MILPITAS CALIFORNIA

SHEET NUMBER S7
OF 8 SHEETS
DRAWING NO. 2015024BS7

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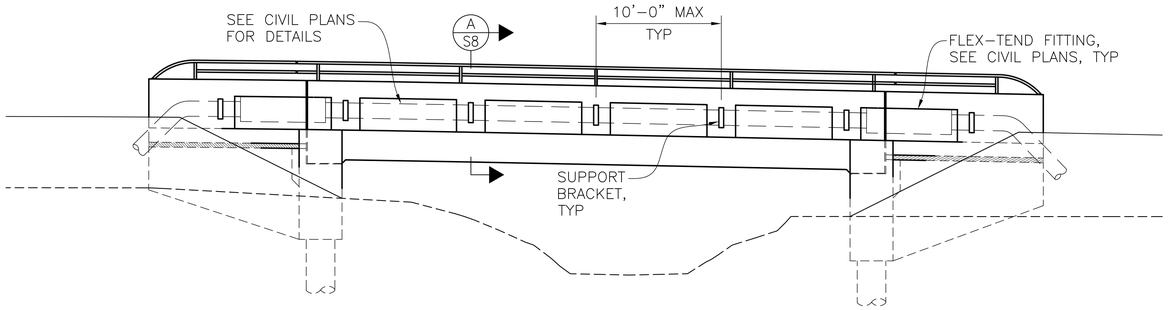
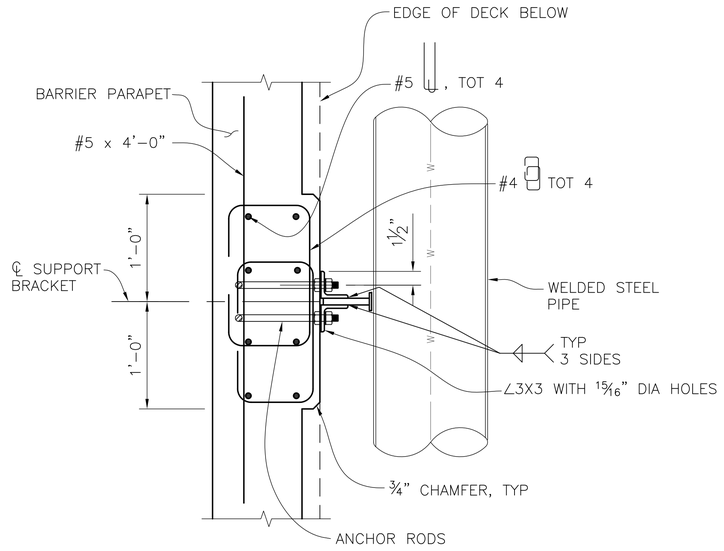
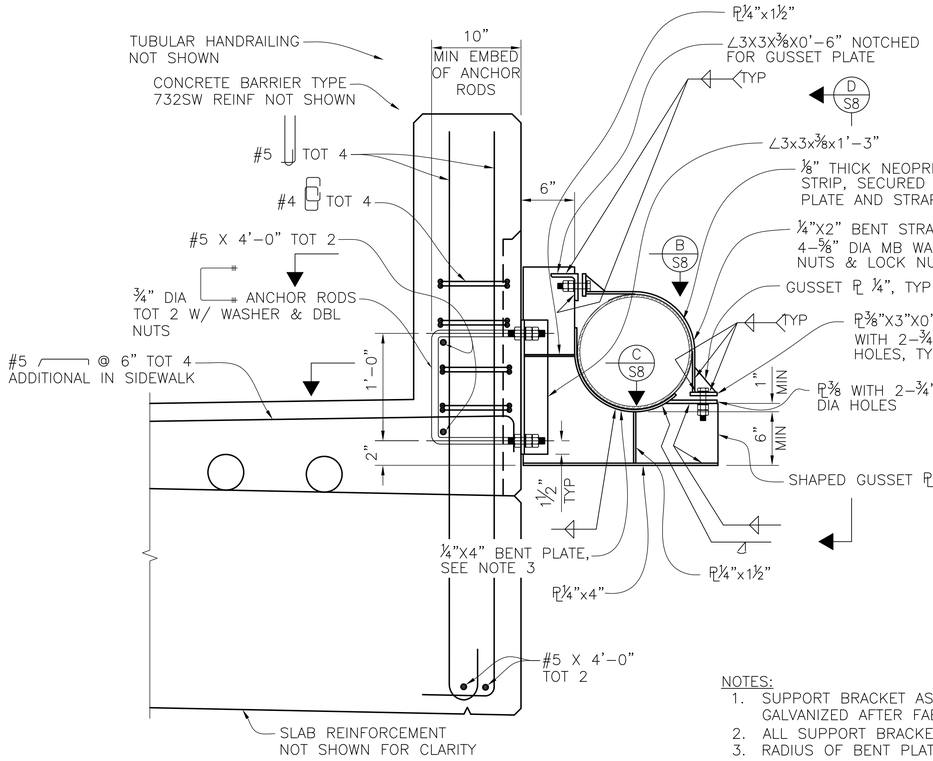


UTILITY ELEVATION
1" = 5'-0"

NOTE:
1. WEST EDGE OF DECK SHOWN, EAST EDGE OF DECK SIMILAR.

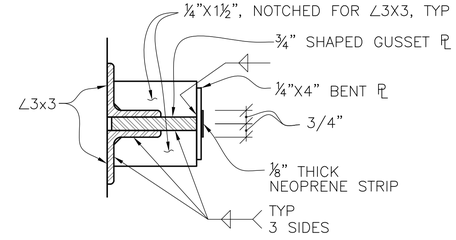


SECTION
1-1/2"=1'-0" (B S8)



NOTES:
1. SUPPORT BRACKET ASSEMBLY TO BE GALVANIZED AFTER FABRICATION
2. ALL SUPPORT BRACKET WELDS ARE ¼" TYP
3. RADIUS OF BENT PLATE TO MATCH OD OF UTILITY PIPE PLUS THICKNESS OF NEOPRENE

SECTION
1-1/2"=1'-0" (A S8)



SECTION
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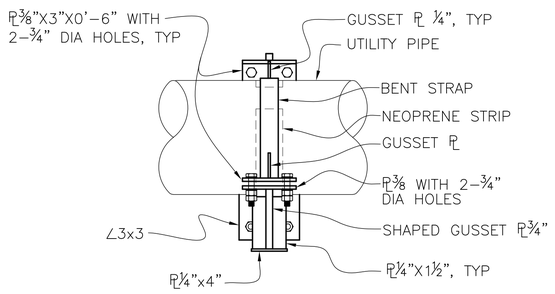

SECTION
1-1/2"=1'-0" (D S8)

REGISTERED PROFESSIONAL ENGINEER JONATHAN P. JENSEN No. C82745 CIVIL STATE OF CALIFORNIA

DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:
JPJ	JPJ	NRZ	04/01/2020

REV.	DATE	DESCRIPTION	BY

CORNERSTONE structural engineering group
986 W Alluvial Ave - Suite 201
Fresno, California 93711
559.320.3200
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UTILITY DETAILS

S. MILPITAS BOULEVARD BRIDGE OVER PENITENCIA EAST CHANNEL

MILPITAS CALIFORNIA

SHEET NUMBER S8 OF 8 SHEETS

DRAWING NO. 2015024BS8

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APPENDIX E
Noise and Vibration Assessment by Illingworth & Rodkin, Inc., dated 2021

SOUTH MILPITAS BOULEVARD BRIDGE NOISE AND VIBRATION ASSESSMENT

Milpitas, California

November 5, 2021

Prepared for:

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Prepared by:

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Cotati, CO 94931
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I&R Job No.: 21-084

INTRODUCTION

The South Milpitas Boulevard Bridge project proposes to construct a bridge across Penitencia East Channel. The proposed bridge would serve vehicles, pedestrians, and cyclists and would connect South Milpitas Boulevard on the north side of the channel with Tarob Court and Sango Court on the south side of the channel. The proposed project would require demolition of the existing vacant office building located at 1831-1841 Tarob Court (APN 086-36-030) which is owned by the City of Milpitas.

This report evaluates the project's potential to result in significant environmental noise or vibration impacts with respect to applicable California Environmental Quality Act (CEQA) guidelines. The report is divided into two sections: 1) the Setting Section provides a brief description of the fundamentals of environmental noise and groundborne vibration, summarizes applicable regulatory criteria, and discusses the results of the ambient noise monitoring survey completed to document existing noise conditions; and 2) the Impacts and Mitigation Measures Section describes the significance criteria used to evaluate project impacts, provides a discussion of each project impact, and presents measures, where necessary, to mitigate the impacts to a less-than-significant level.

SETTING

Fundamentals of Environmental Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its *loudness*. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (*frequency*) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level (dBA).* This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the

variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This *energy-equivalent sound/noise descriptor* is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level* (*CNEL*) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level* (*DNL* or L_{dn}) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Effects of Noise

Sleep and Speech Interference

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noises of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA L_{dn}. Typically, the highest steady traffic noise level during the daytime is about equal to the L_{dn} and nighttime levels are 10 dB lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12 to 17 dB with open windows. With standard construction and closed windows in good condition, the noise attenuation factor is around 20 dB for an older structure and 25 dB for a newer dwelling. Sleep and speech interference is therefore of concern when exterior noise levels are about 57 to 62 dBA L_{dn} with open windows and 65 to 70 dBA L_{dn} if the windows are closed. Levels of 55 to 60 dBA are common along collector streets and secondary arterials, while 65 to 70 dBA is a typical value for a primary/major arterial. Levels of 75 to 80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, those facing major roadways and freeways typically need special glass windows.

Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that the causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 50 dBA L_{dn}. At a L_{dn} of about 60 dBA, approximately 12 percent of the population is highly annoyed. When the L_{dn} increases to 70 dBA, the percentage of the population highly annoyed increases to about 25-30 percent of the population. There is, therefore, an increase of about 2 percent per dBA between a L_{dn} of 60-70 dBA. Between a L_{dn} of 70-80 dBA, each decibel increase increases by about 3 percent the percentage of the population highly annoyed. People appear to respond more adversely to aircraft noise. When the L_{dn} is 60 dBA, approximately 30-35 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about 3 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a 4 percent increase in the percentage of the population highly annoyed.

TABLE 1 Definition of Acoustical Terms Used in this Report

Term	Definition
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e. g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. 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.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, DNL or L_{dn}	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and 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, 1998.

TABLE 2 Typical Noise Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110 dBA	Rock band
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime		
	30 dBA	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20 dBA	
		Broadcast/recording studio
	10 dBA	
	0 dBA	

Source: Technical Noise Supplement (TeNS), California Department of Transportation, September 2013.

Fundamentals of Groundborne Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One method is the Peak Particle Velocity (PPV). The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. In this report, a PPV descriptor with units of mm/sec or in/sec is used to evaluate construction generated vibration for building damage and human complaints. Table 3 displays the reactions of people and the effects on buildings that continuous or frequent intermittent vibration levels produce. The guidelines in Table 3 represent syntheses of vibration criteria for human response and potential damage to buildings resulting from construction vibration.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction related groundborne vibration levels. Because of the impulsive nature of such activities, the use of the PPV descriptor has been routinely used to measure and assess groundborne vibration and almost exclusively to assess the potential of vibration to cause damage and the degree of annoyance for humans.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as paint flaking or minimal extension of cracks in building surfaces; minor, including limited surface cracking; or major, that may threaten the structural integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher. The damage criteria presented in Table 3 include several categories for ancient, fragile, and historic structures, the types of structures most at risk to damage. Most buildings are included within the categories ranging from “Historic and some old buildings” to “Modern industrial/commercial buildings”. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

The annoyance levels shown in Table 3 should be interpreted with care since vibration may be found to be annoying at lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage.

TABLE 3 Reaction of People and Damage to Buildings from Continuous or Frequent Intermittent Vibration Levels

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.01	Barely perceptible	No effect
0.04	Distinctly perceptible	Vibration unlikely to cause damage of any type to any structure
0.08	Distinctly perceptible to strongly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Threshold at which there is a risk of damage to fragile buildings with no risk of damage to most buildings
0.25	Strongly perceptible to severe	Threshold at which there is a risk of damage to historic and some old buildings.
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential structures
0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to new residential and modern commercial/industrial structures

Source: Transportation and Construction Vibration Guidance Manual, California Department of Transportation, April 2020.

Regulatory Background

The State of California and the City of Milpitas have established regulatory criteria that are applicable in this assessment. The California Environmental Quality Act (CEQA) Guidelines, Appendix G, are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. A summary of the applicable regulatory criteria is provided below.

State CEQA Guidelines. The CEQA contains guidelines to evaluate the significance of effects of environmental noise attributable to a proposed project. Under CEQA, noise impacts would be considered significant if the project would result in:

(a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

(b) Generation of excessive groundborne vibration or groundborne noise levels;

(c) For a project located within the vicinity of a private airstrip or an airport land use plan or where such a plan has not been adopted within two miles of a public airport

or public use airport, if the project would expose people residing or working in the project area to excessive noise levels.

City of Milpitas General Plan 2040. The primary goal of the Noise Element is to preserve a nuisance-free noise environment for existing and future land uses by minimizing exposure to harmful and excessive noise levels. The following policies and action items are applicable to the proposed project:

N 1-1 Consider the noise compatibility of existing and future development when making land use planning decisions. Require development and infrastructure projects to be consistent with the land use compatibility standards contained in Tables N-1 and N-2 to ensure acceptable noise exposure levels for existing and future development.

N 1-2 Require new development to mitigate excessive noise to the standards indicated in Tables N-1 and N-2 through best practices, including building location and orientation, building design features, placement of noise-generating equipment away from sensitive receptors, shielding of noise-generating equipment, placement of noise-tolerant features between noise sources and sensitive receptors, and use of noise-minimizing materials.

N 1-3 Use sound walls for sound attenuation only when other measures are not practical, or when recommended by an acoustical expert as part of a mitigation measure. Sound walls shall be designed to be aesthetically pleasing, and should incorporate features such as vegetation, variations in color and texture, artwork, and other features deemed appropriate by the City.

N 1-5 Require acoustical studies for new discretionary developments and transportation improvements that have the potential to affect existing noise-sensitive uses such as schools, hospitals, libraries, care facilities, and residential areas; and for projects that would introduce new noise-sensitive uses into an area where existing noise levels may exceed the thresholds identified in this element.

N 1-6 For projects that are required to prepare an acoustical study to analyze noise impacts, the following criteria shall be used to determine the significance of those impacts:

TRANSPORTATION NOISE SOURCES

- Where existing traffic noise levels are 60 dB Ldn or less at the outdoor activity areas of noise-sensitive uses, a +5 dB Ldn increase in roadway noise levels will be considered significant;

- Where existing traffic noise levels are greater than 60 dB Ldn and up to 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +3 dB Ldn increase in roadway noise levels will be considered significant; and

- Where existing traffic noise levels are greater than 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a + 1.5 dB Ldn increase in roadway noise levels will be considered significant.

N 1-8 Require construction activities to comply with standard best practices to reduce noise exposure to adjacent sensitive receptors (see Action N 1d).

N 1-9 Implement a range of traffic control measures, including but not limited to, light timing, asphalt alternatives (such as rubberized asphalt), and speed reduction measures to reduce roadway noise.

Action N-1a Require that new development projects are reviewed for compliance with the noise requirements established in this element, including the standards established in Tables N1 and N-2, prior to project approval.

Action N-1b Require acoustical studies for new development projects which have the potential to generate noise impacts which exceed the standards identified in this element. The studies shall include representative noise measurements, estimates of existing and projected noise levels, and mitigation measures necessary to ensure compliance with the noise standards included in this element. Studies shall be conducted by a qualified acoustical professional.

Action N-1c Require developers to prepare a construction management/noise mitigation plan that defines best management practices to reduce construction noise, and includes proposed truck routes (that comply with Section 12 V-100-12.05 - Truck Routes of the Milpitas Municipal Code) as part of the entitlement process.

Action N-1d During the environmental review process, determine if proposed construction will constitute a significant impact on nearby sensitive receptors and, if necessary, require mitigation measures in addition to the standard best practice controls. Suggested best practices for control of construction noise include:

- Noise-generating construction activities, including truck traffic coming to and from the construction site for any purpose, shall be limited to between the hours of 7:00 am and 7:00 pm. No construction shall occur on National holidays.

- All equipment driven by internal combustion engines shall be equipped with mufflers, which are in good condition and appropriate for the equipment.

- The construction contractor shall utilize “quiet” models of air compressors and other stationary noise sources where technology exists.

- At all times during project grading and construction, stationary noise-generating equipment shall be located as far as practicable from sensitive receptors and placed so that emitted noise is directed away from residences.

- Unnecessary idling of internal combustion engines shall be prohibited for a duration of longer than five minutes.

- Construction staging areas shall be established at locations that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction activities, to the extent feasible.

- Neighbors located adjacent to the construction site shall be notified of the construction schedule in writing.

- The construction contractor shall designate a "noise disturbance coordinator" who will be responsible for responding to any local complaints about construction noise. The disturbance coordinator shall be responsible for determining the cause of the noise complaint (e.g., starting too early, poor muffler, etc.) and instituting reasonable measures as warranted to correct the problem. A telephone number for the disturbance coordinator shall be conspicuously posted at the construction site.

Action N-1f Petition State and Regional agencies to install "quiet pavement" materials during roadway improvement and resurfacing activities. Utilize quiet pavement materials on City-owned streets to the greatest extent feasible.

City of Milpitas Municipal Code. Chapter 213 of the City's Zoning Ordinance contains a Noise Abatement Section that limits noise levels at adjacent properties. Code Section V-213-3 limits construction operations to between the hours of 7:00 am and 7:00 pm on weekdays and weekends. No construction is permitted on holidays.

Existing Noise Environment

Figure 1 shows the project boundary and existing land uses superimposed on an aerial image of the project site. The proposed bridge would extend South Milpitas Boulevard across Penitencia East Channel, at which point, South Milpitas Boulevard would connect with Tarob Court and Sango Court.

A noise monitoring survey was conducted between Tuesday, October 12, 2021 and Thursday, October 14, 2021. The noise monitoring survey included two long-term noise measurements (LT-1 and LT-2) and two short-term noise measurement (ST-1 and ST-2). Noise measurement locations are shown in Figure 1 and the daily trends in noise levels for the long-term measurements are shown in Figures 2 and 3. The noise environment in the project vicinity results primarily from vehicular traffic along Sango Court, Tarob Court, South Milpitas Boulevard, East Capitol Avenue and Montague Expressway and from commercial activities at properties accessed via Sango Court and Tarob Court.

Long-term noise measurement LT-1 was made in front of 1972 Tarob Court, near existing multi-family housing. Hourly average noise levels at this location typically ranged from 42 to 60 dBA L_{eq} throughout the day and at night. Daytime maximum instantaneous noise levels typically ranged from 65 to 80 dBA L_{max}. The calculated day-night average noise level ranged from 61 to 65 dBA L_{dn}. High maximum instantaneous noise levels were noted during the 5:00 am, 4:00 pm, and 8:00 pm hours, which increased the hourly average noise levels during those same hours by 5 to 10

dBA above typical conditions. When removing just the 5:00 am hour from the data set, the calculated L_{dn} decreased by 4 dBA and ranged from 57 to 61 dBA L_{dn}.

Long-term noise measurement LT-2 was made at the north end of Expedition Lane to quantify ambient noise levels at nearby residential and park land uses. Hourly average noise levels at this location typically ranged from 43 to 58 dBA L_{eq}, and maximum instantaneous noise levels typically ranged from 60 to 75 dBA L_{max}. The day-night average noise level was 56 dBA L_{dn} over the course of the measurement period.

Two short-term noise measurements were made to supplement the long-term data. Table 4 summarizes the results of the short-term noise measurements

TABLE 4 Summary of Short-Term Noise Measurements (dBA)

Noise Measurement Location	Date, Time	Measured Noise Level, dBA					
		L_{max}	$L_{(1)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	L_{eq}
ST-1: South end of S. Milpitas Boulevard near Ascend Apartments	10/12/2021, 12:40-12:50	63	60	55	50	48	52
ST-2: In front of 308 Sango Court	10/12/2021, 12:40-12:50	75	69	59	54	51	58

Source: Illingworth & Rodkin, Inc., 2021.

FIGURE 1 Aerial Photograph, Surrounding Land Uses, and Noise Measurement Locations

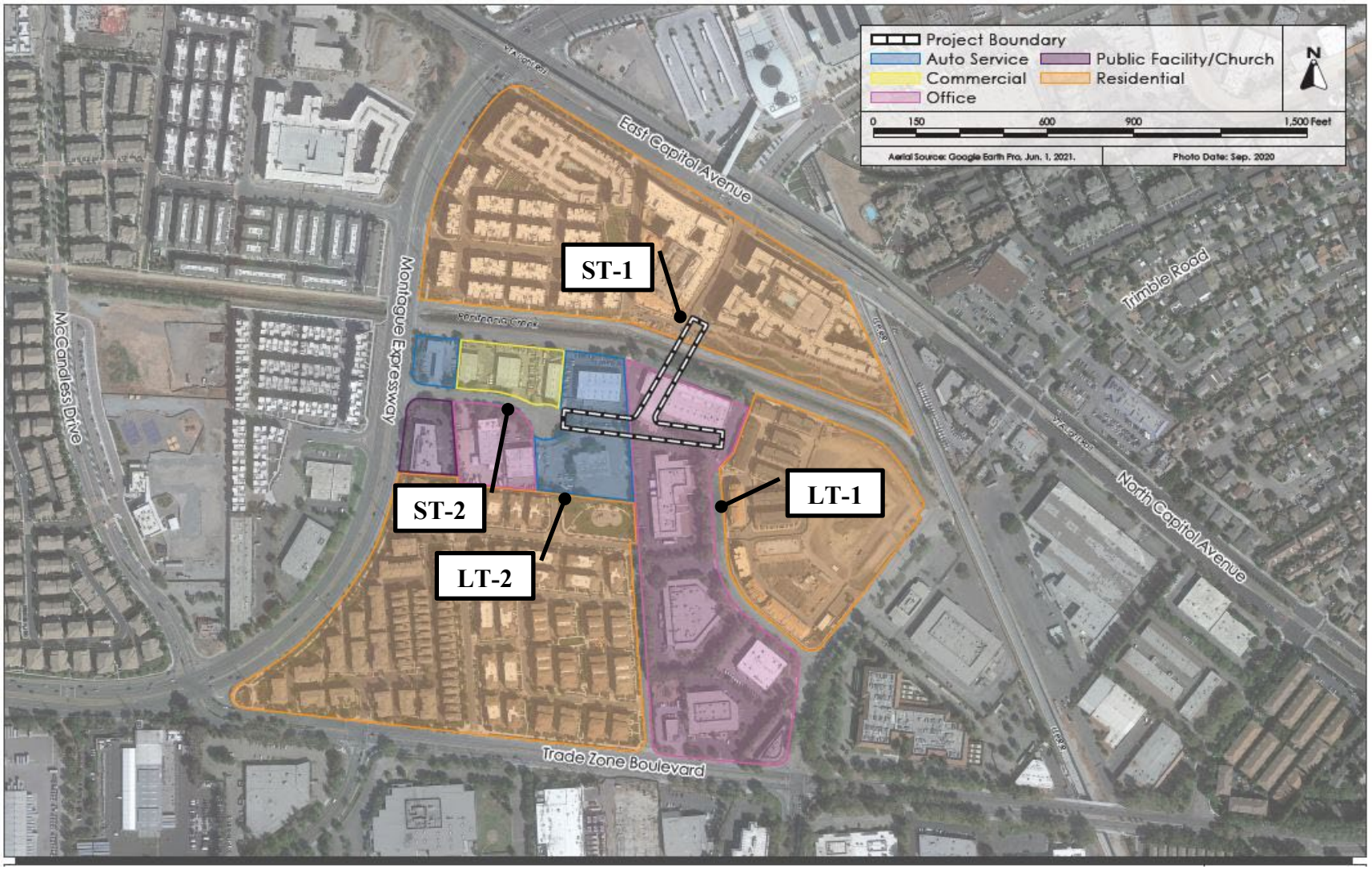


FIGURE 2 Daily Trend in Noise Levels at LT-1

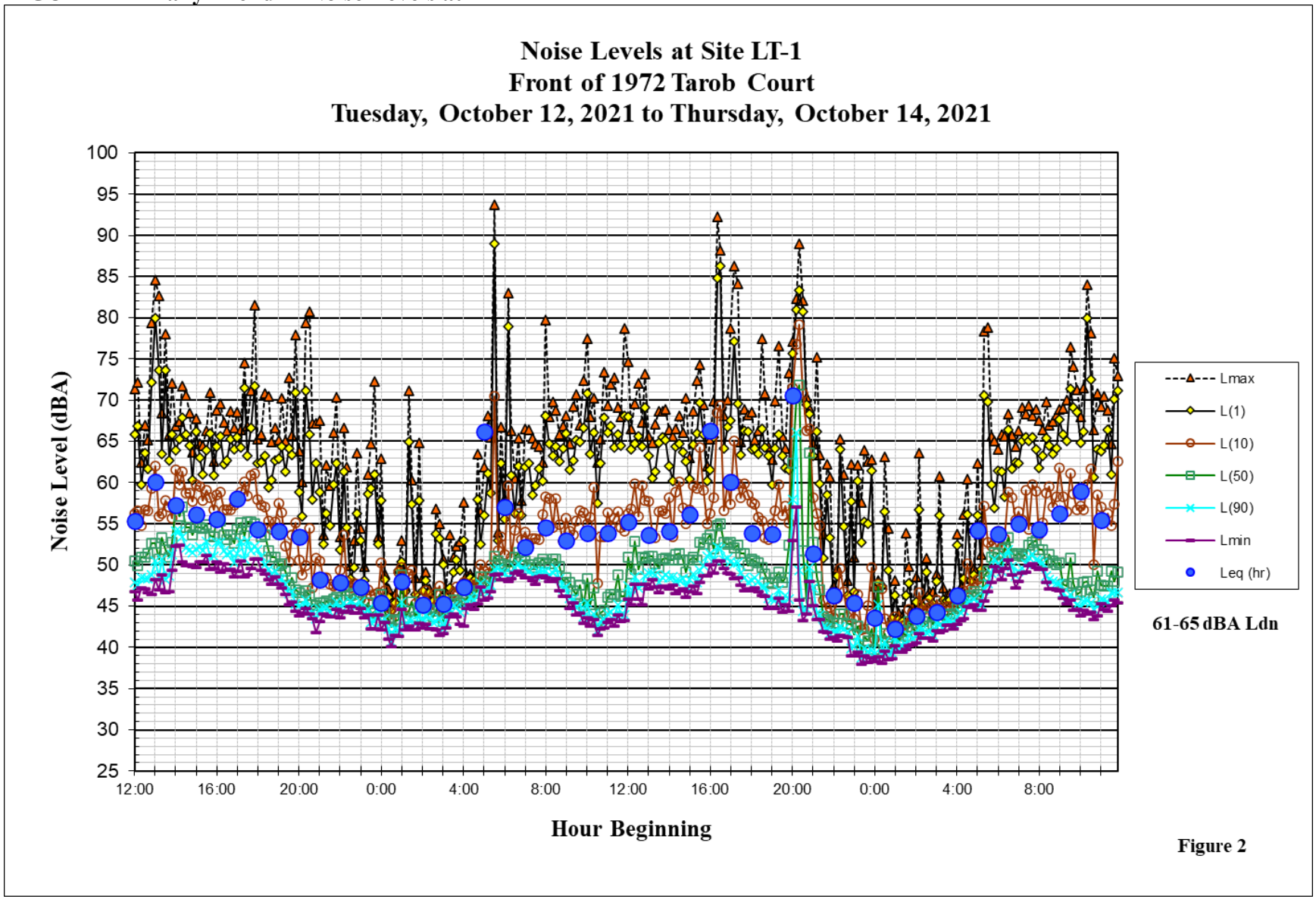


FIGURE 3 Daily Trend in Noise Levels at LT-2

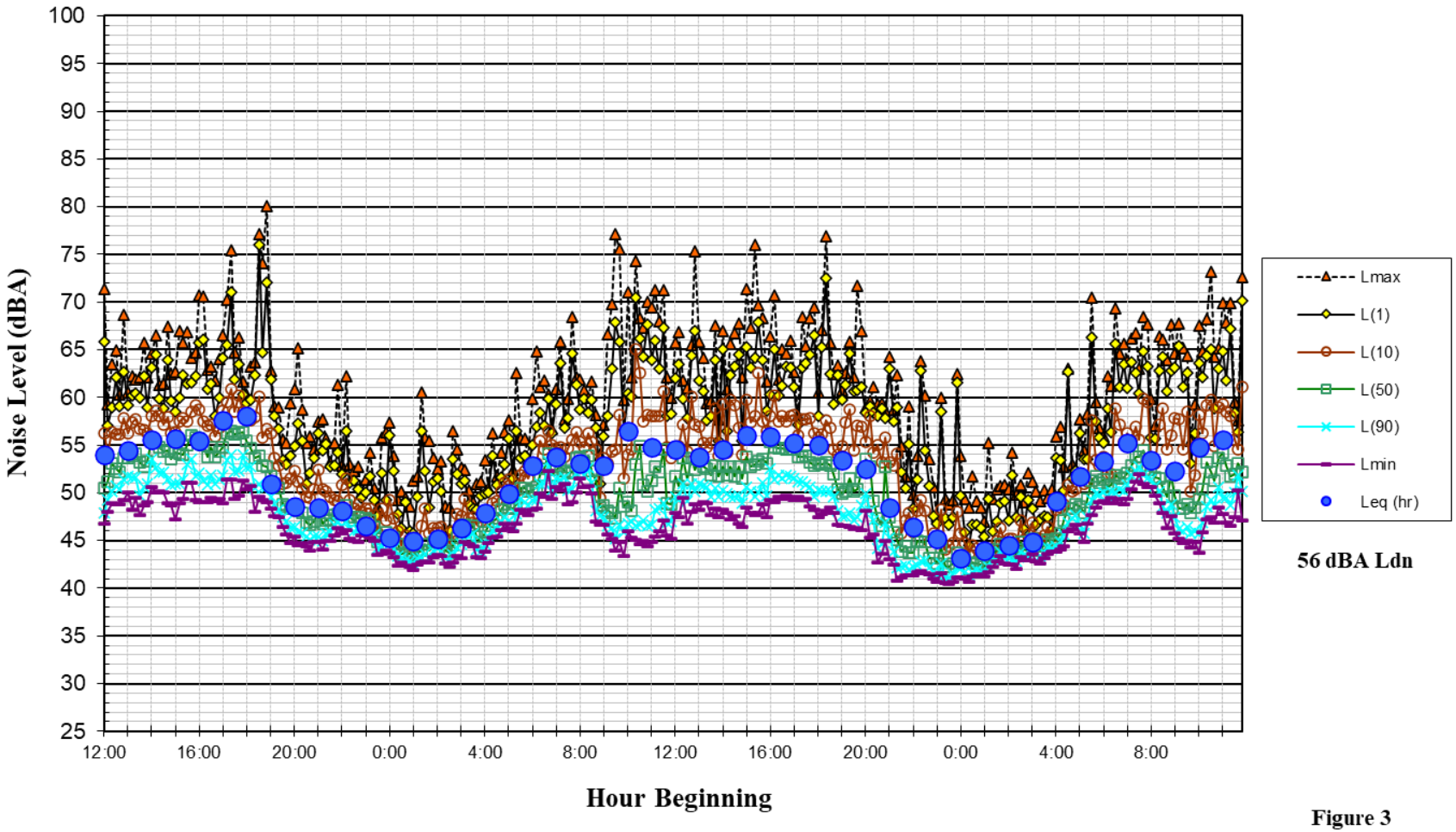


Figure 3

NOISE IMPACTS AND MITIGATION MEASURES

This section describes the significance criteria used to evaluate project impacts under CEQA, provides a discussion of each project impact, and presents mitigation measures, where necessary, to provide a compatible project in relation to adjacent noise sources and land uses.

Significance Criteria

The following criteria were used to evaluate the significance of environmental noise resulting from the project:

- A significant noise impact would be identified if the project would generate a substantial temporary or permanent noise level increase over ambient noise levels at existing noise-sensitive receptors surrounding the project site and that would exceed applicable noise standards presented in the General Plan or Municipal Code at existing noise-sensitive receptors surrounding the project site.

    - A significant temporary noise impact would be identified if construction would occur outside of the hours specified in the Municipal Code.

    - A significant permanent noise level increase would occur if project-generated traffic would result in a noise level increase of more than 5 dBA L_{dn} where existing traffic noise levels are 60 dBA L_{dn} or less.

    - A significant permanent noise level increase would occur if project-generated traffic would result in a noise level increase of more than 3 dBA L_{dn} where existing traffic noise levels are greater than 60 dBA L_{dn} and up to 65 dBA L_{dn}.

    - A significant permanent noise level increase would occur if project-generated traffic would result in a noise level increase of more than 1.5 dBA L_{dn} where existing traffic noise levels are greater than 65 dBA L_{dn}.

    - A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise standards presented in the General Plan or Municipal Code.

- A significant impact would be identified if the construction of the project would generate excessive vibration levels surrounding receptors. Groundborne vibration levels exceeding 0.3 in/sec PPV would have the potential to result in cosmetic damage to normal buildings.

- A significant noise impact would be identified if the project would expose people residing or working in the project area to excessive aircraft noise levels.

Impact 1a: **Temporary Construction Noise.** Existing noise-sensitive land uses would be exposed to a temporary increase in construction noise levels, but construction would be conducted during allowable hours and standard best practices would be implemented during all phases of project construction to reduce the impact to a **less-than-significant level**.

Demolition and construction activities proposed by the project are anticipated to last approximately 18 months. Construction of the bridge would take place in a single dry season from June 15 to October 15, 2023, as required by Valley Water. Demolition of the existing building and construction of the proposed roadway connection would occur between Spring 2023 and Fall 2024. Construction work would occur between 7:00 a.m. and 7:00 p.m., Monday through Sunday, excluding holidays consistent with the City's Municipal Code Section V-213-3(b).

No pile driving is required for the project. Equipment may include, but is not limited to graders, scrapers, dozers, backhoes, excavators, lo-drills, haul trucks, concrete pump trucks, concrete mixing trucks, telehandlers, cranes, manlifts, and pickup trucks.

Noise impacts resulting from construction depend upon the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise-sensitive areas. Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (e.g., early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction lasts over extended periods of time.

Construction activities generate considerable amounts of noise, especially during earth-moving activities when heavy equipment is used. The highest maximum noise levels generated by project construction would typically range from about 80 to 90 dBA L_{max} at a distance of 50 feet from the noise source. Table 5 shows the hourly average noise level ranges, by construction phase for various types of construction projects. A list of typical maximum instantaneous noise levels measured at 50 feet are provided in Table 6. Typical hourly average construction-generated noise levels for public works projects are about 79 to 88 dBA L_{eq}, as measured at a distance of 50 feet from the center of the site during busy construction periods (e.g., earth moving equipment, impact tools, etc.). Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of the distance between the source and receptor. Shielding by buildings or terrain can provide an additional 5 to 10 dBA noise reduction at distant receptors.

TABLE 5 Typical Ranges of Construction Noise Levels at 50 Feet, L_{eq} (dBA)

	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	II	I	II	I	II	I	II
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84

I - All pertinent equipment present at site.
II - Minimum required equipment present at site.

Source: U.S.E.P.A., Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

TABLE 6 Construction Equipment 50-foot Noise Emission Limits

Equipment Category	L_{max} Level (dBA)1,2	Impact/Continuous
Arc Welder	73	Continuous
Auger Drill Rig	85	Continuous
Backhoe	80	Continuous
Bar Bender	80	Continuous
Boring Jack Power Unit	80	Continuous
Chain Saw	85	Continuous
Compressor[3]	70	Continuous
Compressor (other)	80	Continuous
Concrete Mixer	85	Continuous
Concrete Pump	82	Continuous
Concrete Saw	90	Continuous
Concrete Vibrator	80	Continuous
Crane	85	Continuous
Dozer	85	Continuous
Excavator	85	Continuous
Front End Loader	80	Continuous
Generator	82	Continuous
Generator (25 KVA or less)	70	Continuous
Gradall	85	Continuous
Grader	85	Continuous
Grinder Saw	85	Continuous
Horizontal Boring Hydro Jack	80	Continuous
Hydra Break Ram	90	Impact
Impact Pile Driver	105	Impact
Insitu Soil Sampling Rig	84	Continuous
Jackhammer	85	Impact

Equipment Category	L_{max} Level (dBA)1,2	Impact/Continuous
Mounted Impact Hammer (hoe ram)	90	Impact
Paver	85	Continuous
Pneumatic Tools	85	Continuous
Pumps	77	Continuous
Rock Drill	85	Continuous
Scraper	85	Continuous
Slurry Trenching Machine	82	Continuous
Soil Mix Drill Rig	80	Continuous
Street Sweeper	80	Continuous
Tractor	84	Continuous
Truck (dump, delivery)	84	Continuous
Vacuum Excavator Truck (vac-truck)	85	Continuous
Vibratory Compactor	80	Continuous
Vibratory Pile Driver	95	Continuous
All other equipment with engines larger than 5 HP	85	Continuous

Notes:

1 Measured at 50 feet from the construction equipment, with a "slow" (1 sec.) time constant.

2 Noise limits apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.

3 Portable Air Compressor rated at 75 cfm or greater and that operates at greater than 50 psi.

The Federal Highway Administration's (FHWA's) Roadway Construction Noise Model (RCNM) was used to calculate the hourly average noise levels anticipated for the worst-case scenario for each construction phase, based on the equipment list provided by the applicant at the time of this study. RCNM includes representative sound levels for the most common types of construction equipment and the approximate usage factors of such equipment that were developed based on an extensive database of information gathered during the construction of the Central Artery/Tunnel Project in Boston, Massachusetts (CA/T Project or "Big Dig"). The usage factors represent the percentage of time that the equipment would be operating at full power. To estimate the worst-case scenario for each phase of the proposed project, it was assumed that all equipment provided for each phase would operate simultaneously. RCNM calculated construction noise levels ranging from 84 to 86 dBA L_{eq} at a distance of 50 feet from the source, which corresponded well with the EPA's typical range of construction noise levels for domestic housing.

Table 7 summarizes all equipment and quantities expected to be used for each construction phase, the duration of each phase, and the estimated worst-case scenario noise levels expected at the property lines of the nearest surrounding noise-sensitive land use. Construction equipment would likely be spread throughout the sites, but for purposes of modeling the worst-case scenario, all equipment was assumed to be operating in relatively the same area, with the geometrical center of construction equipment being the center of the construction site. Therefore, the propagation distances were estimated from the center of the active construction site to the property lines of the surrounding receptors. No shielding effects were assumed for the estimated noise levels shown in Table 7.

TABLE 7 Estimated Construction Noise Levels at Nearby Land Uses

Phase	Construction Equipment (Quantity)	Calculated Hourly Average L_{eq}, dBA			
		Source (50 feet)	West Commercial (180 ft)	North Residential (200 ft)	East and South Residential/ Commercial (300 ft)
Demolition	Concrete/Industrial Saw (1) Excavator (1) Rubber Tired Dozer (1) Tractor/Loader/Backhoe (1)	86	75	74	70
Site Preparation	Grader (1) Rubber Tired Dozer (1) Tractor/Loader/Backhoe (1)	85	74	73	69
Grading/ Excavation	Excavator (1) Grader (1) Rubber Tired Dozer (1) Tractors/Loaders/Backhoes (2)	86	75	74	70
Paving	Cement and Mortar Mixer (1) Paver (1) Paving Equipment (1) Roller (1) Tractor/Loader/Backhoe (1)	84	73	72	68
Bridge Construction	Drill Rig (1) Tractors/Loaders/Backhoes (2) Crane (1) Forklift (1) Cement and Mortar Mixers (3) Aerial Lift (1) Concrete Boom Pump (1)	85	74	73	69

The nearest commercial receptors to the west (approximately 180 feet from the acoustic center of the project site) would be exposed to average construction noise levels ranging from 73 to 75 dBA L_{eq}, and the nearest commercial receptors to the south (approximately 300 feet from the acoustic center of the project site) would be exposed to average construction noise levels ranging from 68 to 70 dBA L_{eq}. The nearest residential land uses would be approximately 200 feet north or 300 feet east and would be exposed to average construction noise levels ranging from 68 to 74 dBA L_{eq}.

General Plan Action N-1d suggests the following best practices for control of construction noise:

- Noise-generating construction activities, including truck traffic coming to and from the construction site for any purpose, shall be limited to between the hours of 7:00 am and 7:00 pm. No construction shall occur on National holidays.

- All equipment driven by internal combustion engines shall be equipped with mufflers, which are in good condition and appropriate for the equipment.

- The construction contractor shall utilize “quiet” models of air compressors and other stationary noise sources where technology exists.

- At all times during project grading and construction, stationary noise-generating equipment shall be located as far as practicable from sensitive receptors and placed so that emitted noise is directed away from residences.

- Unnecessary idling of internal combustion engines shall be prohibited for a duration of longer than five minutes.

- Construction staging areas shall be established at locations that will create the greatest distance between the construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction activities, to the extent feasible.

- Neighbors located adjacent to the construction site shall be notified of the construction schedule in writing.

- The construction contractor shall designate a "noise disturbance coordinator" who will be responsible for responding to any local complaints about construction noise. The disturbance coordinator shall be responsible for determining the cause of the noise complaint (e.g., starting too early, poor muffler, etc.) and instituting reasonable measures as warranted to correct the problem. A telephone number for the disturbance coordinator shall be conspicuously posted at the construction site.

The above standard construction best management practices can be incorporated into the project specifications to reduce noise levels emanating from the site and to minimize disruption and annoyance at existing noise-sensitive receptors in the project vicinity. Reasonable regulation of the hours of construction, as well as regulation of the arrival and operation of heavy equipment and the delivery of construction material, are necessary to protect the health and safety of persons, promote the general welfare of the community, and maintain the quality of life. Implementation of the above standard construction controls would reduce construction noise levels emanating from the site, minimizing disruption and annoyance. The implementation of these standard controls would reduce the impact to a less-than-significant level.

Impact 1b: **Permanent Noise Level Increase.** The proposed project is not expected to cause a substantial permanent traffic noise level increase at the existing residential land uses in the project vicinity. **This is a less-than-significant impact.**

According to the City of Milpitas General Plan a significant impact would occur if the project generated a noise level increase of more than 5 dBA where existing traffic noise levels are 60 dBA L_{dn} or less, an increase of 3 dBA or more where existing traffic noise levels are greater than 60 dBA L_{dn} and up to 65 dBA L_{dn}, or a noise level increase of more than 1.5 dBA L_{dn} where existing traffic noise levels are greater than 65 dBA L_{dn}. Based on to the long-term noise measurement data, the existing traffic noise levels ranted from 56 dBA L_{dn} to 65 dBA L_{dn}; therefore, a significant impact would occur if traffic due to the proposed project would permanently increase noise levels by up to 3 dBA L_{dn}.

The project's traffic study included AM and PM peak hour traffic volumes for the existing, near term (with and without the project), and 2040 (with and without the project) traffic scenarios. The noise increase attributable to the project was calculated by comparing the near term with project traffic volumes to the near term without project volumes, and the 2040 with project traffic volumes to the 2040 without project volumes. Based on these comparisons, a traffic noise increase of up to 1 dBA L_{dn} would be expected as a result of the project along S. Milpitas Boulevard, south of E. Capital Avenue. Along every other roadway segment included in the traffic study, a noise level increase of less than 1 dBA L_{dn} or less was calculated. This does not represent a significant permanent noise level increase as traffic noise levels would not increase by 3 dBA L_{dn} or more.

In addition, 2040 traffic noise levels with the project were modeled along area roadways to quantify the future noise level anticipated at existing and planned multi-family residential land uses in the project vicinity. The results of the modeling indicated that traffic noise levels would be 60 dBA L_{dn} or less at a distance of 33 feet from the centerline of the roadway. This distance represents the minimum setback of existing and planned multi-family residential land uses in the project vicinity. The predicted future traffic noise levels would fall below the 65 dBA L_{dn} normally acceptable noise and land use compatibility threshold established by the City of Milpitas for new multi-family housing projects, therefore, the proposed project would have a less-than-significant impact on sensitive receptors in the area.

Mitigation Measure 1b: None required.

Impact 2: Generation of Excessive Groundborne Vibration due to Construction. Construction-related vibration levels are not anticipated to exceed 0.3 in/sec PPV at the nearest structures. **This is a less-than-significant impact.**

The City of Milpitas does not specify a construction vibration limit. For structural damage, the California Department of Transportation recommends a vibration limit of 0.5 in/sec PPV for buildings structurally sound and designed to modern engineering standards, 0.3 in/sec PPV for buildings that are found to be structurally sound but where structural damage is a major concern, and a conservative limit of 0.25 in/sec PPV for historic and some old buildings (see Table 3). The 0.5 in/sec PPV threshold would apply to recently constructed buildings to the north (Anton Ascend and Anton Aspire Apartments) and east (Tarob Court Apartments), while the 0.3 in/sec PPV threshold would apply to the remaining buildings to the south and west (existing commercial and industrial buildings).

Table 8 presents typical vibration levels from construction equipment at 25, 50, 75, 100 and 125 feet, which represent distances to existing buildings in the project vicinity. Vibration levels would vary depending on soil conditions, construction methods, and equipment used. Vibration levels are highest close to the source, and then attenuate with increasing distance at the rate $(D_{ref}/D)^{1.1}$, where D is the distance from the source in feet and D_{ref} is the reference distance of 25 feet.

TABLE 8 Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 ft. (in/sec)	PPV at 50 ft. (in/sec)	PPV at 75 ft. (in/sec)	PPV at 100 ft. (in/sec)	PPV at 125 ft. (in/sec)
Clam shovel drop		0.202	0.094	0.060	0.044	0.034
Hydromill (slurry wall)	In soil	0.008	0.004	0.002	0.002	0.001
	In rock	0.017	0.008	0.005	0.004	0.003
Vibratory Roller		0.210	0.098	0.063	0.046	0.036
Hoe Ram		0.089	0.042	0.027	0.019	0.015
Large bulldozer		0.089	0.042	0.027	0.019	0.015
Caisson drilling		0.089	0.042	0.027	0.019	0.015
Loaded trucks		0.076	0.035	0.023	0.017	0.013
Jackhammer		0.035	0.016	0.010	0.008	0.006
Small bulldozer		0.003	0.001	0.001	0.001	0.001

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, September 2018, as modified by Illingworth & Rodkin, Inc., October 2021.

Project construction activities, such as drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.) may generate substantial vibration in the immediate vicinity of construction activities. However, as indicated in Table 8, none of these construction activities would be anticipated to exceed 0.5 in/sec PPV or 0.3 in/sec PPV at the nearest structures as all work would occur at distances of 25 feet or greater. The nearest residential land uses to the north would include the Anton Ascend and Anton Aspire Apartments, and the nearest residential land uses to the east would include the Tarob Court Apartments. These apartments would be as close as 25 to 50 feet from project work areas and exposed to worst-case vibration levels of 0.210 in/sec PPV, which is below the 0.5 in/sec PPV threshold for structurally sound buildings designed to modern engineering standards. Commercial/industrial buildings to the south and west (i.e., 328, 349, 355, and 1700 Sango Court, and 1905 Tarob Court) would also be as close as 25 to 50 feet from project work areas and exposed to worst-case vibration levels of 0.210 in/sec PPV, which is below the 0.3 in/sec PPV threshold for buildings that are found to be structurally sound but where structural damage is a major concern. Vibration levels would attenuate with distance as shown in Table 8, so as work proceeds away from adjacent buildings, the resulting vibration levels would be less. Vibration levels due to demolition and construction activities associated with the project may be perceptible to occupants but would not be anticipated to cause cosmetic or structural damage to the nearest buildings and would not be considered excessive. This is a less-than-significant impact.

Mitigation Measure 2: None required.

Impact 3: Excessive Aircraft Noise. The project site is located approximately 4 miles from the nearest airport, and the proposed project would not expose people working at the site to excessive aircraft noise. **This is a less-than-significant impact.**

Norman Y. Mineta San José International Airport is a public-use airport located approximately 3 miles southwest of the project site. The City of San Jose's Airport Master plan provides the 2037 Norman Y. Mineta San José International Airport noise contour map included in this report as

Figure 4 [1] Figure 4 shows that the project site lies well outside the 2037 60 dBA CNEL noise contour of the airport.. This means future exterior noise levels due to aircraft would not exceed 60 dBA CNEL/L_{dn}. Therefore, the proposed project would not expose people working at the site to excessive aircraft noise. This is a less-than-significant impact.

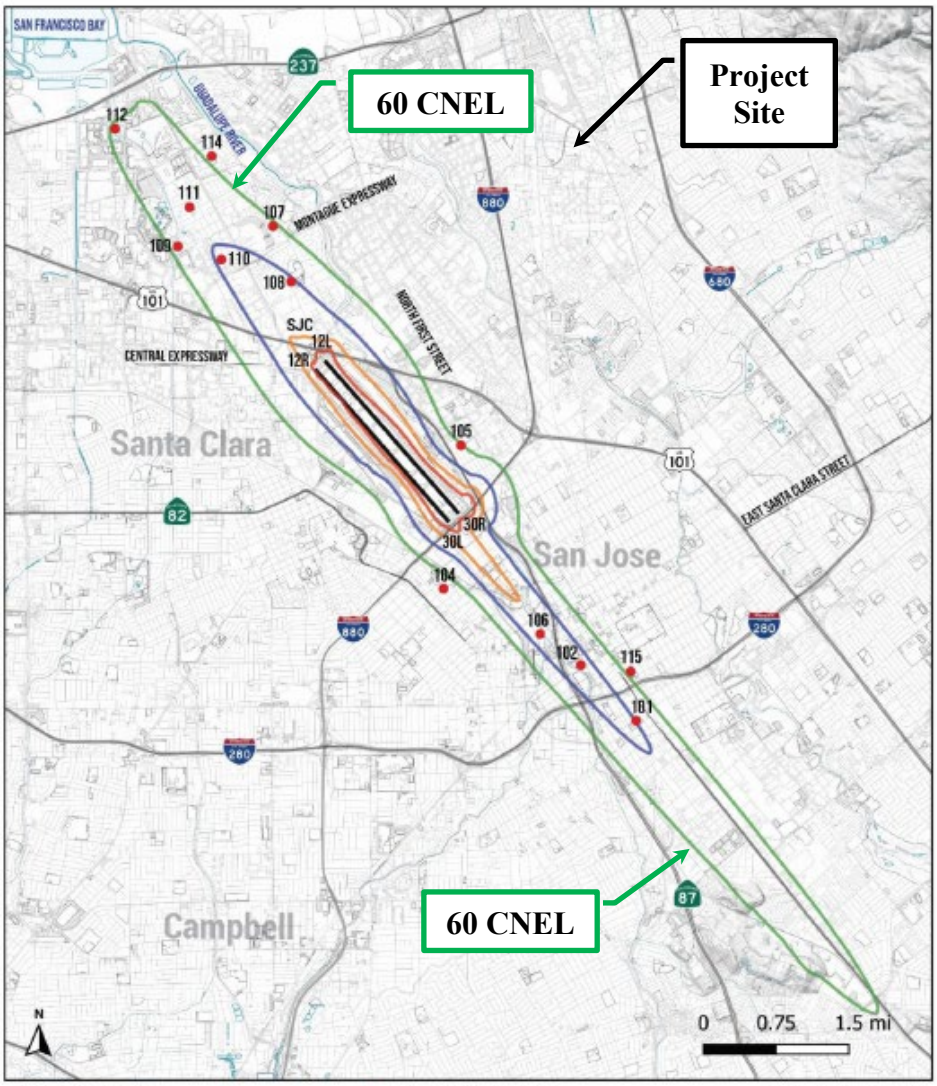
Mitigation Measure 3: **None required.**

1 David J. Powers & Associates, Inc., Integrated Final Environmental Impact Report, Amendment to Norman Y. Mineta San Jose International Airport Master Plan, April 2020.

FIGURE 4 2037 CNEL Noise Contours for SJC Relative to Project Site

Figure 5
Scenario 2: With Project 2037 Noise Contour Map

SAN JOSE INTERNATIONAL AIRPORT | Environmental Impact Report FINAL | October 2019



NORMAN Y. MINETA SAN JOSE INTERNATIONAL AIRPORT

- Noise Monitoring Station
- 101 Site ID
- Runway
- 75 dBA and Greater CNEL Contour
- 70 dBA and Greater CNEL Contour
- 65 dBA and Greater CNEL Contour
- 60 dBA and Greater CNEL Contour

Figure 5 Scenario 2: With Project 2037 Noise Contour Map

Source: BridgeNet International 2019

APPENDIX F
Transportation Analysis by Hexagon Transportation Consultant Inc, dated 2021

Hexagon Transportation Consultants, Inc.

Memorandum

Date:	October 1, 2021
To:	City of Milpitas
From:	Brett Walinski, TE Eric Tse, PE, PTOE
Subject:	Transportation Analysis for the Penitencia Creek Bridge Project

Introduction

Hexagon Transportation Consultants, Inc. has completed this transportation analysis for the proposed extension of Milpitas Boulevard over Penitencia Creek. The project would construct a new 2-lane vehicular bridge, with sidewalks and bike space over Penitencia Creek at the end of Milpitas Boulevard, west of Capitol Avenue. The bridge would be part of the Transit Area Specific Plan (TASP) to provide vehicular, bicycle, and pedestrian connectivity between various developments and the Milpitas Transit Center. The proposed bridge would terminate at a proposed roadway connecting Tarob Court and Sango Court, also part of the project. The project location and study intersections are shown on Figure 1, and the proposed bridge cross-section is shown on Figure 2.

This study includes analysis required by the California Environmental Quality Act (CEQA), including vehicle-miles traveled, and impacts to bikes, pedestrians, and transit as well as off-site intersection analysis and circulation analysis, which was requested by City staff to document potential project benefits.

Existing Transportation Setting

The project vicinity is bounded by the major roadways of Montague Expressway, Capitol Avenue, and Trade Zone Boulevard. Within the project area, primary public streets include Sango Court, Tarob Court, Milpitas Boulevard, and Lundy Place. These roadways are described below.

> *Montague Expressway* is an east-west roadway that starts at the intersection of Scott Boulevard and San Tomas Expressway in the west and ends at the intersection of S. Park Victoria Drive/Morrill Avenue and Landess Avenue in the east. This facility is primarily a six to eight lane expressway and connects the following freeways: U.S. Highway 101 (US 101), Interstate 880 (I-880), and Interstate 680 (I-680). During the AM peak period from 6:00 a.m. to 9:00 a.m., one westbound through lane is restricted for high-occupancy vehicle (HOV) use. During the PM peak period from 3:00 p.m. to 7:00 p.m., one eastbound lane is restricted for HOV use. The HOV lanes are discontinued at the US 101 and I-880 interchanges and terminate just west of Great Mall Parkway-Capitol Avenue intersection.

Capitol Avenue is a north-south, six-lane divided arterial roadway in the project vicinity extending from Montague Expressway in the north, where it becomes Great Mall Parkway, to San Jose in the south. It provides direct access to the project area and the Milpitas Transit Center via its intersection with Milpitas Boulevard. Santa Clara Valley Transportation Authority (VTA) light-rail transit (LRT) service is provided along the median of Great Mall Parkway along an elevated platform.

Trade Zone Boulevard is an east-west, four-lane roadway, extending from Montague Expressway in the west to Capitol Avenue in the east. It provides access to the project vicinity via Lundy Place and several local residential streets within the TASP.

Milpitas Boulevard is a two-lane, north-south roadway south of Capitol Avenue, and a four lane east-west, roadway serving the Milpitas BART station north of Capitol Avenue. South of Capitol Avenue, it currently terminates at Penitencia Creek. The proposed bridge project would extend this roadway over Penitencia Creek eventually linking to planned extensions to Sango Court and Tarob Court.

Tarob Court is a two-lane roadway extending west from Lundy Place. It provides access to the office/industrial buildings located to the west of Lundy Place and terminates in a cul-de-sac approximately 800 feet west of Lundy Place. Tarob Court provides direct access to the project site via a single driveway.

Lundy Place is a north-south, two-lane roadway extending from the Union Pacific Railroad tracks in the north to Trade Zone Boulevard in the south, where it becomes Lundy Avenue. Lundy Place terminates in a cul-de-sac approximately 650 feet north of Tarob Court.

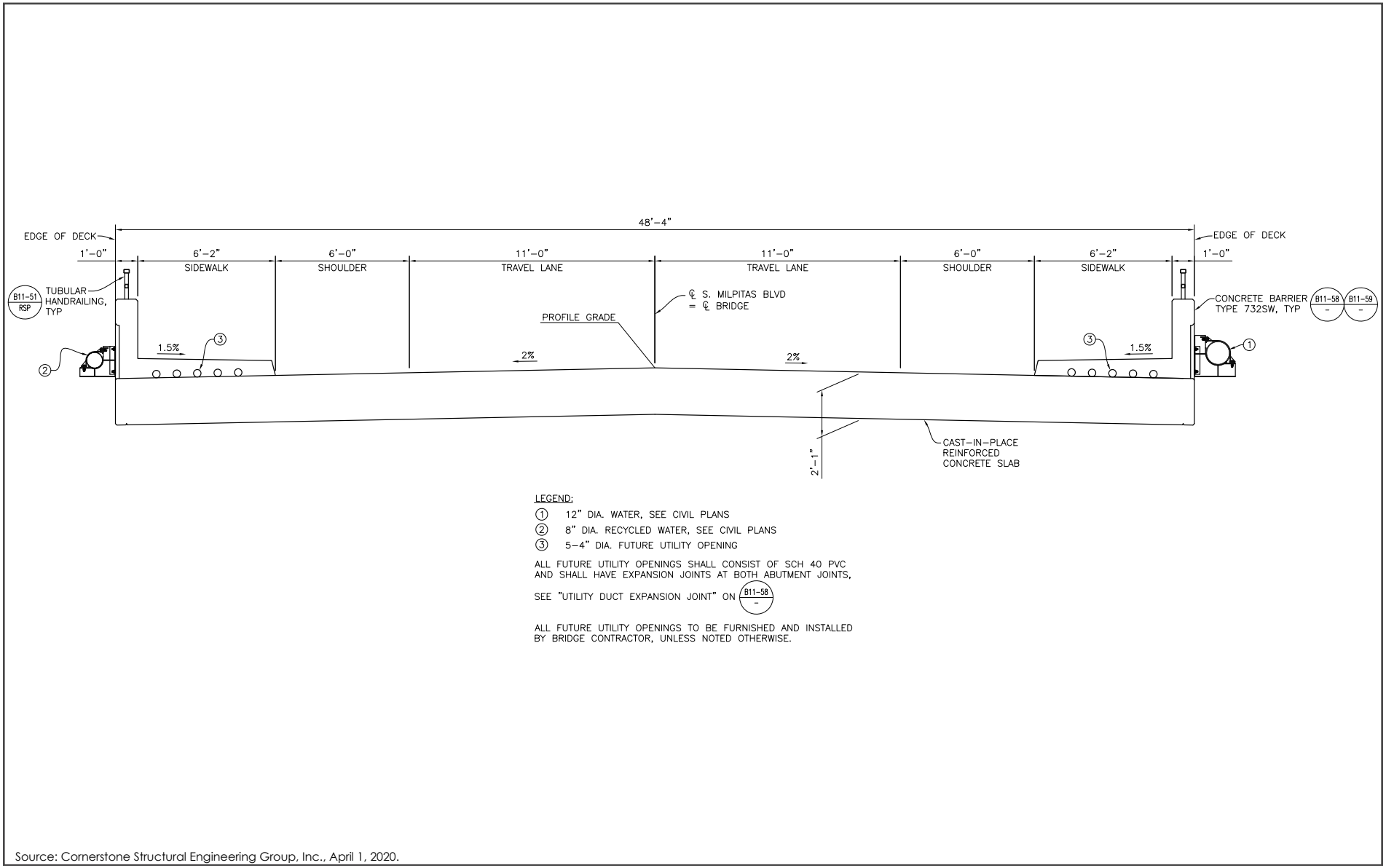
Sango Court is a two-lane roadway extending east from Montague Expressway. It provides access to existing office/industrial buildings and terminates in a cul-de-sac approximately 500 feet east of Montague Expressway.

Existing bicycle access to the project vicinity is provided primarily via a network of nearby Class II bike lanes and Class III bike routes which are shared with vehicular traffic. Buffered Class II bike lanes are provided along Trade Zone Boulevard. Conventional Class II bike lanes are present on Lundy Avenue south of Trade Zone Boulevard, McCandless Drive, and Capitol Avenue. Existing Class III bike routes are present on Montague Expressway. A full description of existing bike lanes in the project area is provided in the City of Milpitas *Trail, Pedestrian, and Bicycle Master Plan.*

The signalized intersections serving the project vicinity generally provide crosswalks and the majority of streets in the project vicinity generally provide sidewalks, except at the following locations:

- Trade Zone Boulevard has intermittetend sidewalks
- West side of Lundy Avenue, just north of Trade Zone Bouelvard
- Both sides of Sango Court
- West side of Tarob Court

Figure 1
Site Location and Study Intersections



Source: Cornerstone Structural Engineering Group, Inc., April 1, 2020.

Figure 2
Proposed Bridge Cross-Section

NORTH
Not to Scale

Existing transit service in the project area includes VTA buses, Light Rail (LRT), and BART. These are primarily located at the Milpitas Transit center, which includes the Milpitas BART station, a park-and-ride lot, the Montague LRT station, and several bus routes at a bus transfer facility. This is located approximately 600 feet north of the proposed bridge. VTA light-rail runs in the median of Great Mall Parkway/Capitol Avenue, and BART provides regional access to San Jose, Fremont, Oakland, and San Francisco, with future service planned to Downtown San Jose and Santa Clara. Service schedules for transit service have been evolving due to the effects of COVID, but current route maps and service frequencies can be found at VTA.org and BART.gov.

VMT Analysis

Senate Bill (SB) 743 has changed the primary metric for identifying transportation impacts under CEQA from vehicle level of service (LOS) to daily vehicle-miles travelled (VMT). The City of Milpitas, as the lead agency for this CEQA document, has adopted guidelines to identify VMT impacts. These guidelines were largely based on the State of California Governor's Office of Planning and Research (OPR) guidelines published in its *Technical Advisory on Evaluating Transportation Impacts in CEQA*. The City and OPR guidelines allow for screening of projects that would not generate substantial VMT demand. City guidelines state that several types of roadway projects are exempt from quantitative VMT analysis, including projects that result in the:

> *Addition of roadway capacity on local or collector streets provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit.*

The proposed project would primarily link land uses within the TASP area to the surrounding roadway network, resulting in the overall shortening of trips through the area. The bridge would be a two-lane facility with one lane in each direction and would serve as the extension Milpitas Boulevard. According to the TASP, the bridge segment, and the link between Tarob Court and Sango Court, would be considered local streets.

The proposed bridge would include 11-foot travel lanes, 6-foot shoulder areas for bikes, and 6-foot sidewalks for pedestrians on both sides of the street, improving access between the surrounding land uses and the Milpitas BART station (located less than 1,000 feet to the north). The connecting roadway (Tarob Court to Sango Court) would be constructed within a 52-foot right of way that includes 11-foot-wide travel lanes for both vehicles and bicycles in each direction, an 8-foot wide vehicle parking aisle on one side of the street, 7-foot-wide planting strip and 5-foot wide sidewalks on both sides of the street. Given the nature of the surrounding area and proximity to BART, as well as the project's bike/pedestrian friendly design, it meets the City's criteria to support the finding that the project's impacts would be *less than significant.*

To determine quantitatively whether the project would shorten vehicular trips, the Milpitas Travel Demand Forecast (TDF) Model was utilized to determine roadway VMT with and without the project, under existing plus approved and year 2040 conditions. The Milpitas TDF model is a refinement of the Valley Transportation Authority (VTA) countywide TDF model, which was developed during the City's General Plan update. It is an approved tool for estimating VMT within the City of Milpitas. Existing plus approved conditions represent existing traffic and land uses, plus approved development in the project vicinity. It is hereafter referred to as near-term conditions. The results are presented in Table 1, which show the change in daily VMT and VHT (vehicle-hours-traveled) within the Milpitas TASP area.

Table 1
VMT within the Project Vicinity

Scenario	Daily Vehicle Miles Traveled			Daily Vehicle Hours Traveled		
	No Bridge	w/ Bridge	Difference	No Bridge	w/ Bridge	Difference
Near- Term	83,658	83,373	-285	2,087	2,078	-9.8
2040	83,042	82,697	-345	2,272	2,261	-11.0

The near-term and year 2040 forecasts support the premise that the bridge would serve primarily local traffic and reduce VMT. The data show that the proposed bridge would reduce the daily VMT in the area by 285 in the near term and by 345 by year 2040. Similarly, daily vehicle-hours of travel would also decrease, by 9.8 hours and 11.0 hours in the near-term and year 2040, respectively. Note that the 2040 VMT is slightly less in year 2040 compared to the near-term, even though there is more development assumed in the TSAP area in year 2040. The reduction in VMT is caused by: (1) higher development densities in the TSAP area which increases non-motorized travel and transit use; (2) increased congestion of the roadway system making transit more attractive; and (3) Phase II BART extension to San Jose and Santa Clara, which includes four new BART stations and BART trains running on more frequent headways.

Impacts to Bikes, Pedestrians and Transit

Nearly all of the streets within the study area include sidewalks, curb ramps, and crosswalks at major intersections. In addition, there are existing bike lanes in the area on Capitol Avenue, Lundy Avenue, Trade Zone Boulevard, and Milpitas Boulevard. According to the Valley Transportation Authority (VTA) Transportation Impact Analysis (TIA) Technical Guidelines, a project would create an impact on pedestrian and bike circulation if: (1) it would reduce, sever or eliminate existing or planned bike/pedestrian access and circulation in the area; (2) it would preclude, modify, or otherwise affect proposed bicycle and pedestrian projects and/or policies identified in an adopted plan; or (3) it would cause a change to existing bike paths such as alignment, width of the trail ROW, or length of the trail.

The City of Milpitas *Trail, Pedestrian, and Bicycle Master Plan* was reviewed to insure project conformance. The plan does not show any planned improvements within the TASP area bounded by Capitol Avenue, Trade Zone Boulevard, and Montague Expressway. This is likely because bike and pedestrian improvements are already specified in the TASP, which includes various policies:

- *Policy 3.15: Review individual development applications to ensure that adequate street right-of-way, bicycle facilities, pedestrian facilities and landscaping are provided and are consistent with the Transit Area Plan circulation policies and street design standards.*
- *Policy 3.27: Every resident of the Transit Area shall be able to safely walk and bike to the BART and VTA light rail stations. As projects are constructed, make sure that all the routes described below are continuous and designed to be attractive and safe for pedestrians.*
- *Policy 3.28: Provide continuous bicycle circulation through the project site and to adjacent areas by closing existing gaps in bicycle lanes and bicycle routes.*

- *Policy 3.29: A Class III bicycle route shall be created on the internal roadways (from the Milpitas Boulevard Extension/Capitol Avenue intersection to Tarob Court) to provide a continuous bicycle connection between Milpitas Boulevard and the existing bicycle lanes on Lundy Street.*
- *Policy 3.30: Maintain pedestrian and biking facilities.*

Figure 3-5 in the TASP shows a proposed bike/pedestrian trail running along Penitencia Creek and Milpitas Boulevard (south of Capitol Avenue). The proposed Penitencia Creek bridge is shown in the TASP as a Class III Bike route and is classified on Figure 5-1 as "Typical Residential Street." While the TASP does not provide specific details for bridge design, Figure 5-9 in the TASP shows recommended design guidelines for "New Local Streets," which includes 11-foot travel lanes and 5-foot wide sidewalks on both sides of the street.

The proposed bridge would include 6-foot shoulder areas for bikes and 6-foot sidewalks for pedestrians on both sides of the street, which exceeds the standards outlined in the TASP. The connecting segment between Tarob Court and Sango Court would meet the TASP guidelines. Overall, the proposed project would improve access for bikes and pedestrians between the surrounding land uses and the Milpitas BART station, Montague Light Rail station, and BART bus transfer facility. Without the proposed bridge, walking distances for land uses south of Penitencia Creek to the Milpitas Transit Center area would be increased considerably. The project design would not modify any existing pedestrian or bikeway facilities, nor would it preclude other planned improvements in the area. It is also consistent with the design guidelines identified in the TASP. Thus, the project would result in a *less than significant* impact to bikes and pedestrians.

There are several transit services available in the project vicinity. These are primarily located at the Milpitas Transit center, which includes the Milpitas BART station, a park-and-ride lot, the Montague Light Rail station, and several bus routes at a bus transfer facility. According to the VTA TIA Technical Guidelines, a project would create an impact on transit if: (1) it would cause a permanent or temporary reduction of transit availability or interference with existing transit users (relocation/closure of a transit stop or vacation of a roadway utilized by transit) or (2) result in significant delays in transit service.

The project, by itself, would not preclude, modify or otherwise affect existing or proposed transit projects or policies identified by the VTA. As a roadway improvement linking various surrounding uses, the bridge project would not increase transit delay, but could reduce bus delays on surrounding streets by shortening the length of roadway trips in the project vicinity (see VMT discussion). Overall, the bridge project would increase transit accessibility by providing a more convenient bike and pedestrian link to the surrounding transit uses. Thus, the proposed bridge project would result in a *less than significant* impact to transit service.

Level of Service Analysis

A level of service analysis was conducted in the project vicinity to determine the effects of the proposed project on intersection delays. This analysis was requested by City staff and is provided for informational purposes, as in accordance with state guidelines, the metric used determine environmental impacts is VMT. The analysis evaluated level of service at the following major intersections nearby, with and without the proposed vehicular bridge over Penitencia Creek:

1. East Capitol Avenue and Milpitas Boulevard
2. Trade Zone Boulevard and Lundy Avenue
3. Montague Expressway and Trade Zone Boulevard
4. Montague Expressway and Great Mall Parkway

5. Montague Expressway and Sango Court

These locations were evaluated under near-term (existing plus approved) and year 2040 conditions during the AM (7-9) and PM (4-6) peak periods. The baseline roadway network in the project area also reflects a future two lane roadway connection between Sango Court and Expedition Lane (see Figure 3). Traffic volumes were estimated from the aforementioned Milpitas TDF model, which reflects traffic generation volumes pre-Covid (see Figures 4 through 8). The land uses within the model within the project vicinity were updated based on current development plans supplied by City of Milpitas staff. The results of the analysis are shown in Table 2.

The results show that, generally, the project would increase the amount of traffic and delays at the intersection of Capitol Avenue and Milpitas Boulevard, as residents west of the proposed bridge access Capitol Avenue. In addition, the proposed bridge would generally decrease or maintain the delays along Montague Expressway, with the largest delay decreases occurring at the intersection of Montague Expressway and Trade Zone Boulevard.

TASP Site Circulation

At the request of City staff, a site circulation analysis was conducted to evaluate the connectivity within the TASP in the vicinity of the proposed bridge. As previously described, the baseline roadway network reflects a future two lane roadway connection between Sango Court and Expedition Lane (see also Figure 1). Another planned connection would link Tarob Court to Journey Street via the extension of Expedition Lane. This link could provide vehicular connectivity, or could be designated as bike and pedestrian only, depending on the design and layout of future project-specific development plans. A vehicular link would be ideal, as it would provide many residences west of Journey Street with convenient access to the existing traffic signal at Lundy Avenue/Trade Zone Boulevard. The alternative would be to make left turns from Momentum Drive and Journey Street to Trade Zone Boulevard, which can be difficult during peak hours due to roadway congestion on Trade Zone Boulevard. Both of these roadway links would be undertaken as the surrounding properties are redeveloped and would include pedestrian and bike elements consistent with TASP design guidelines.

The proposed vehicular bridge link would have several potential benefits. First, it would provide access for the properties south of Penitencia Creek to Milpitas Boulevard, Capitol Avenue, and the Milpitas Transit Center, via the signalized intersection at Capitol Avenue/Milpitas Boulevard. Second, it would allow properties north of Penitencia Creek direct access to the signalized intersection at Lundy Avenue and Trade Zone Avenue as a means to reach the industrial areas south of Trade Zone Boulevard. Without the proposed project, more traffic would be routed through the intersections of Montague Expressway/Capitol Avenue and Trade Zone Boulevard/Montague Expressway, which are congested facilities during peak commute periods (see also Level of Service Analysis section above). There would be considerable vehicular demand for the proposed bridge. Traffic volumes on the bridge were forecasted to be 700 daily trips (52 AM peak hour trips and 79 PM peak hour trips) under near term conditions and 800 daily vehicle trips (98 AM peak hour trips and 121 PM peak hour trips) by year 2040. The bridge would also reduce the daily vehicle-hours of travel within the neighborhood by 11 hours by year 2040.

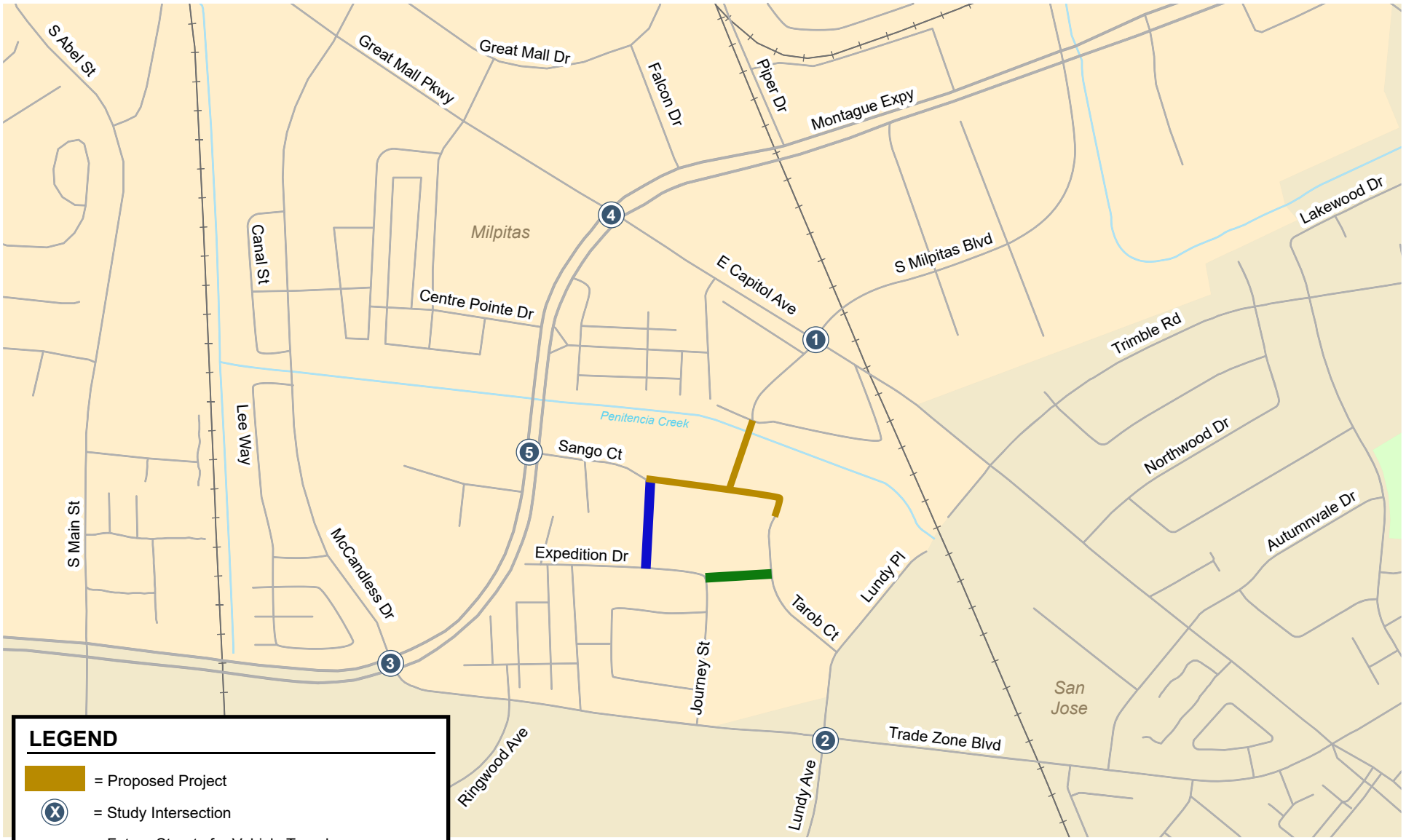


Figure 3
Existing and Planned Roadway Network

LEGEND

- = Proposed Project
- = Planned Future Street Network
- X = Study Intersection
- XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 4
Existing Traffic Volumes

HEXAGON

NORTH
Not to Scale

Figure 5
Near Term No Project Traffic Volumes

Figure 6
Near Term Plus Project Traffic Volumes

Figure 7
Year 2040 No Project Traffic Volumes

Figure 8
Year 2040 Plus Project Traffic Volumes

Table 2
Intersection Level of Service Summary

No.	Signalized Intersection	Traffic Control	Count Date	Peak Hour	LOS Std.	Existing		Near Term					Year 2040				
								No Project		With Project			No Project		With Project		
						Avg. Delay[1]	LOS	Avg. Delay[1]	LOS	Avg. Delay[1]	LOS	Change in Avg. Delay	Avg. Delay[1]	LOS	Avg. Delay[1]	LOS	Change in Avg. Delay
1	Capitol Avenue and Milpitas Boulevard	Signal	06/23/21	AM	D	19.7	B	26.5	C	26.8	C	0.3	114.3	F	114.3	F	0.0
			06/23/21	PM		15.5	B	18.7	B	20.6	C	1.9	135.7	F	139.1	F	3.4
2	Lundy Avenue and Trade Zone Boulevard	Signal	05/02/19	AM	D	30.3	C	31.9	C	31.9	C	0.0	87.1	F	87.9	F	0.8
			05/02/19	PM		41.8	D	49.7	D	49.8	D	0.1	77.8	E	77.7	E	-0.1
3	Montague Expressway and Trade Zone Boulevard	Signal	09/17/19	AM	E	97.5	F	135.3	F	134.3	F	-1.0	230.9	F	225.9	F	-5.0
			11/08/18	PM		65.9	E	83.4	F	79.9	E	-3.5	90.5	F	89.4	F	-1.1
4	Montague Expressway and Capitol Avenue	Signal	05/23/21	AM	E	42.4	D	45.1	D	45.1	D	0.0	56.8	E	56.7	E	-0.1
			11/08/18	PM		69.6	E	72.7	E	73.8	E	1.1	187.3	F	187.3	F	0.0
5	Montague Expressway and Sango Court	SSSC[2]	06/29/21	AM	N/A	0.2/9.9	A/A	0.9/10.7	A/B	0.9/10.7	A/B	0.0/0.0	0.8/14.8	A/B	0.9/14.9	A/B	0.1/0.1
			06/29/21	PM		0.2/14.5	A/B	0.5/17.3	A/C	0.5/17.1	A/B	0.0/-0.2	0.9/36.5	A/E	0.8/34.9	A/D	-0.1/1.6

[1] Signalized intersection level of service is based on the Highway Capacity Manual (HCM) methodology, using average control delay for the entire intersection. For unsignalized intersection at Montague/Sango, average intersection delay/approach with highest delay based on HCM methodology are shown.

[2] SSSC = Side street stop control

Similarly, the proposed bridge project would have a beneficial impact on pedestrian and bike circulation. In addition to providing connectivity for inter-neighborhood trips and recreation, walking distances for land uses south of Penitencia Creek to the Milpitas BART station area, without the proposed bridge, would be increased by as much as 2,000 feet, which at typical walking speeds, equates to over 8 minutes of additional travel time. Reducing pedestrian and bike travel times increases the convenience of transit trips, encouraging transit ridership, and reducing the possibility that residents would drive to the BART park-and-ride.

Project Alternative

An alternative to the proposed project is to construct the bridge portion for bikes and pedestrians only (i.e. no vehicular traffic). This configuration would retain all of the bike and pedestrian benefits, including improving access to the Milpitas BART station area and providing connectivity for inter-neighborhood trips and recreation. There would be no change in VMT or LOS from existing or baseline conditions, and the project would still qualify for a CEQA exclusion as it would "substantially improve conditions" for pedestrians and cyclists. Thus, this configuration would also result in a *less than significant* impact.

Conclusions

The impacts of the proposed project were evaluated in accordance with City of Milpitas and State of California OPR CEQA guidelines. The project's site circulation and level of service effects were also evaluated. This report reached the following conclusions:

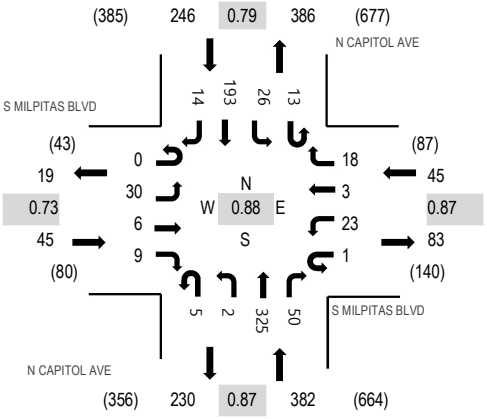
- The proposed vehicular bridge project would result in a *less than significant impact* to VMT and would reduce both VMT and VHT in the project vicinity.
- The proposed bridge would result in *less than significant* impacts to bikes, pedestrians, and transit, and would be generally benefit bike and pedestrian circulation.
- The proposed vehicular bridge would generally reduce vehicular delays on Montague Expressway, and increase delays at the intersection of Capitol Avenue and Milpitas Boulevard.
- The proposed vehicular bridge would provide improved transportation connectivity between all the uses in the area and would comply with the design guidelines specified in the City's TASP.
- A project alternative, which includes constructing the bridge portion for bike and pedestrian use only, would also result in a *less than significant* CEQA impact.

Appendix

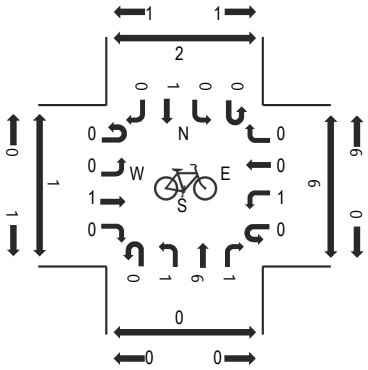
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 N CAPITOL AVE & S MILPITAS BLVD AM
Date: Wednesday, June 23, 2021
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:45 AM - 09:00 AM

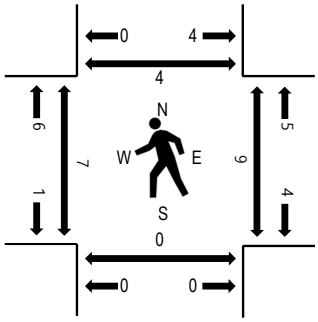
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	S MILPITAS BLVD Eastbound				S MILPITAS BLVD Westbound				N CAPITOL AVE Northbound				N CAPITOL AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	7	0	1	0	3	0	9	0	5	35	13	1	3	29	5	111	498	1	1	0	0
7:15 AM	0	4	0	1	0	3	1	5	1	0	57	6	1	5	26	4	114	542	0	5	1	1
7:30 AM	0	9	3	4	0	1	0	8	3	0	52	10	0	5	26	4	125	585	1	1	0	0
7:45 AM	0	4	1	1	0	4	0	8	1	3	86	10	5	1	22	2	148	661	1	3	0	0
8:00 AM	0	5	1	4	0	5	1	6	2	0	66	13	3	4	40	5	155	718	3	5	0	1
8:15 AM	0	11	3	1	1	3	0	4	2	1	72	14	5	9	29	2	157		4	2	0	2
8:30 AM	0	5	2	0	0	8	1	4	0	0	96	14	2	4	63	2	201		0	1	0	1
8:45 AM	0	9	0	4	0	7	1	4	1	1	91	9	3	9	61	5	205		0	1	0	0

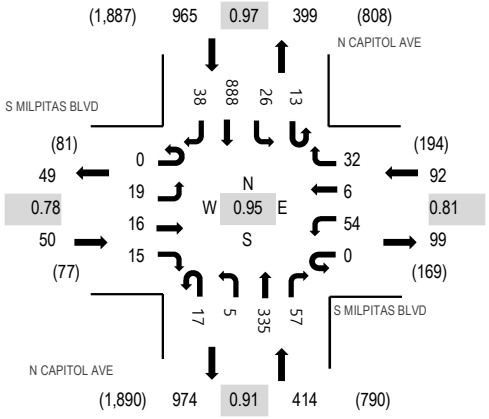
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	1	0	0	2	0	0	0	1	0	4
Lights	0	28	6	9	1	22	3	15	5	2	319	48	13	24	189	12	696
Mediums	0	2	0	0	0	1	0	2	0	0	4	2	0	2	3	2	18
Total	0	30	6	9	1	23	3	18	5	2	325	50	13	26	193	14	718

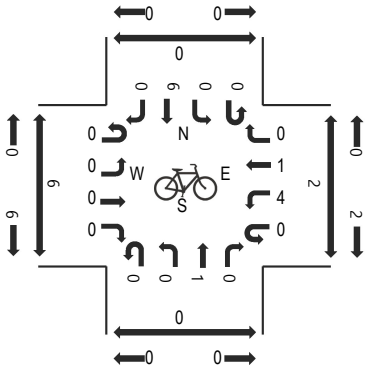
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 N CAPITOL AVE & S MILPITAS BLVD PM
Date: Wednesday, June 23, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

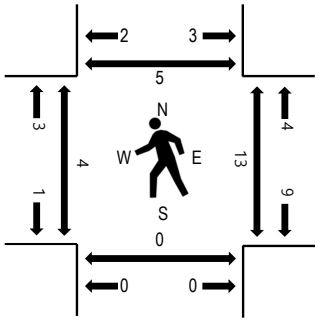
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

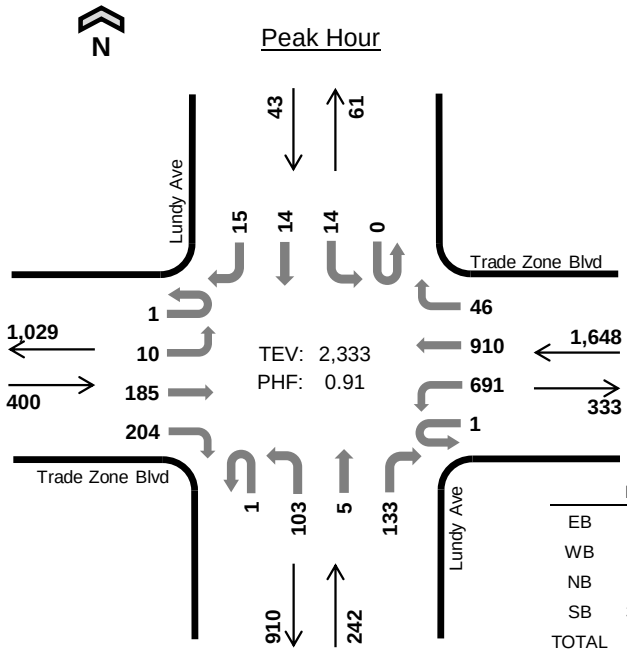
Interval Start Time	S MILPITAS BLVD Eastbound				S MILPITAS BLVD Westbound				N CAPITOL AVE Northbound				N CAPITOL AVE Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	2	0	4	0	8	0	12	6	0	92	9	7	10	238	3	391	1,427	1	1	0	1
4:15 PM	0	4	2	2	0	14	0	8	4	1	80	13	14	7	196	9	354	1,422	0	3	0	0
4:30 PM	0	2	3	2	0	16	0	16	2	1	71	9	4	5	189	4	324	1,428	2	2	0	2
4:45 PM	0	3	1	2	0	14	1	13	1	3	77	7	4	4	218	10	358	1,503	1	1	0	2
5:00 PM	0	5	3	4	0	12	0	7	4	3	80	19	5	7	228	9	386	1,521	0	3	0	0
5:15 PM	0	3	3	2	0	16	2	7	1	1	83	11	2	8	213	8	360		0	2	0	2
5:30 PM	0	6	5	5	0	15	0	8	6	1	92	15	3	8	227	8	399		1	4	0	3
5:45 PM	0	5	5	4	0	11	4	10	6	0	80	12	3	3	220	13	376		3	4	0	0

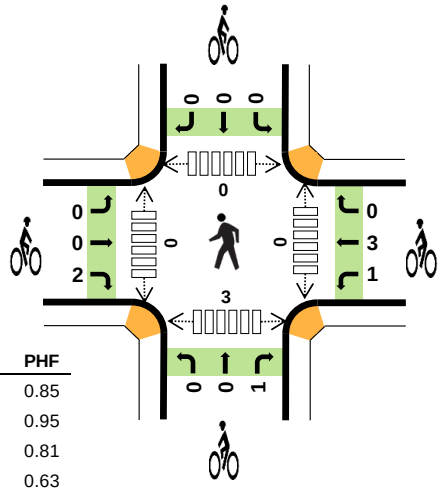
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3
Lights	0	19	16	15	0	54	6	32	17	5	332	57	13	26	882	38	1,512
Mediums	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0	6
Total	0	19	16	15	0	54	6	32	17	5	335	57	13	26	888	38	1,521

Lundy Ave
Trade Zone Blvd

Date: 05-02-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM





	HV %:	PHF
EB	4.0%	0.85
WB	1.5%	0.95
NB	5.0%	0.81
SB	34.9%	0.63
TOTAL	2.9%	0.91

Two-Hour Count Summaries

Interval Start	Trade Zone Blvd Eastbound				Trade Zone Blvd Westbound				Lundy Ave Northbound				Lundy Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	1	2	43	27	0	46	207	9	0	27	3	29	0	1	1	3	399	0
7:15 AM	0	7	36	40	0	76	216	13	0	15	1	25	0	0	0	3	432	0
7:30 AM	0	5	46	39	0	102	207	7	0	36	0	34	0	0	0	3	479	0
7:45 AM	0	1	43	54	0	135	214	14	0	22	2	33	0	4	0	2	524	1,834
8:00 AM	**0**	**3**	**40**	**44**	**0**	**140**	**225**	**13**	**0**	**27**	**2**	**42**	**0**	**2**	**2**	**3**	**543**	1,978
8:15 AM	**0**	**2**	**41**	**45**	**1**	**176**	**249**	**9**	**1**	**21**	**0**	**25**	**0**	**3**	**3**	**3**	**579**	2,125
8:30 AM	**0**	**2**	**48**	**57**	**0**	**184**	**217**	**6**	**0**	**21**	**2**	**26**	**0**	**3**	**2**	**5**	**573**	2,219
8:45 AM	**1**	**3**	**56**	**58**	**0**	**191**	**219**	**18**	**0**	**34**	**1**	**40**	**0**	**6**	**7**	**4**	**638**	**2,333**
Count Total	2	25	353	364	1	1,050	1,754	89	1	203	11	254	0	19	15	26	4,167	0
Peak Hour All	**1**	**10**	**185**	**204**	**1**	**691**	**910**	**46**	**1**	**103**	**5**	**133**	**0**	**14**	**14**	**15**	**2,333**	**0**
Peak Hour HV	**0**	**2**	**2**	**12**	**0**	**4**	**10**	**11**	**0**	**8**	**1**	**3**	**0**	**7**	**1**	**7**	**68**	**0**
Peak Hour HV%	**0%**	**20%**	**1%**	**6%**	**0%**	**1%**	**1%**	**24%**	**0%**	**8%**	**20%**	**2%**	**-**	**50%**	**7%**	**47%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	4	2	3	1	*10*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	3	2	3	1	*9*	0	0	0	0	*0*	1	0	0	2	*3*
7:30 AM	4	5	5	1	*15*	1	0	0	0	*1*	0	1	1	0	*2*
7:45 AM	4	8	3	2	*17*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	**4**	**7**	**1**	**2**	***14***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**3**	**4**	**3**	**3**	***13***	**0**	**2**	**0**	**0**	***2***	**0**	**0**	**0**	**1**	*1*
8:30 AM	**5**	**6**	**3**	**5**	***19***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	*2*
8:45 AM	**4**	**8**	**5**	**5**	***22***	**2**	**1**	**1**	**0**	***4***	**0**	**0**	**0**	**0**	***0***
Count Total	31	42	26	20	*119*	3	4	1	0	*8*	1	1	1	5	*8*
Peak Hour	**16**	**25**	**12**	**15**	***68***	**2**	**4**	**1**	**0**	***7***	**0**	**0**	**0**	**3**	***3***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Trade Zone Blvd				Trade Zone Blvd				Lundy Ave				Lundy Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	2	1	0	0	2	0	0	1	0	2	0	0	0	1	10	0
7:15 AM	0	2	0	1	0	0	1	1	0	1	0	2	0	0	0	1	9	0
7:30 AM	0	0	1	3	0	1	3	1	0	5	0	0	0	0	0	1	15	0
7:45 AM	0	0	3	1	0	1	3	4	0	1	0	2	0	2	0	0	17	51
8:00 AM	**0**	**0**	**1**	**3**	**0**	**2**	**1**	**4**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**14**	55
8:15 AM	**0**	**1**	**1**	**1**	**0**	**0**	**3**	**1**	**0**	**2**	**0**	**1**	**0**	**1**	**1**	**1**	**13**	59
8:30 AM	**0**	**1**	**0**	**4**	**0**	**1**	**3**	**2**	**0**	**1**	**1**	**1**	**0**	**2**	**0**	**3**	**19**	63
8:45 AM	**0**	**0**	**0**	**4**	**0**	**1**	**3**	**4**	**0**	**4**	**0**	**1**	**0**	**2**	**0**	**3**	**22**	**68**
Count Total	0	5	8	18	0	6	19	17	0	16	1	9	0	9	1	10	119	0
Peak Hour	**0**	**2**	**2**	**12**	**0**	**4**	**10**	**11**	**0**	**8**	**1**	**3**	**0**	**7**	**1**	**7**	**68**	**0**

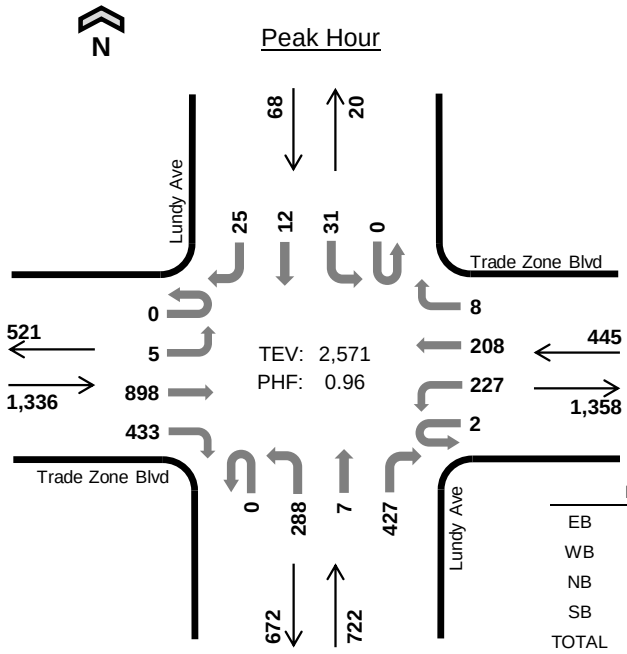
Two-Hour Count Summaries - Bikes

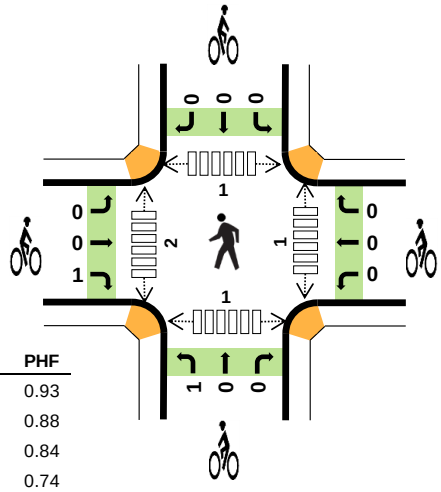
Interval Start	Trade Zone Blvd			Trade Zone Blvd			Lundy Ave			Lundy Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	2
8:15 AM	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	4
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
8:45 AM	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**4**	**7**
Count Total	0	0	3	1	3	0	0	0	1	0	0	0	8	0
Peak Hour	**0**	**0**	**2**	**1**	**3**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**7**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Lundy Ave
Trade Zone Blvd

Date: 05-02-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM





	HV %:	PHF
EB	1.2%	0.93
WB	0.9%	0.88
NB	1.2%	0.84
SB	2.9%	0.74
TOTAL	1.2%	0.96

Two-Hour Count Summaries

Interval Start	Trade Zone Blvd Eastbound				Trade Zone Blvd Westbound				Lundy Ave Northbound				Lundy Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	4	176	93	0	47	36	3	0	51	1	89	0	6	5	8	519	0
4:15 PM	0	4	214	100	0	49	42	2	0	63	3	91	0	4	4	8	584	0
4:30 PM	1	2	248	102	0	60	47	2	0	65	0	102	0	7	1	2	639	0
4:45 PM	1	4	230	106	0	41	58	1	1	64	0	102	0	6	1	4	619	2,361
5:00 PM	**0**	**1**	**186**	**105**	**0**	**54**	**47**	**3**	**0**	**97**	**2**	**117**	**0**	**15**	**3**	**4**	**634**	2,476
5:15 PM	**0**	**2**	**241**	**116**	**1**	**45**	**46**	**1**	**0**	**51**	**0**	**95**	**0**	**10**	**5**	**8**	**621**	2,513
5:30 PM	**0**	**0**	**226**	**118**	**0**	**63**	**62**	**1**	**0**	**80**	**2**	**104**	**0**	**4**	**2**	**7**	**669**	2,543
5:45 PM	**0**	**2**	**245**	**94**	**1**	**65**	**53**	**3**	**0**	**60**	**3**	**111**	**0**	**2**	**2**	**6**	**647**	**2,571**
Count Total	2	19	1,766	834	2	424	391	16	1	531	11	811	0	54	23	47	4,932	0
Peak Hour All	**0**	**5**	**898**	**433**	**2**	**227**	**208**	**8**	**0**	**288**	**7**	**427**	**0**	**31**	**12**	**25**	**2,571**	**0**
Peak Hour HV	**0**	**1**	**4**	**11**	**0**	**2**	**2**	**0**	**0**	**8**	**0**	**1**	**0**	**0**	**0**	**2**	**31**	**0**
Peak Hour HV%	**-**	**20%**	**0%**	**3%**	**0%**	**1%**	**1%**	**0%**	**-**	**3%**	**0%**	**0%**	**-**	**0%**	**0%**	**8%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	1	7	1	*13*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	5	2	3	2	*12*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	7	4	2	0	*13*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	2	3	4	1	*10*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	**6**	**2**	**2**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**5**	**2**	**3**	**0**	***10***	**1**	**0**	**0**	**0**	***1***	**1**	**1**	**0**	**0**	*2*
5:30 PM	**0**	**0**	**1**	**1**	***2***	**0**	**0**	**1**	**0**	***1***	**0**	**1**	**0**	**1**	*2*
5:45 PM	**5**	**0**	**3**	**1**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	***1***
Count Total	34	14	25	6	*79*	1	0	1	0	*2*	1	2	1	1	*5*
Peak Hour	**16**	**4**	**9**	**2**	***31***	**1**	**0**	**1**	**0**	***2***	**1**	**2**	**1**	**1**	***5***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Trade Zone Blvd				Trade Zone Blvd				Lundy Ave				Lundy Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	4	0	0	0	1	0	6	0	1	0	0	0	1	13	0
4:15 PM	0	0	2	3	0	0	2	0	0	2	0	1	0	0	0	2	12	0
4:30 PM	0	1	2	4	0	3	0	1	0	1	0	1	0	0	0	0	13	0
4:45 PM	0	0	0	2	0	0	3	0	0	4	0	0	0	0	0	1	10	48
5:00 PM	**0**	**0**	**2**	**4**	**0**	**1**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	45
5:15 PM	**0**	**0**	**1**	**4**	**0**	**1**	**1**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**10**	43
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	32
5:45 PM	**0**	**1**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**1**	**9**	**31**
Count Total	0	2	8	24	0	5	7	2	0	21	0	4	0	0	0	6	79	0
Peak Hour	**0**	**1**	**4**	**11**	**0**	**2**	**2**	**0**	**0**	**8**	**0**	**1**	**0**	**0**	**0**	**2**	**31**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Trade Zone Blvd			Trade Zone Blvd			Lundy Ave			Lundy Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	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
4:30 PM	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
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	1
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	2
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
Count Total	0	0	1	0	0	0	1	0	0	0	0	0	2	0
Peak Hour	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**

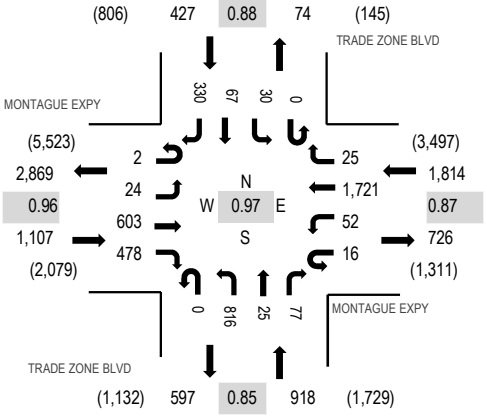
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

All Traffic Data Services Inc.

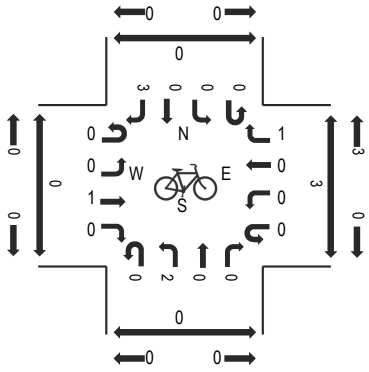
(303) 216-2439
www.alltrafficdata.net

Location: 1 TRADE ZONE BLVD & MONTAGUE EXPY AM
Date: Tuesday, September 17, 2019
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

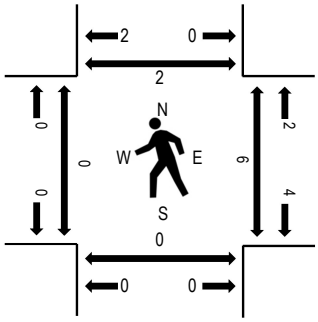
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	MONTAGUE EXPY Eastbound				MONTAGUE EXPY Westbound				TRADE ZONE BLVD Northbound				TRADE ZONE BLVD Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	5	94	87	7	18	548	8	0	163	4	9	0	4	7	31	985	4,077	0	1	0	2
7:15 AM	1	4	149	90	1	9	465	7	0	219	6	14	0	2	5	42	1,014	4,179	0	0	0	0
7:30 AM	0	3	150	89	4	12	501	9	0	182	4	12	0	7	14	54	1,041	4,266	0	0	0	2
7:45 AM	0	8	152	105	2	7	406	10	0	229	7	25	0	8	23	55	1,037	4,198	0	0	0	0
8:00 AM	1	5	158	141	6	14	468	0	0	159	8	19	0	6	20	82	1,087	4,034	0	5	0	0
8:15 AM	1	8	143	143	4	19	346	6	0	246	6	21	0	9	10	139	1,101		0	1	0	0
8:30 AM	0	11	145	146	2	5	309	1	0	183	16	11	0	4	21	119	973		0	11	0	0
8:45 AM	0	2	120	118	4	10	289	0	0	161	7	18	0	1	19	124	873		0	7	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	12	1	0	2	16	0	0	10	0	0	0	0	0	0	41
Lights	2	24	559	460	16	50	1,677	25	0	789	23	73	0	29	64	327	4,118
Mediums	0	0	32	17	0	0	28	0	0	17	2	4	0	1	3	3	107
Total	2	24	603	478	16	52	1,721	25	0	816	25	77	0	30	67	330	4,266

11/8/18

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #5802 MONTAGUE EXPWY/TRADE ZONE BLVD

Cycle (sec):	189	Critical Vol./Cap.(X):	1.005
Loss Time (sec):	12	Average Delay (sec/veh):	60.7
Optimal Cycle:	300	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:		Ovl			Ovl			Ovl			Ovl	
Min. Green:	30	30	30	14	14	14	15	101	101	23	109	109
Y+R:	5.3	5.3	5.3	5.4	5.4	5.4	4.9	5.8	5.8	4.6	5.8	5.8
Lanes:	2 1	0	0 1	1 1	0	0 1	1	0 3	0 1	1	0 3	0 1
Volume Module: >> Count Date: 8 Nov 2018 << 5:00 - 6:00 PM												
Base Vol:	528	71	165	31	124	78	82	1715	1216	202	828	71
Growth 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
Initial Bse:	528	71	165	31	124	78	82	1715	1216	202	828	71
User 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
PHF 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
PHF Volume:	528	71	165	31	124	78	82	1715	1216	202	828	71
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	528	71	165	31	124	78	82	1715	1216	202	828	71
PCE 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
MLF 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
FinalVolume:	528	71	165	31	124	78	82	1715	1216	202	828	71
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.67	0.95	0.92	1.38	0.50	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	2.74	0.26	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	3483	468	1750	2625	950	1750	1750	5700	1750	1750	5700	1750
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.09	0.01	0.13	0.04	0.05	0.30	0.69	0.12	0.15	0.04
Crit Moves:	****				****				****	****		
Green Time:	30.0	30.0	53.0	24.3	24.3	39.1	14.8	101	131.0	23.0	108	132.2
Volume/Cap:	0.96	0.96	0.34	0.09	1.02	0.22	0.60	0.56	1.00	0.95	0.25	0.06
Uniform Del:	78.8	78.8	54.0	72.6	82.4	62.2	84.2	29.3	29.0	82.4	20.4	8.9
IncremntDel:	25.2	25.2	0.4	0.0	77.2	0.3	7.0	0.2	26.4	47.1	0.0	0.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.29	1.63	1.00	1.34	1.65
Delay/Veh:	104.0	104	54.4	72.7	160	62.5	91.2	37.9	73.7	129.5	27.4	14.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	104.0	104	54.4	72.7	160	62.5	91.2	37.9	73.7	129.5	27.4	14.7
LOS by Move:	F	F	D-	E	F	E	F	D+	E	F	C	B
HCM2kAvgQ:	16	20	8	2	11	4	5	25	78	14	10	2

Note: Queue reported is the number of cars per lane.

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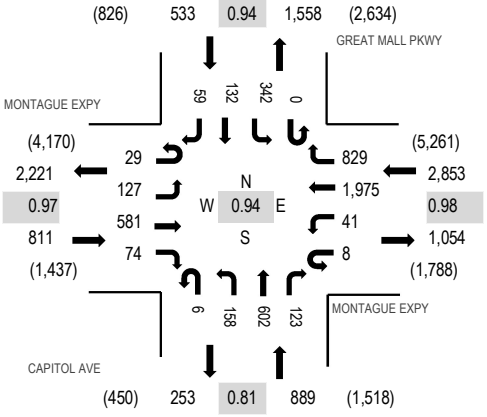
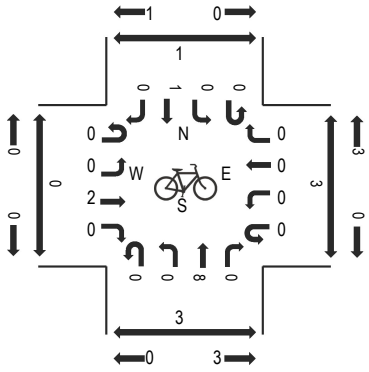
All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

Location: 17 CAPITOL AVE & MONTAGUE EXPY AM
Date: Thursday, May 23, 2019
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 08:15 AM - 08:30 AM

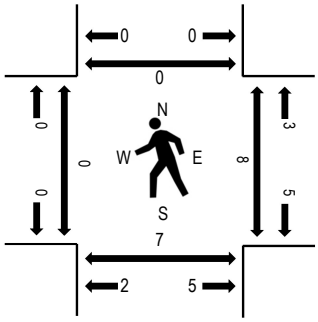
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	MONTAGUE EXPY Eastbound				MONTAGUE EXPY Westbound				CAPITOL AVE Northbound				GREAT MALL PKWY Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	12	12	95	13	0	10	379	115	0	22	59	14	0	23	11	7	772	4,041	0	0	1	1
7:15 AM	5	8	130	11	0	8	471	146	1	43	90	15	0	25	16	8	977	4,488	1	2	0	1
7:30 AM	16	15	112	6	2	13	433	164	1	40	129	28	0	46	26	10	1,041	4,860	1	1	0	1
7:45 AM	4	37	151	15	2	8	520	193	0	37	143	27	0	70	28	16	1,251	5,086	0	3	3	0
8:00 AM	10	28	137	18	0	15	456	200	1	41	131	39	0	96	34	13	1,219	5,001	0	2	2	0
8:15 AM	6	35	148	14	5	9	505	210	4	41	201	28	0	89	40	14	1,349		0	2	2	0
8:30 AM	9	27	145	27	1	9	494	226	1	39	127	29	0	87	30	16	1,267		0	1	0	0
8:45 AM	10	24	142	15	0	24	453	190	1	27	124	35	0	67	41	13	1,166		1	4	2	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	1	9	1	0	0	22	5	0	0	0	0	0	4	0	0	42
Lights	28	122	547	70	8	39	1,912	802	6	157	596	122	0	326	129	57	4,921
Mediums	1	4	25	3	0	2	41	22	0	1	6	1	0	12	3	2	123
Total	29	127	581	74	8	41	1,975	829	6	158	602	123	0	342	132	59	5,086

11/8/18

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #5803 MONTAGUE EXPWY/CAPITOL AVE

Cycle (sec):	190	Critical Vol./Cap.(X):	0.595
Loss Time (sec):	12	Average Delay (sec/veh):	50.6
Optimal Cycle:	178	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ovl			Ovl		
Min. Green:	11	35	35	34	57	57	24	77	77	20	73	73
Y+R:	6.7	5.7	5.7	6.5	5.7	5.7	5.7	5.8	5.8	5.6	5.8	5.8
Lanes:	2 0	3 0	1	2 0	2 1	0	2 0	3 0	1	2 0	4 0	1
Volume Module: >> Count Date: 8 Nov 2018 << 5:00 - 6:00 PM												
Base Vol:	75	244	166	606	1281	65	177	1475	311	312	933	384
Growth 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
Initial Bse:	75	244	166	606	1281	65	177	1475	311	312	933	384
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.66	1.00	1.00	1.00	1.00
PHF 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
PHF Volume:	75	244	166	606	1281	65	177	974	311	312	933	384
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	75	244	166	606	1281	65	177	974	311	312	933	384
PCE 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
MLF 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
FinalVolume:	75	244	166	606	1281	65	177	974	311	312	933	384
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	0.98	0.95	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	3.00	1.00	2.00	2.85	0.15	2.00	3.00	1.00	2.00	4.00	1.00
Final Sat.:	3150	5700	1750	3150	5329	270	3150	5700	1750	3150	7600	1750
Capacity Analysis Module:												
Vol/Sat:	0.02	0.04	0.09	0.19	0.24	0.24	0.06	0.17	0.18	0.10	0.12	0.22
Crit Moves:			****	****				****		****		
Green Time:	12.7	35.0	35.0	43.6	65.9	65.9	24.6	77.0	89.7	22.4	74.8	118.4
Volume/Cap:	0.36	0.23	0.51	0.84	0.69	0.69	0.43	0.42	0.38	0.84	0.31	0.35
Uniform Del:	84.7	66.1	69.8	69.9	53.4	53.4	76.3	40.5	32.2	82.0	39.8	17.3
IncremntDel:	1.0	0.1	1.4	8.6	1.1	1.1	0.7	0.1	0.3	15.4	0.1	0.2
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.81	1.00	0.90	0.52
Delay/Veh:	85.8	66.2	71.3	78.5	54.5	54.5	77.0	36.1	26.3	97.4	35.9	9.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	85.8	66.2	71.3	78.5	54.5	54.5	77.0	36.1	26.3	97.4	35.9	9.1
LOS by Move:	F	E	E	E-	D-	D-	E-	D+	C	F	D+	A
HCM2kAvgQ:	3	4	10	22	23	23	5	11	9	11	7	6

Note: Queue reported is the number of cars per lane.

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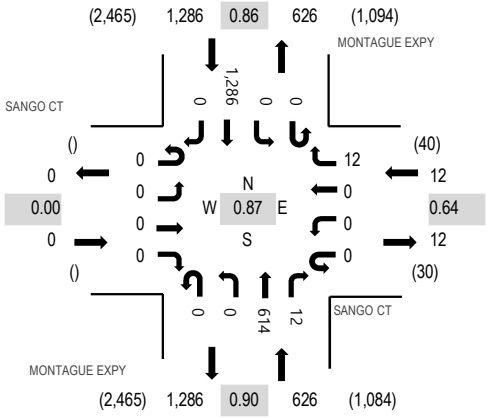
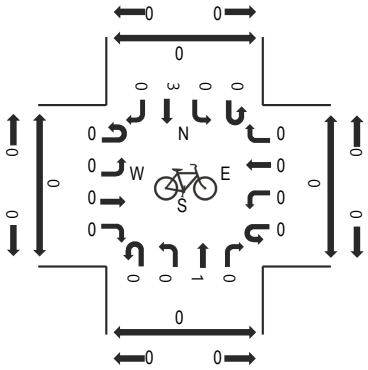
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 MONTAGUE EXPY & SANGO CT AM
Date: Tuesday, June 29, 2021
Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes: 08:45 AM - 09:00 AM

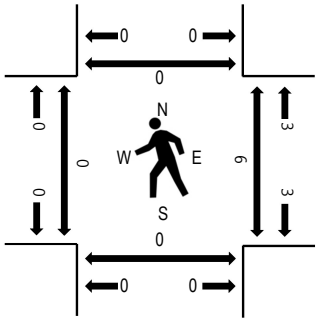
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SANGO CT Eastbound				SANGO CT Westbound				MONTAGUE EXPY Northbound				MONTAGUE EXPY Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	0	0	0	0	0	7	0	0	94	3	0	0	246	0	350	1,665	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	11	0	0	100	4	0	0	251	0	366	1,784	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	6	0	0	121	3	0	0	319	0	449	1,866	0	1	0	0
7:45 AM	0	0	0	0	0	0	0	4	0	0	125	8	0	0	363	0	500	1,873	0	1	0	0
8:00 AM	0	0	0	0	0	0	0	4	0	0	142	6	0	0	317	0	469	1,924	0	1	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	159	2	0	0	287	0	448		0	2	0	0
8:30 AM	0	0	0	0	0	0	0	6	0	0	142	1	0	0	307	0	456		0	3	0	0
8:45 AM	0	0	0	0	0	0	0	2	0	0	171	3	0	0	375	0	551		0	0	0	0

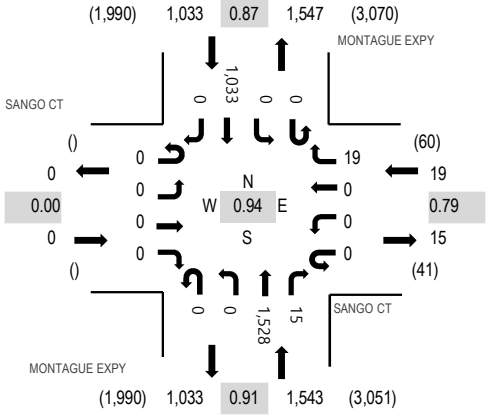
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	13	0	0	0	24	0	37
Lights	0	0	0	0	0	0	0	10	0	0	562	11	0	0	1,231	0	1,814
Mediums	0	0	0	0	0	0	0	2	0	0	39	1	0	0	31	0	73
Total	0	0	0	0	0	0	0	12	0	0	614	12	0	0	1,286	0	1,924

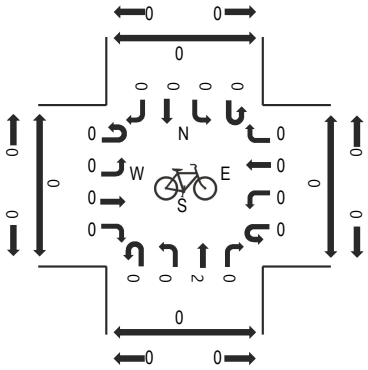
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 MONTAGUE EXPY & SANGO CT PM
Date: Tuesday, June 29, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:45 PM - 06:00 PM

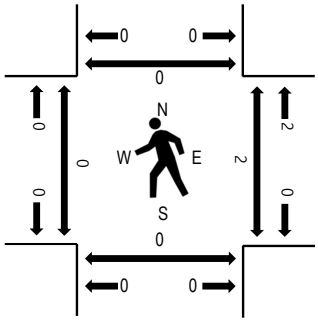
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	SANGO CT Eastbound				SANGO CT Westbound				MONTAGUE EXPY Northbound				MONTAGUE EXPY Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	0	0	0	0	0	9	0	0	345	6	0	0	237	0	597	2,506	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	13	0	0	382	6	0	0	228	0	629	2,517	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	9	0	0	348	9	0	0	259	0	625	2,506	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	10	0	0	407	5	0	0	233	0	655	2,563	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	2	0	0	355	2	0	0	249	0	608	2,595	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	5	0	0	381	2	0	0	230	0	618		0	1	0	0
5:30 PM	0	0	0	0	0	0	0	5	0	0	376	5	0	0	296	0	682		0	0	0	0
5:45 PM	0	0	0	0	0	0	0	7	0	0	416	6	0	0	258	0	687		0	1	0	0

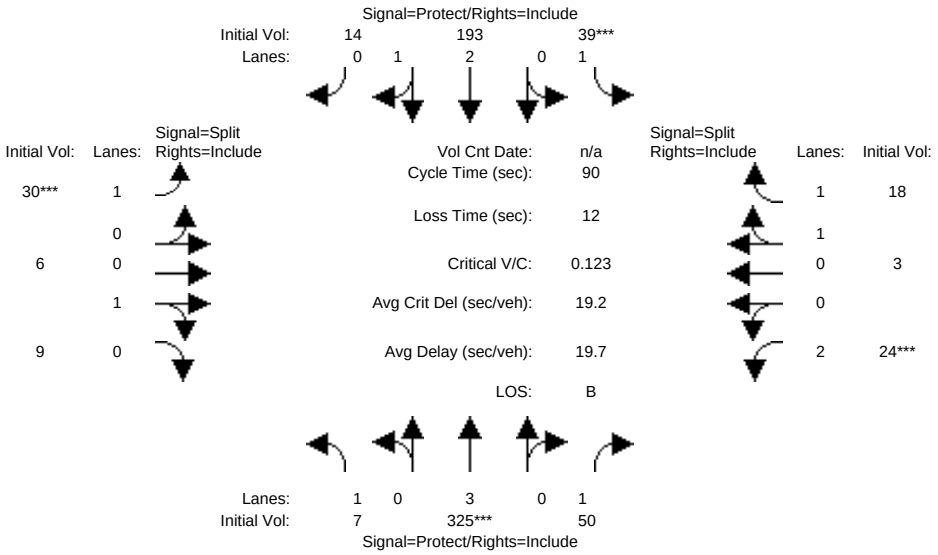
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	8	0	0	0	12	0	20
Lights	0	0	0	0	0	0	0	18	0	0	1,492	14	0	0	1,000	0	2,524
Mediums	0	0	0	0	0	0	0	1	0	0	28	1	0	0	21	0	51
Total	0	0	0	0	0	0	0	19	0	0	1,528	15	0	0	1,033	0	2,595

Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing AM

Intersection #1: CAPITOL AVE/MILPITAS BLVD



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	7	325	50	39	193	14	30	6	9	24	3	18
Growth 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
Initial Bse:	7	325	50	39	193	14	30	6	9	24	3	18
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	7	325	50	39	193	14	30	6	9	24	3	18
User 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
PHF 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
PHF Volume:	7	325	50	39	193	14	30	6	9	24	3	18
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	7	325	50	39	193	14	30	6	9	24	3	18
PCE 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
MLF 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
FinalVolume:	7	325	50	39	193	14	30	6	9	24	3	18
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	1.00	0.74	0.87	0.99	0.91	0.87	0.91	0.84	0.79	0.87	0.79
Lanes:	1.00	3.00	1.00	1.00	2.78	0.22	1.00	0.38	0.62	2.00	0.26	1.74
Final Sat.:	1663	5700	1412	1663	5230	379	1663	658	987	2993	435	2607
Capacity Analysis Module:												
Vol/Sat:	0.00	0.06	0.04	0.02	0.04	0.04	0.02	0.01	0.01	0.01	0.01	0.01
Crit Moves:		****		****			****			****		
Green/Cycle:	0.25	0.44	0.44	0.18	0.36	0.36	0.14	0.14	0.14	0.11	0.11	0.11
Volume/Cap:	0.02	0.13	0.08	0.13	0.10	0.10	0.13	0.07	0.07	0.07	0.06	0.06
Delay/Veh:	25.2	15.1	14.8	31.2	19.0	19.0	34.3	33.8	33.8	35.9	35.9	35.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	25.2	15.1	14.8	31.2	19.0	19.0	34.3	33.8	33.8	35.9	35.9	35.9
LOS by Move:	C	B	B	C	B	B	C	C	C	D	D	D
HCM2kAvgQ:	0	2	1	1	1	1	1	0	0	0	0	0

Note: Queue reported is the number of cars per lane.

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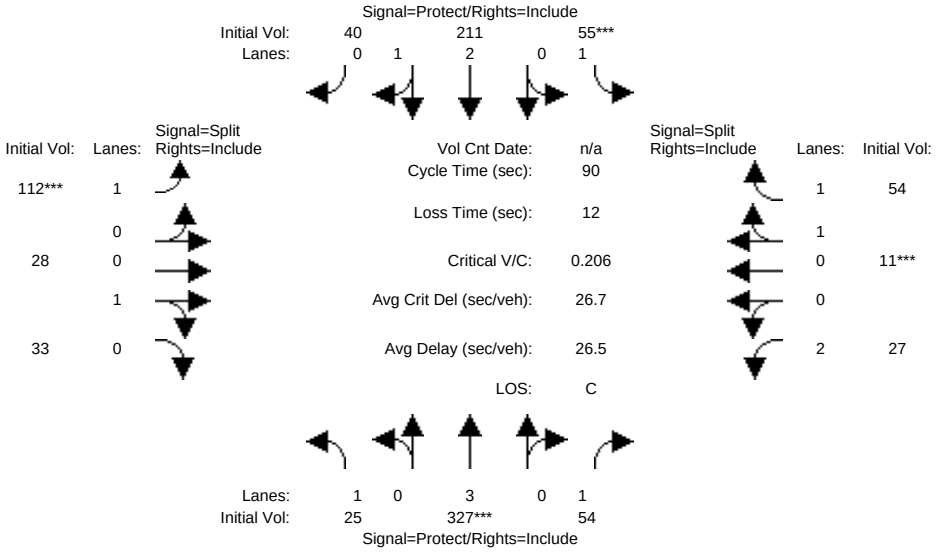
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background AM

Intersection #1: CAPITOL AVE/MILPITAS BLVD



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	25	327	54	55	211	40	112	28	33	27	11	54
Growth 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
Initial Bse:	25	327	54	55	211	40	112	28	33	27	11	54
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	25	327	54	55	211	40	112	28	33	27	11	54
User 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
PHF 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
PHF Volume:	25	327	54	55	211	40	112	28	33	27	11	54
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	25	327	54	55	211	40	112	28	33	27	11	54
PCE 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
MLF 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
FinalVolume:	25	327	54	55	211	40	112	28	33	27	11	54
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	1.00	0.78	0.87	0.98	0.90	0.87	0.92	0.85	0.79	0.88	0.81
Lanes:	1.00	3.00	1.00	1.00	2.49	0.51	1.00	0.44	0.56	2.00	0.32	1.68
Final Sat.:	1663	5700	1488	1663	4614	875	1663	766	903	2993	525	2579
Capacity Analysis Module:												
Vol/Sat:	0.02	0.06	0.04	0.03	0.05	0.05	0.07	0.04	0.04	0.01	0.02	0.02
Crit Moves:		****			****			****			****	
Green/Cycle:	0.18	0.27	0.27	0.16	0.25	0.25	0.32	0.32	0.32	0.11	0.11	0.11
Volume/Cap:	0.08	0.21	0.13	0.21	0.18	0.18	0.21	0.11	0.11	0.08	0.19	0.19
Delay/Veh:	31.0	25.2	24.7	33.4	26.3	26.3	22.3	21.5	21.5	36.0	36.6	36.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	31.0	25.2	24.7	33.4	26.3	26.3	22.3	21.5	21.5	36.0	36.6	36.6
LOS by Move:	C	C	C	C	C	C	C	C	C	D	D	D
HCM2kAvgQ:	1	2	1	2	2	2	2	1	1	0	1	1

Note: Queue reported is the number of cars per lane.

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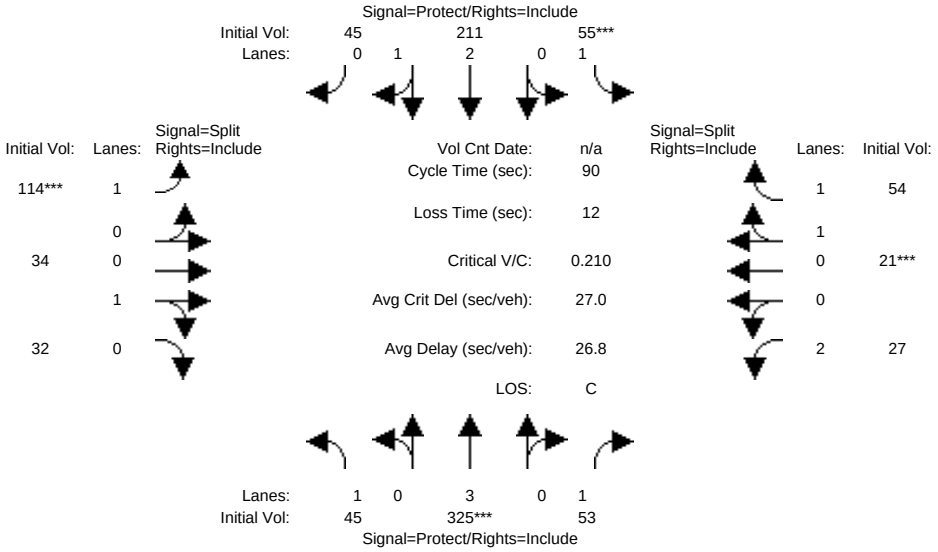
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background + Project AM

Intersection #1: CAPITOL AVE/MILPITAS BLVD



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	45	325	53	55	211	45	114	34	32	27	21	54
Growth 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
Initial Bse:	45	325	53	55	211	45	114	34	32	27	21	54
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	45	325	53	55	211	45	114	34	32	27	21	54
User 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
PHF 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
PHF Volume:	45	325	53	55	211	45	114	34	32	27	21	54
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	45	325	53	55	211	45	114	34	32	27	21	54
PCE 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
MLF 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
FinalVolume:	45	325	53	55	211	45	114	34	32	27	21	54
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	1.00	0.78	0.87	0.97	0.90	0.87	0.93	0.85	0.79	0.89	0.82
Lanes:	1.00	3.00	1.00	1.00	2.44	0.56	1.00	0.49	0.51	2.00	0.53	1.47
Final Sat.:	1663	5700	1488	1663	4508	961	1663	871	820	2993	894	2299
Capacity Analysis Module:												
Vol/Sat:	0.03	0.06	0.04	0.03	0.05	0.05	0.07	0.04	0.04	0.01	0.02	0.02
Crit Moves:		****		****			****				****	
Green/Cycle:	0.18	0.27	0.27	0.16	0.25	0.25	0.33	0.33	0.33	0.11	0.11	0.11
Volume/Cap:	0.15	0.21	0.13	0.21	0.19	0.19	0.21	0.12	0.12	0.08	0.21	0.21
Delay/Veh:	31.6	25.4	24.9	33.4	26.5	26.5	22.1	21.4	21.4	35.9	36.7	36.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	31.6	25.4	24.9	33.4	26.5	26.5	22.1	21.4	21.4	35.9	36.7	36.7
LOS by Move:	C	C	C	C	C	C	C	C	C	D	D	D
HCM2kAvgQ:	1	2	1	2	2	2	3	1	1	0	1	1

Note: Queue reported is the number of cars per lane.

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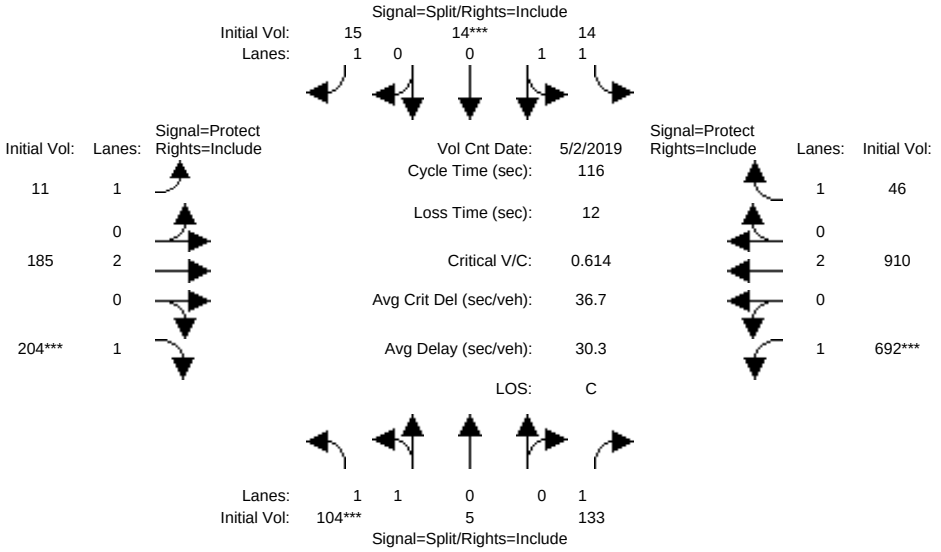
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing AM

Intersection #2: LUNDY/TRADE ZONE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 2 May 2019 << 7:50-8:50												
Base Vol:	104	5	133	14	14	15	11	185	204	692	910	46
Growth 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
Initial Bse:	104	5	133	14	14	15	11	185	204	692	910	46
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	104	5	133	14	14	15	11	185	204	692	910	46
User 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
PHF 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
PHF Volume:	104	5	133	14	14	15	11	185	204	692	910	46
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	104	5	133	14	14	15	11	185	204	692	910	46
PCE 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
MLF 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
FinalVolume:	104	5	133	14	14	15	11	185	204	692	910	46
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.92	0.08	1.00	1.04	0.96	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	3352	161	1750	1822	1822	1750	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.03	0.03	0.08	0.01	0.01	0.01	0.01	0.05	0.12	0.40	0.24	0.03
Crit Moves:	****				****				****	****		
Green/Cycle:	0.12	0.12	0.12	0.09	0.09	0.09	0.14	0.16	0.16	0.53	0.55	0.55
Volume/Cap:	0.25	0.25	0.61	0.09	0.09	0.10	0.05	0.31	0.75	0.75	0.44	0.05
Delay/Veh:	47.3	47.3	60.6	49.4	49.4	50.2	43.7	44.8	63.6	26.6	16.2	12.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.3	47.3	60.6	49.4	49.4	50.2	43.7	44.8	63.6	26.6	16.2	12.2
LOS by Move:	D	D	E	D	D	D	D	D	E	C	B	B
HCM2kAvgQ:	2	2	6	1	1	1	0	3	9	22	9	1

Note: Queue reported is the number of cars per lane.

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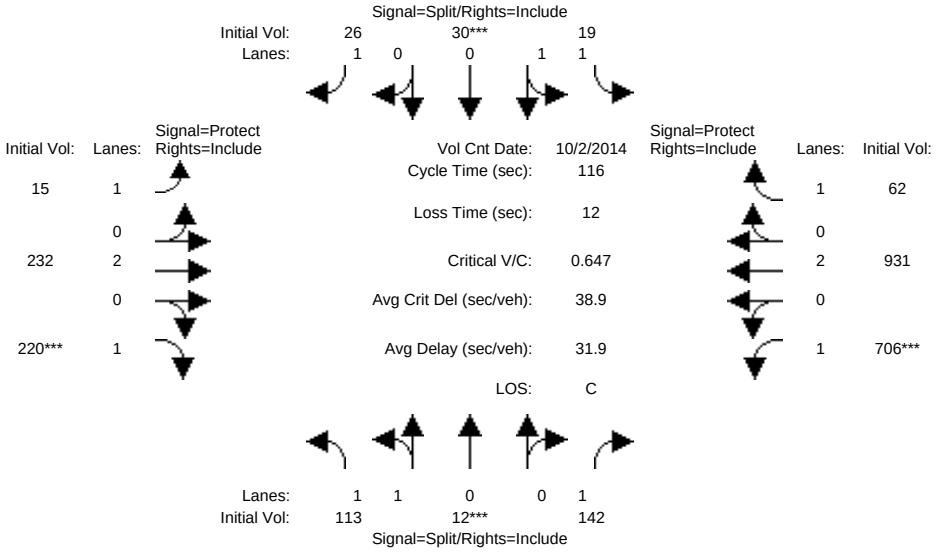
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background AM

Intersection #2: LUNDY/TRADE ZONE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 2 Oct 2014 << 7:50-8:50												
Base Vol:	113	12	142	19	30	26	15	232	220	706	931	62
Growth 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
Initial Bse:	113	12	142	19	30	26	15	232	220	706	931	62
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	113	12	142	19	30	26	15	232	220	706	931	62
User 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
PHF 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
PHF Volume:	113	12	142	19	30	26	15	232	220	706	931	62
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	113	12	142	19	30	26	15	232	220	706	931	62
PCE 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
MLF 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
FinalVolume:	113	12	142	19	30	26	15	232	220	706	931	62
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.82	0.18	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	3188	339	1750	1750	1900	1750	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.08	0.01	0.02	0.01	0.01	0.06	0.13	0.40	0.25	0.04
Crit Moves:		****			****				****	****		
Green/Cycle:	0.13	0.13	0.13	0.09	0.09	0.09	0.14	0.16	0.16	0.52	0.55	0.55
Volume/Cap:	0.28	0.28	0.65	0.13	0.18	0.17	0.06	0.38	0.77	0.77	0.45	0.06
Delay/Veh:	47.6	47.6	62.1	49.6	50.7	51.6	44.2	45.0	64.7	28.5	16.3	12.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.6	47.6	62.1	49.6	50.7	51.6	44.2	45.0	64.7	28.5	16.3	12.3
LOS by Move:	D	D	E	D	D	D	D	D	E	C	B	B
HCM2kAvgQ:	2	2	6	1	1	1	1	4	10	23	10	1

Note: Queue reported is the number of cars per lane.

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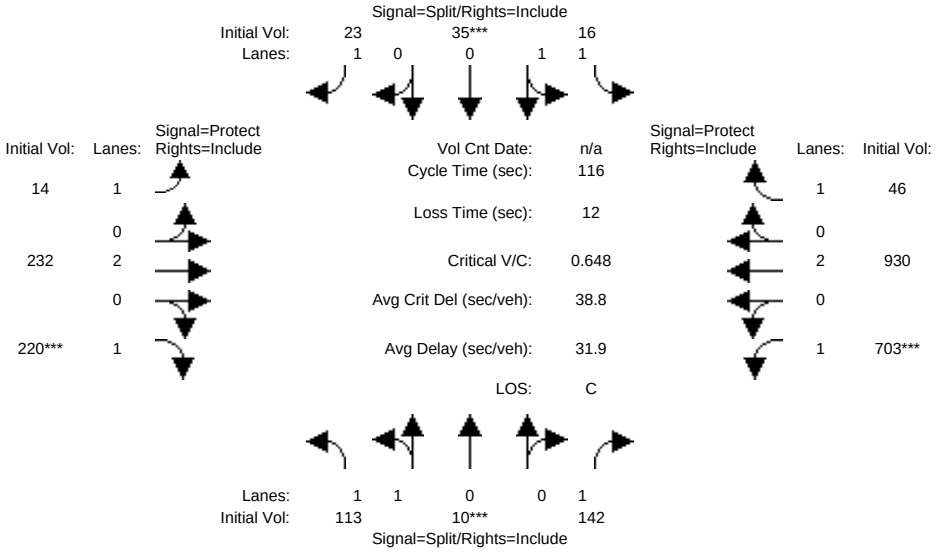
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background + Project AM

Intersection #2: LUNDY/TRADE ZONE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	113	10	142	16	35	23	14	232	220	703	930	46
Growth 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
Initial Bse:	113	10	142	16	35	23	14	232	220	703	930	46
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	113	10	142	16	35	23	14	232	220	703	930	46
User 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
PHF 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
PHF Volume:	113	10	142	16	35	23	14	232	220	703	930	46
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	113	10	142	16	35	23	14	232	220	703	930	46
PCE 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
MLF 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
FinalVolume:	113	10	142	16	35	23	14	232	220	703	930	46
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.85	0.15	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	3236	286	1750	1750	1900	1750	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.03	0.03	0.08	0.01	0.02	0.01	0.01	0.06	0.13	0.40	0.24	0.03
Crit Moves:		****			****				****	****		
Green/Cycle:	0.13	0.13	0.13	0.09	0.09	0.09	0.14	0.16	0.16	0.52	0.55	0.55
Volume/Cap:	0.28	0.28	0.65	0.11	0.21	0.15	0.06	0.37	0.77	0.77	0.45	0.05
Delay/Veh:	47.6	47.6	62.2	49.3	51.4	51.2	44.2	45.0	64.4	28.4	16.3	12.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.6	47.6	62.2	49.3	51.4	51.2	44.2	45.0	64.4	28.4	16.3	12.2
LOS by Move:	D	D	E	D	D	D	D	D	E	C	B	B
HCM2kAvgQ:	2	2	6	1	1	1	0	4	10	23	10	1

Note: Queue reported is the number of cars per lane.

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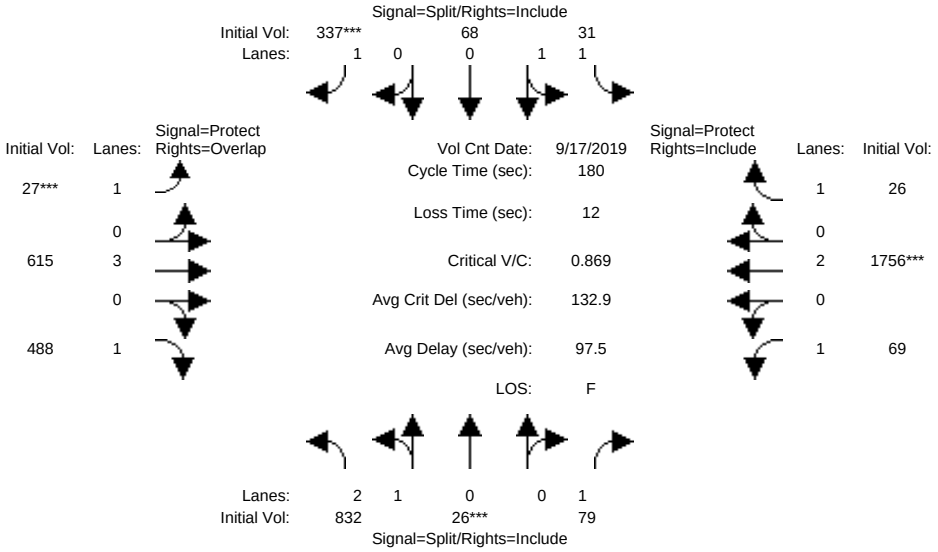
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing AM

Intersection #3: MONTAGUE EXPWY/TRADE ZONE BLVD



Street Name:	Trade Zone Blvd						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	10	10	10	10	10	10	7	100	10	7	107	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 17 Sep 2019 << 7:00-9:00												
Base Vol:	832	26	79	31	68	337	27	615	488	69	1756	26
Growth 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
Initial Bse:	832	26	79	31	68	337	27	615	488	69	1756	26
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	832	26	79	31	68	337	27	615	488	69	1756	26
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.82	1.00
PHF 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
PHF Volume:	832	26	79	31	68	337	27	615	488	69	1440	26
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	832	26	79	31	68	337	27	615	488	69	1440	26
PCE 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
MLF 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
FinalVolume:	832	26	79	31	68	337	27	615	488	69	1440	26
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	0.95	0.75	0.91	0.99	0.78	0.87	1.00	0.78	0.87	1.00	0.77
Lanes:	2.92	0.08	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	4394	137	1433	1724	1872	1488	1663	5700	1488	1663	3800	1470
Capacity Analysis Module:												
Vol/Sat:	0.19	0.19	0.06	0.02	0.04	0.23	0.02	0.11	0.33	0.04	0.38	0.02
Crit Moves:		****				****	****				****	
Green/Cycle:	0.14	0.14	0.14	0.16	0.16	0.16	0.04	0.59	0.73	0.04	0.59	0.59
Volume/Cap:	1.39	1.39	0.40	0.11	0.22	1.39	0.42	0.18	0.45	0.94	0.64	0.03
Delay/Veh:	261.4	261	72.4	64.2	65.6	272.6	88.8	17.0	10.4	171.1	24.4	15.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	261.4	261	72.4	64.2	65.6	272.6	88.8	17.0	10.4	171.1	24.4	15.1
LOS by Move:	F	F	E	E	E	F	F	B	B	F	C	B
HCM2kAvgQ:	32	32	5	2	3	34	2	5	12	7	25	1

Note: Queue reported is the number of cars per lane.

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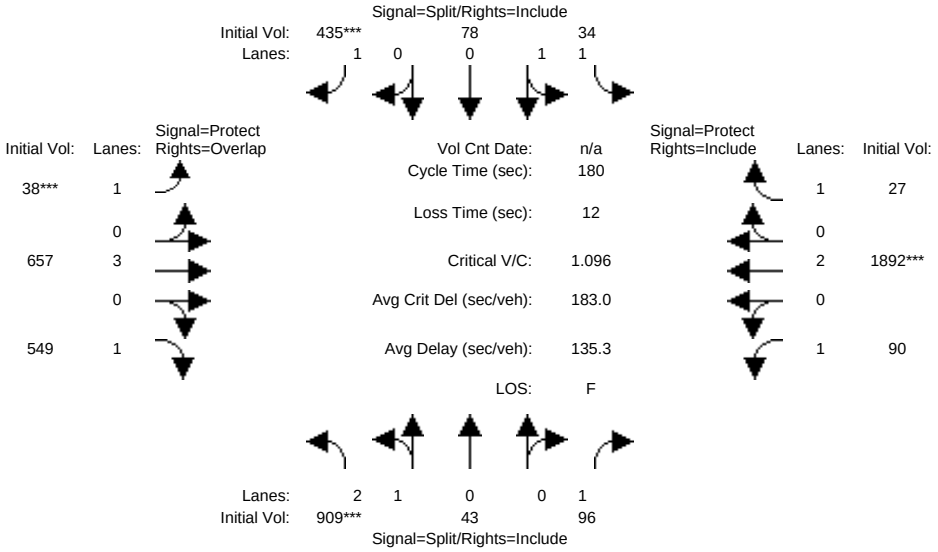
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background AM

Intersection #3: MONTAGUE EXPWY/TRADE ZONE BLVD



Street Name:	Trade Zone Blvd						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	10	10	10	10	10	10	7	100	10	7	107	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	909	43	96	34	78	435	38	657	549	90	1892	27
Growth 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
Initial Bse:	909	43	96	34	78	435	38	657	549	90	1892	27
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	909	43	96	34	78	435	38	657	549	90	1892	27
User 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
PHF 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
PHF Volume:	909	43	96	34	78	435	38	657	549	90	1892	27
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	909	43	96	34	78	435	38	657	549	90	1892	27
PCE 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
MLF 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
FinalVolume:	909	43	96	34	78	435	38	657	549	90	1892	27
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	0.95	0.78	0.91	0.99	0.78	0.87	1.00	0.78	0.87	1.00	0.78
Lanes:	2.89	0.11	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	4338	205	1488	1724	1872	1488	1663	5700	1488	1663	3800	1488
Capacity Analysis Module:												
Vol/Sat:	0.21	0.21	0.06	0.02	0.04	0.29	0.02	0.12	0.37	0.05	0.50	0.02
Crit Moves:	****					****	****				****	
Green/Cycle:	0.13	0.13	0.13	0.17	0.17	0.17	0.04	0.58	0.70	0.06	0.59	0.59
Volume/Cap:	1.67	1.67	0.52	0.11	0.24	1.67	0.59	0.20	0.53	0.96	0.84	0.03
Delay/Veh:	389.4	389	76.1	62.6	64.2	393.6	98.4	18.2	13.1	165.3	32.4	15.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	389.4	389	76.1	62.6	64.2	393.6	98.4	18.2	13.1	165.3	32.4	15.1
LOS by Move:	F	F	E	E	E	F	F	B	B	F	C	B
HCM2kAvgQ:	40	40	6	2	4	50	3	5	15	8	43	1

Note: Queue reported is the number of cars per lane.

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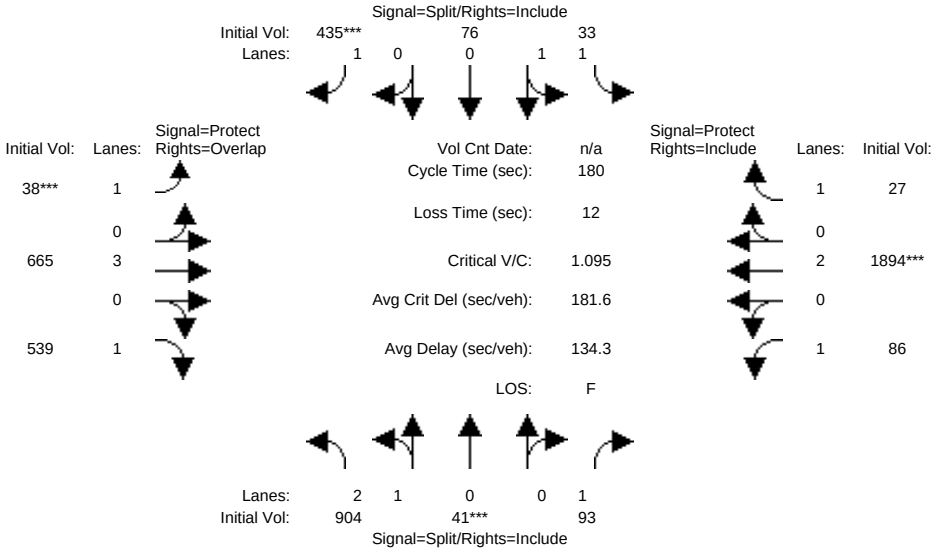
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background + Project AM

Intersection #3: MONTAGUE EXPWY/TRADE ZONE BLVD



Street Name:	Trade Zone Blvd						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	10	10	10	10	10	10	7	100	10	7	107	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	904	41	93	33	76	435	38	665	539	86	1894	27
Growth 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
Initial Bse:	904	41	93	33	76	435	38	665	539	86	1894	27
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	904	41	93	33	76	435	38	665	539	86	1894	27
User 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
PHF 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
PHF Volume:	904	41	93	33	76	435	38	665	539	86	1894	27
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	904	41	93	33	76	435	38	665	539	86	1894	27
PCE 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
MLF 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
FinalVolume:	904	41	93	33	76	435	38	665	539	86	1894	27
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	0.95	0.78	0.91	0.99	0.78	0.87	1.00	0.78	0.87	1.00	0.78
Lanes:	2.89	0.11	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	4344	197	1488	1724	1872	1488	1663	5700	1488	1663	3800	1488
Capacity Analysis Module:												
Vol/Sat:	0.21	0.21	0.06	0.02	0.04	0.29	0.02	0.12	0.36	0.05	0.50	0.02
Crit Moves:		****				****	****				****	
Green/Cycle:	0.12	0.12	0.12	0.18	0.18	0.18	0.04	0.58	0.70	0.05	0.59	0.59
Volume/Cap:	1.67	1.67	0.50	0.11	0.23	1.67	0.59	0.20	0.51	0.96	0.84	0.03
Delay/Veh:	387.3	387	75.7	62.5	64.1	391.4	98.4	18.1	12.8	166.1	32.5	15.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	387.3	387	75.7	62.5	64.1	391.4	98.4	18.1	12.8	166.1	32.5	15.1
LOS by Move:	F	F	E	E	E	F	F	B	B	F	C	B
HCM2kAvgQ:	40	40	6	2	4	50	3	6	15	8	43	1

Note: Queue reported is the number of cars per lane.

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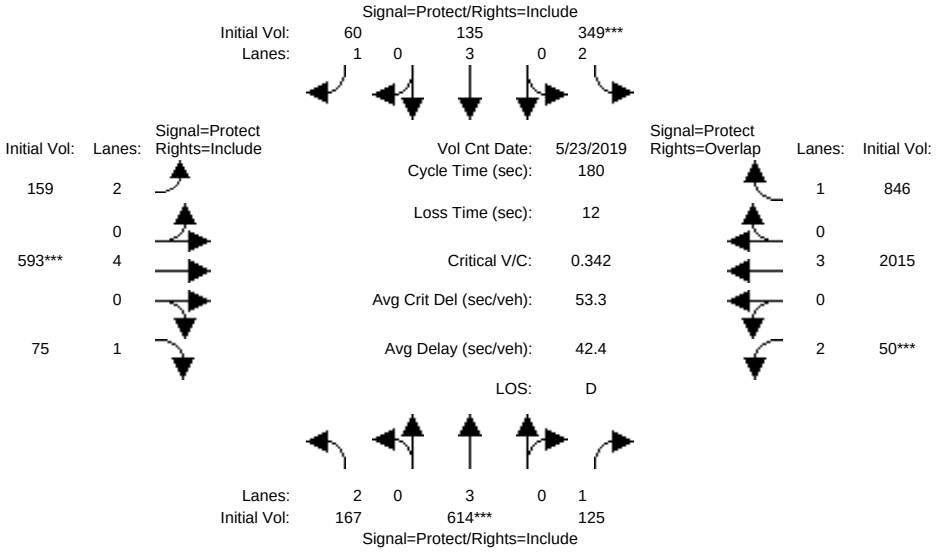
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing AM

Intersection #4: MONTAGUE EXPWY/CAPITOL AVE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	100	10	7	90	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 23 May 2019 << 7:00-9:00												
Base Vol:	167	614	125	349	135	60	159	593	75	50	2015	846
Growth 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
Initial Bse:	167	614	125	349	135	60	159	593	75	50	2015	846
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	167	614	125	349	135	60	159	593	75	50	2015	846
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.82	1.00
PHF 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
PHF Volume:	167	614	125	349	135	60	159	593	75	50	1652	846
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	167	614	125	349	135	60	159	593	75	50	1652	846
PCE 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
MLF 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
FinalVolume:	167	614	125	349	135	60	159	593	75	50	1652	846
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	1.00	0.76	0.79	1.00	0.78	0.79	1.00	0.76	0.79	1.00	0.77
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	4.00	1.00	2.00	3.00	1.00
Final Sat.:	2993	5700	1445	2993	5700	1488	2993	7600	1446	2993	5700	1468
Capacity Analysis Module:												
Vol/Sat:	0.06	0.11	0.09	0.12	0.02	0.04	0.05	0.08	0.05	0.02	0.29	0.58
Crit Moves:		****		****				****		****		
Green/Cycle:	0.17	0.16	0.16	0.18	0.17	0.17	0.06	0.56	0.56	0.04	0.54	0.71
Volume/Cap:	0.33	0.66	0.53	0.66	0.14	0.24	0.93	0.14	0.09	0.43	0.54	0.81
Delay/Veh:	66.1	72.5	71.4	72.3	63.7	65.2	133.4	19.3	18.8	87.1	27.3	22.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	66.1	72.5	71.4	72.3	63.7	65.2	133.4	19.3	18.8	87.1	27.3	22.2
LOS by Move:	E	E	E	E	E	E	F	B	B	F	C	C
HCM2kAvgQ:	5	11	7	12	2	3	8	4	2	2	19	35

Note: Queue reported is the number of cars per lane.

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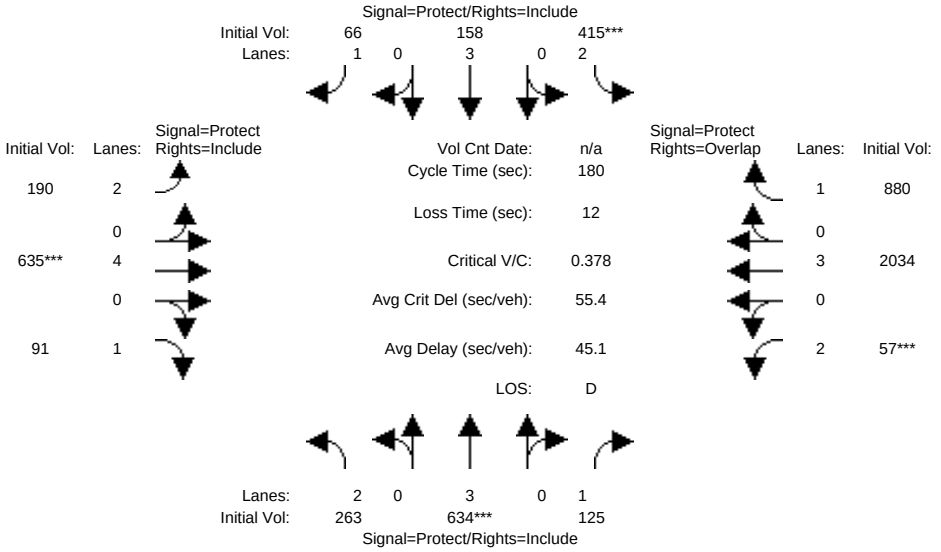
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background AM

Intersection #4: MONTAGUE EXPWY/CAPITOL AVE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	100	10	7	90	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	263	634	125	415	158	66	190	635	91	57	2034	880
Growth 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
Initial Bse:	263	634	125	415	158	66	190	635	91	57	2034	880
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	263	634	125	415	158	66	190	635	91	57	2034	880
User 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
PHF 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
PHF Volume:	263	634	125	415	158	66	190	635	91	57	2034	880
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	263	634	125	415	158	66	190	635	91	57	2034	880
PCE 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
MLF 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
FinalVolume:	263	634	125	415	158	66	190	635	91	57	2034	880
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	4.00	1.00	2.00	3.00	1.00
Final Sat.:	2993	5700	1488	2993	5700	1488	2993	7600	1488	2993	5700	1488
Capacity Analysis Module:												
Vol/Sat:	0.09	0.11	0.08	0.14	0.03	0.04	0.06	0.08	0.06	0.02	0.36	0.59
Crit Moves:		****		****				****		****		
Green/Cycle:	0.21	0.15	0.15	0.19	0.13	0.13	0.07	0.56	0.56	0.04	0.53	0.72
Volume/Cap:	0.42	0.74	0.56	0.74	0.21	0.34	0.95	0.15	0.11	0.49	0.68	0.83
Delay/Veh:	62.4	76.4	73.9	74.0	70.0	72.1	132.3	19.4	19.0	88.0	31.9	23.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	62.4	76.4	73.9	74.0	70.0	72.1	132.3	19.4	19.0	88.0	31.9	23.3
LOS by Move:	E	E	E	E	E	E	F	B	B	F	C	C
HCM2kAvgQ:	8	12	7	14	3	4	9	4	2	2	27	37

Note: Queue reported is the number of cars per lane.

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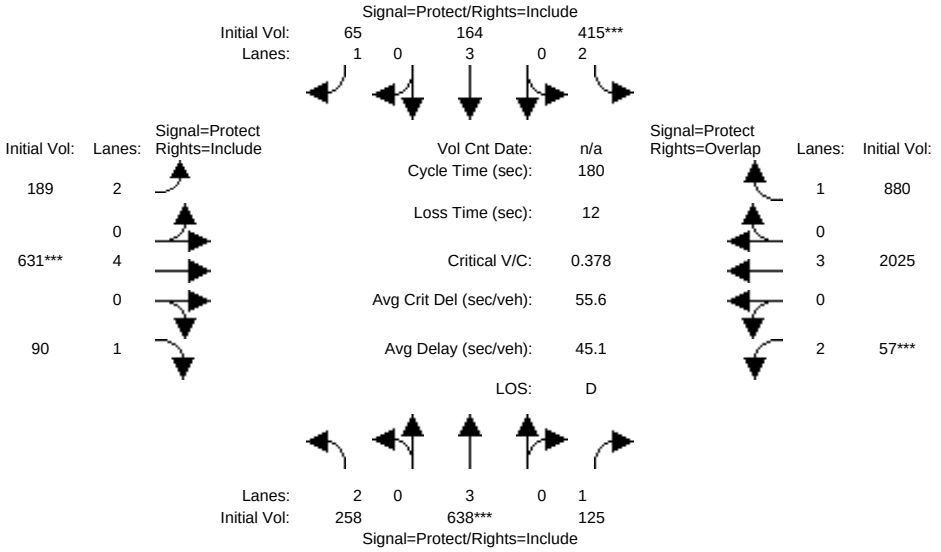
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background + Project AM

Intersection #4: MONTAGUE EXPWY/CAPITOL AVE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	100	10	7	90	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	258	638	125	415	164	65	189	631	90	57	2025	880
Growth 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
Initial Bse:	258	638	125	415	164	65	189	631	90	57	2025	880
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	258	638	125	415	164	65	189	631	90	57	2025	880
User 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
PHF 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
PHF Volume:	258	638	125	415	164	65	189	631	90	57	2025	880
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	258	638	125	415	164	65	189	631	90	57	2025	880
PCE 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
MLF 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
FinalVolume:	258	638	125	415	164	65	189	631	90	57	2025	880
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	4.00	1.00	2.00	3.00	1.00
Final Sat.:	2993	5700	1488	2993	5700	1488	2993	7600	1488	2993	5700	1488
Capacity Analysis Module:												
Vol/Sat:	0.09	0.11	0.08	0.14	0.03	0.04	0.06	0.08	0.06	0.02	0.36	0.59
Crit Moves:		****		****				****		****		
Green/Cycle:	0.21	0.15	0.15	0.19	0.13	0.13	0.07	0.56	0.56	0.04	0.53	0.72
Volume/Cap:	0.42	0.74	0.56	0.74	0.22	0.33	0.95	0.15	0.11	0.49	0.67	0.83
Delay/Veh:	62.5	76.4	73.8	74.2	69.8	71.8	132.4	19.4	19.0	88.0	31.7	23.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	62.5	76.4	73.8	74.2	69.8	71.8	132.4	19.4	19.0	88.0	31.7	23.3
LOS by Move:	E	E	E	E	E	E	F	B	B	F	C	C
HCM2kAvgQ:	7	12	7	14	3	4	9	4	2	2	27	37

Note: Queue reported is the number of cars per lane.

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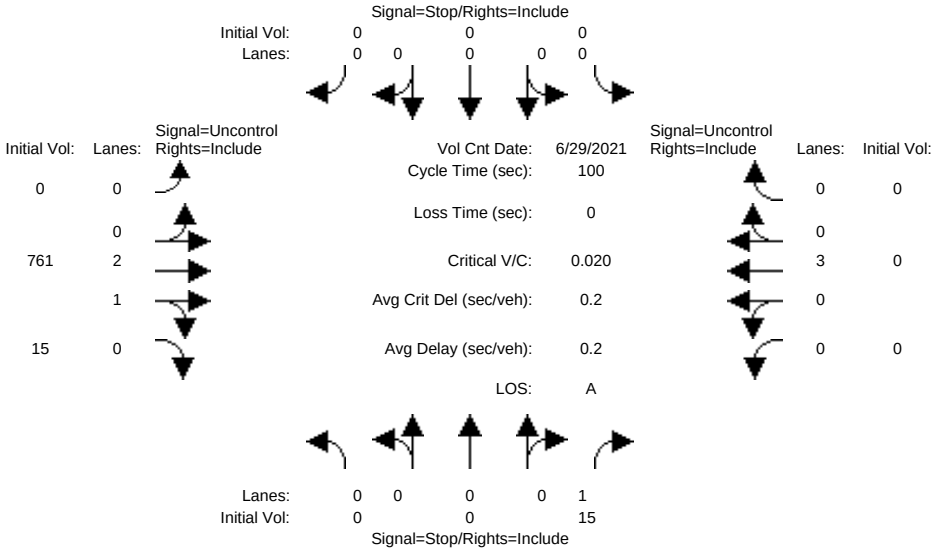
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing AM

Intersection #5: Montague Expressway/Sango Ct



Street Name:	Sango Ct						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module: >> Count Date: 29 Jun 2021 <<												
Base Vol:	0	0	15	0	0	0	0	761	15	0	0	0
Growth 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
Initial Bse:	0	0	15	0	0	0	0	761	15	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	15	0	0	0	0	761	15	0	0	0
User 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
PHF 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
PHF Volume:	0	0	15	0	0	0	0	761	15	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	15	0	0	0	0	761	15	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	261	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	744	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	744	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	0.02	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	0.1	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	9.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	A	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	9.9			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	A			*			*			*		

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

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Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	15	0	0	0	0	761	15	0	0	0
ApproachDel:	9.9			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.0]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=15]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=791]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	15	0	0	0	0	761	15	0	0	0

Major Street Volume: 776
Minor Approach Volume: 15
Minor Approach Volume Threshold: 372

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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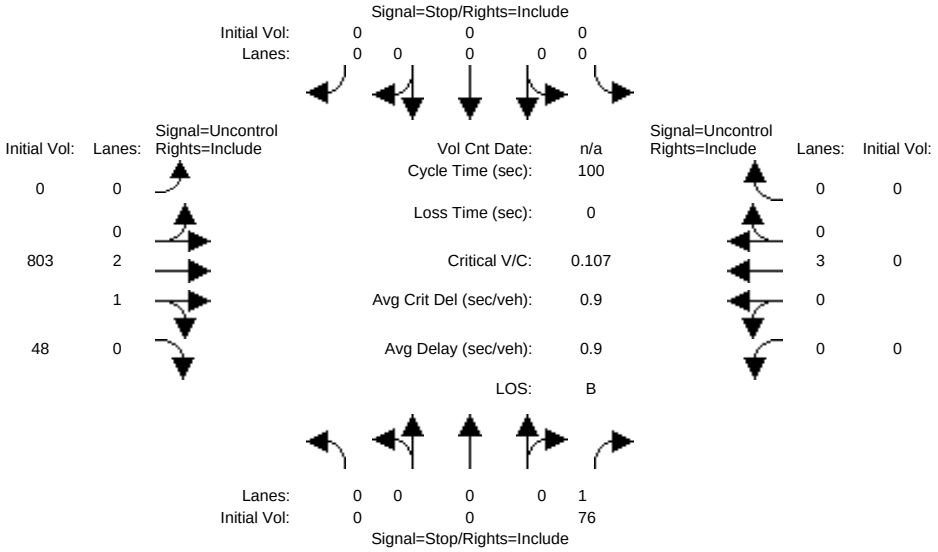
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background AM

Intersection #5: Montague Expressway/Sango Ct



Street Name:	Sango Ct						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	76	0	0	0	0	803	48	0	0	0
Growth 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
Initial Bse:	0	0	76	0	0	0	0	803	48	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	76	0	0	0	0	803	48	0	0	0
User 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
PHF 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
PHF Volume:	0	0	76	0	0	0	0	803	48	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	76	0	0	0	0	803	48	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	292	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	711	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	711	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	0.11	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	0.4	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	10.7	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	10.7			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

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Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	76	0	0	0	0	803	48	0	0	0
ApproachDel:	10.7			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=76]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=927]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	76	0	0	0	0	803	48	0	0	0

Major Street Volume: 851
Minor Approach Volume: 76
Minor Approach Volume Threshold: 340

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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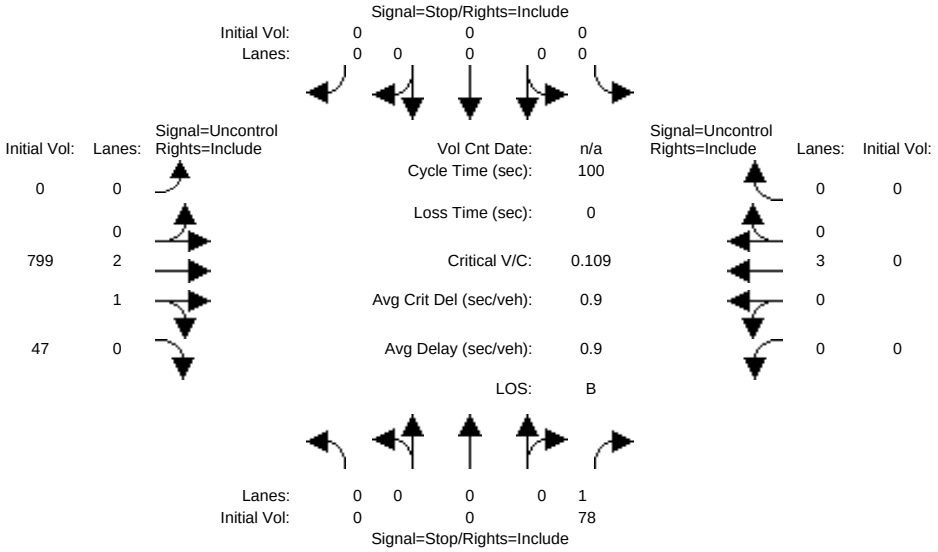
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background + Project AM

Intersection #5: Montague Expressway/Sango Ct



Street Name:	Sango Ct						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	78	0	0	0	0	799	47	0	0	0
Growth 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
Initial Bse:	0	0	78	0	0	0	0	799	47	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	78	0	0	0	0	799	47	0	0	0
User 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
PHF 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
PHF Volume:	0	0	78	0	0	0	0	799	47	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	78	0	0	0	0	799	47	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	290	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	713	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	713	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	0.11	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	0.4	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	10.7	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	10.7			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

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Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	78	0	0	0	0	799	47	0	0	0
ApproachDel:	10.7			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.2]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=78]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=924]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	78	0	0	0	0	799	47	0	0	0

Major Street Volume: 846
Minor Approach Volume: 78
Minor Approach Volume Threshold: 342

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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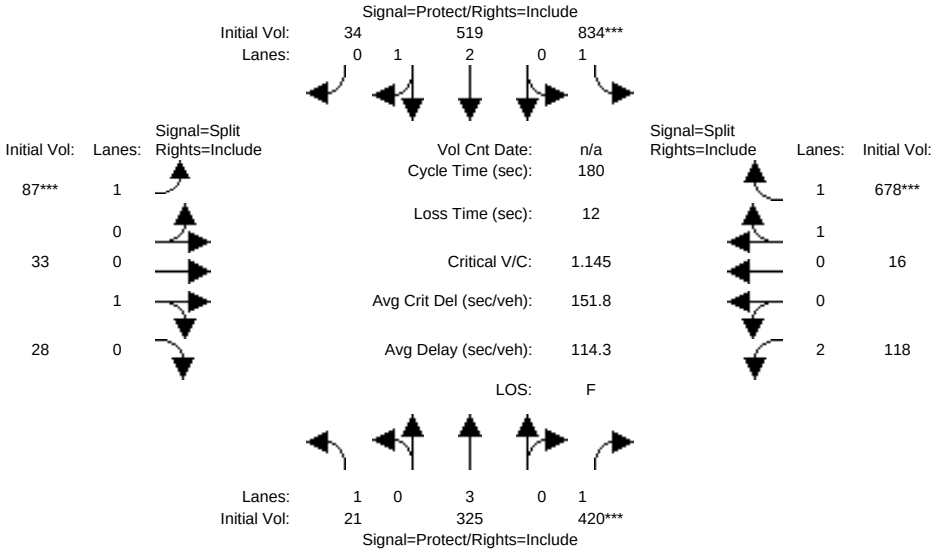
Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative AM

Intersection #1: CAPITOL AVE/MILPITAS BLVD



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	21	325	420	834	519	34	87	33	28	118	16	678
Growth 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
Initial Bse:	21	325	420	834	519	34	87	33	28	118	16	678
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	21	325	420	834	519	34	87	33	28	118	16	678
User 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
PHF 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
PHF Volume:	21	325	420	834	519	34	87	33	28	118	16	678
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	21	325	420	834	519	34	87	33	28	118	16	678
PCE 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
MLF 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
FinalVolume:	21	325	420	834	519	34	87	33	28	118	16	678
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	1.00	0.78	0.87	0.99	0.91	0.87	0.93	0.86	0.79	0.85	0.79
Lanes:	1.00	3.00	1.00	1.00	2.80	0.20	1.00	0.52	0.48	2.00	0.04	1.96
Final Sat.:	1663	5700	1488	1663	5274	345	1663	921	781	2993	69	2922
Capacity Analysis Module:												
Vol/Sat:	0.01	0.06	0.28	0.50	0.10	0.10	0.05	0.04	0.04	0.04	0.23	0.23
Crit Moves:			****	****			****					****
Green/Cycle:	0.19	0.24	0.24	0.43	0.49	0.49	0.06	0.06	0.06	0.20	0.20	0.20
Volume/Cap:	0.07	0.23	1.16	1.16	0.20	0.20	0.94	0.65	0.65	0.20	1.16	1.16
Delay/Veh:	59.6	54.6	165.5	137.0	26.5	26.5	159.2	97.6	97.6	60.1	161	160.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	59.6	54.6	165.5	137.0	26.5	26.5	159.2	97.6	97.6	60.1	161	160.5
LOS by Move:	E	D	F	F	C	C	F	F	F	E	F	F
HCM2kAvgQ:	1	5	35	66	6	6	8	4	4	3	30	30

Note: Queue reported is the number of cars per lane.

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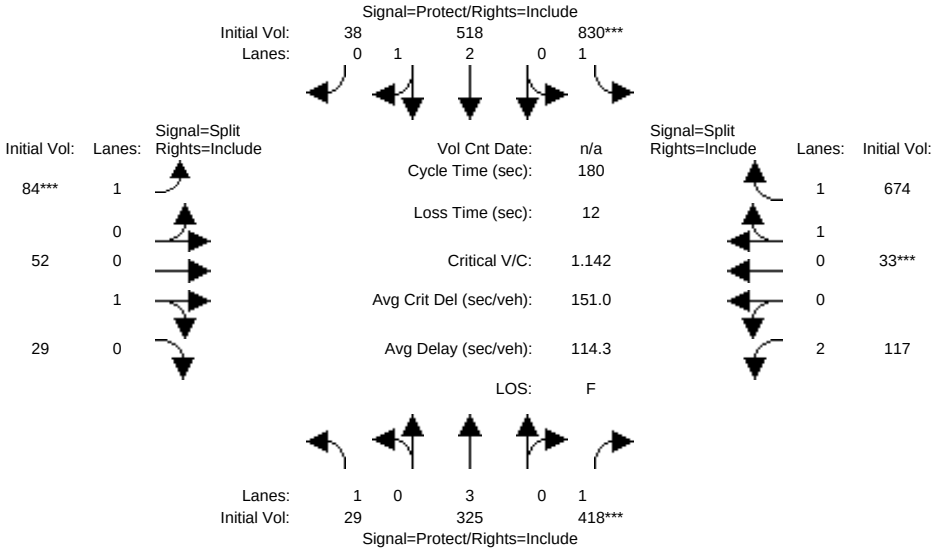
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative + Project AM

Intersection #1: CAPITOL AVE/MILPITAS BLVD



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	29	325	418	830	518	38	84	52	29	117	33	674
Growth 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
Initial Bse:	29	325	418	830	518	38	84	52	29	117	33	674
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	29	325	418	830	518	38	84	52	29	117	33	674
User 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
PHF 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
PHF Volume:	29	325	418	830	518	38	84	52	29	117	33	674
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	29	325	418	830	518	38	84	52	29	117	33	674
PCE 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
MLF 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
FinalVolume:	29	325	418	830	518	38	84	52	29	117	33	674
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	1.00	0.78	0.87	0.99	0.91	0.87	0.95	0.87	0.79	0.86	0.79
Lanes:	1.00	3.00	1.00	1.00	2.78	0.22	1.00	0.62	0.38	2.00	0.09	1.91
Final Sat.:	1663	5700	1488	1663	5227	383	1663	1120	624	2993	141	2870
Capacity Analysis Module:												
Vol/Sat:	0.02	0.06	0.28	0.50	0.10	0.10	0.05	0.05	0.05	0.04	0.23	0.23
Crit Moves:			****	****			****				****	
Green/Cycle:	0.19	0.24	0.24	0.43	0.48	0.48	0.06	0.06	0.06	0.20	0.20	0.20
Volume/Cap:	0.09	0.23	1.16	1.16	0.20	0.20	0.91	0.84	0.84	0.19	1.16	1.16
Delay/Veh:	60.2	54.8	165.2	136.8	26.6	26.6	149.2	128	128.0	59.6	160	159.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	60.2	54.8	165.2	136.8	26.6	26.6	149.2	128	128.0	59.6	160	159.6
LOS by Move:	E	D	F	F	C	C	F	F	F	E	F	F
HCM2kAvgQ:	1	5	35	66	6	6	7	6	6	3	30	30

Note: Queue reported is the number of cars per lane.

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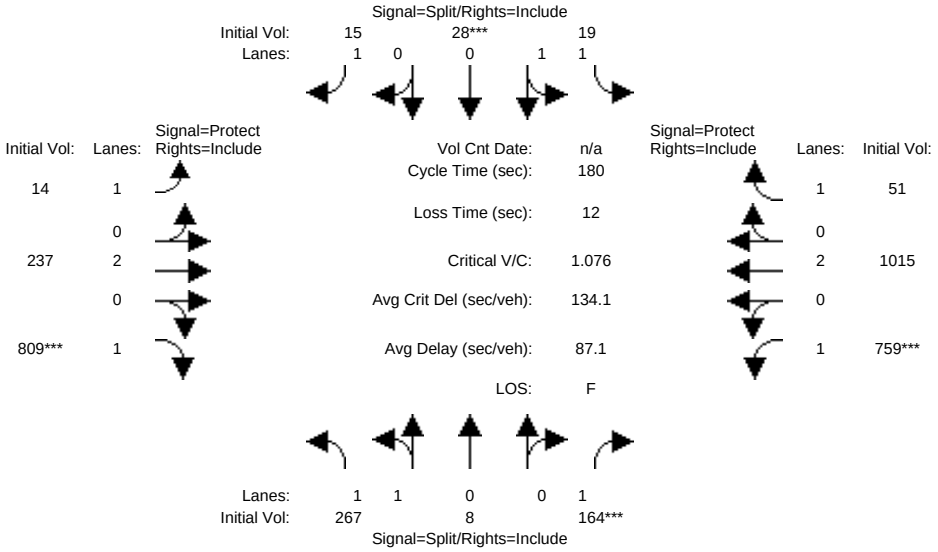
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative AM

Intersection #2: LUNDY/TRADE ZONE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	267	8	164	19	28	15	14	237	809	759	1015	51
Growth 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
Initial Bse:	267	8	164	19	28	15	14	237	809	759	1015	51
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	267	8	164	19	28	15	14	237	809	759	1015	51
User 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
PHF 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
PHF Volume:	267	8	164	19	28	15	14	237	809	759	1015	51
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	267	8	164	19	28	15	14	237	809	759	1015	51
PCE 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
MLF 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
FinalVolume:	267	8	164	19	28	15	14	237	809	759	1015	51
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.95	0.05	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	3406	102	1750	1750	1900	1750	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.08	0.08	0.09	0.01	0.01	0.01	0.01	0.06	0.46	0.43	0.27	0.03
Crit Moves:			****		****				****	****		
Green/Cycle:	0.08	0.08	0.08	0.06	0.06	0.06	0.10	0.41	0.41	0.38	0.69	0.69
Volume/Cap:	0.94	0.94	1.13	0.20	0.27	0.15	0.08	0.15	1.13	1.13	0.39	0.04
Delay/Veh:	122.1	122	195.5	83.0	85.1	84.3	74.2	33.6	127.6	130.8	12.0	8.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	122.1	122	195.5	83.0	85.1	84.3	74.2	33.6	127.6	130.8	12.0	8.8
LOS by Move:	F	F	F	F	F	F	E	C	F	F	B	A
HCM2kAvgQ:	11	11	15	1	2	1	1	4	62	59	11	1

Note: Queue reported is the number of cars per lane.

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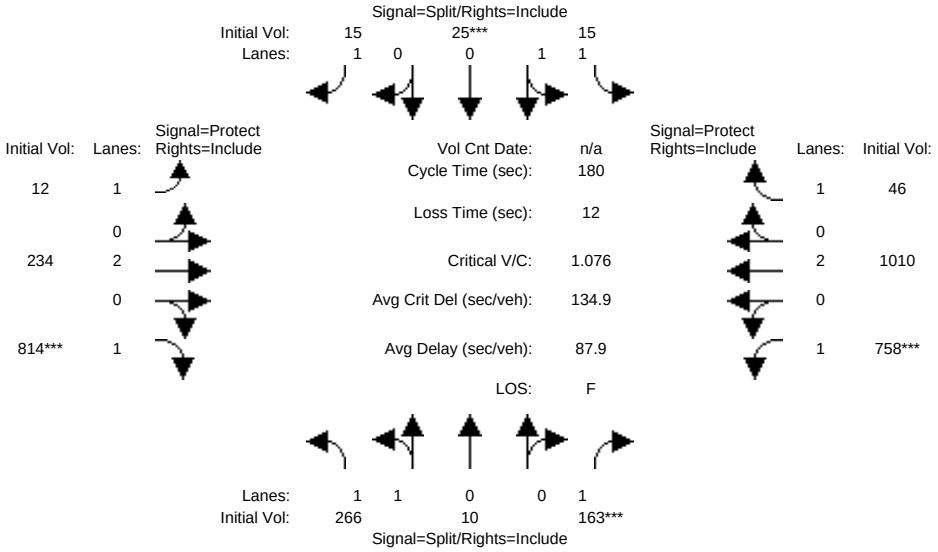
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative + Project AM

Intersection #2: LUNDY/TRADE ZONE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	266	10	163	15	25	15	12	234	814	758	1010	46
Growth 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
Initial Bse:	266	10	163	15	25	15	12	234	814	758	1010	46
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	266	10	163	15	25	15	12	234	814	758	1010	46
User 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
PHF 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
PHF Volume:	266	10	163	15	25	15	12	234	814	758	1010	46
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	266	10	163	15	25	15	12	234	814	758	1010	46
PCE 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
MLF 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
FinalVolume:	266	10	163	15	25	15	12	234	814	758	1010	46
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.93	0.07	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	3383	127	1750	1750	1900	1750	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.08	0.08	0.09	0.01	0.01	0.01	0.01	0.06	0.47	0.43	0.27	0.03
Crit Moves:			****		****				****	****		
Green/Cycle:	0.08	0.08	0.08	0.06	0.06	0.06	0.10	0.41	0.41	0.38	0.69	0.69
Volume/Cap:	0.95	0.95	1.13	0.15	0.24	0.15	0.07	0.15	1.13	1.13	0.38	0.04
Delay/Veh:	124.5	124	196.5	82.2	84.6	84.3	73.9	33.4	128.1	131.6	11.9	8.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	124.5	124	196.5	82.2	84.6	84.3	73.9	33.4	128.1	131.6	11.9	8.7
LOS by Move:	F	F	F	F	F	F	E	C	F	F	B	A
HCM2kAvgQ:	11	11	15	1	1	1	1	4	63	59	11	1

Note: Queue reported is the number of cars per lane.

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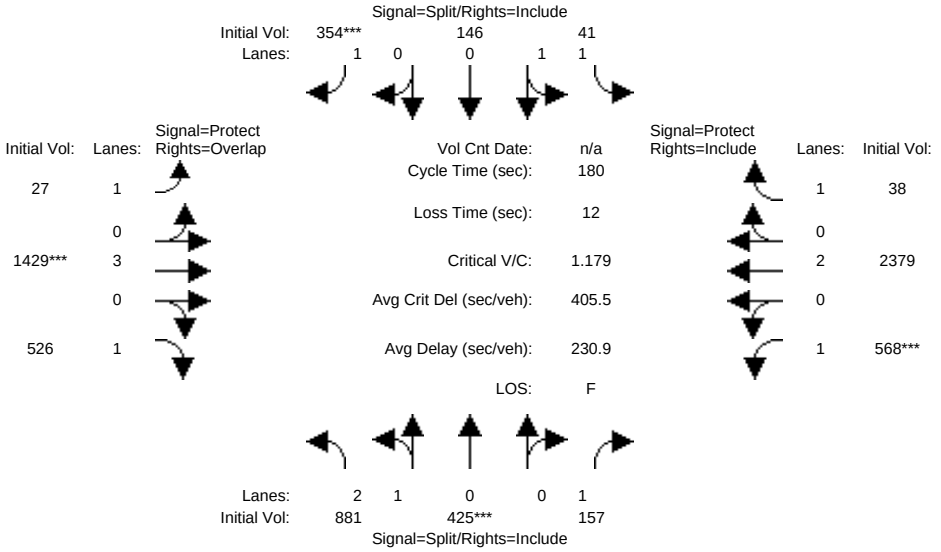
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative AM

Intersection #3: MONTAGUE EXPWY/TRADE ZONE BLVD



Street Name:	Trade Zone Blvd						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	10	10	10	10	10	10	7	100	10	7	107	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	881	425	157	41	146	354	27	1429	526	568	2379	38
Growth 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
Initial Bse:	881	425	157	41	146	354	27	1429	526	568	2379	38
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	881	425	157	41	146	354	27	1429	526	568	2379	38
User 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
PHF 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
PHF Volume:	881	425	157	41	146	354	27	1429	526	568	2379	38
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	881	425	157	41	146	354	27	1429	526	568	2379	38
PCE 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
MLF 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
FinalVolume:	881	425	157	41	146	354	27	1429	526	568	2379	38
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.80	0.97	0.78	0.91	0.99	0.78	0.87	1.00	0.78	0.87	1.00	0.78
Lanes:	2.14	0.86	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	3264	1575	1488	1731	1879	1488	1663	5700	1488	1663	3800	1488
Capacity Analysis Module:												
Vol/Sat:	0.27	0.27	0.11	0.02	0.08	0.24	0.02	0.25	0.35	0.34	0.63	0.03
Crit Moves:		****				****		****		****		
Green/Cycle:	0.12	0.12	0.12	0.11	0.11	0.11	0.04	0.56	0.68	0.15	0.67	0.67
Volume/Cap:	2.25	2.25	0.88	0.22	0.73	2.25	0.39	0.45	0.52	2.25	0.94	0.04
Delay/Veh:	646.7	647	113.7	73.8	88.6	662.3	87.7	23.8	15.2	650.9	34.6	10.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	646.7	647	113.7	73.8	88.6	662.3	87.7	23.8	15.2	650.9	34.6	10.3
LOS by Move:	F	F	F	E	F	F	F	C	B	F	C	B
HCM2kAvgQ:	61	61	12	2	9	48	2	15	15	75	61	1

Note: Queue reported is the number of cars per lane.

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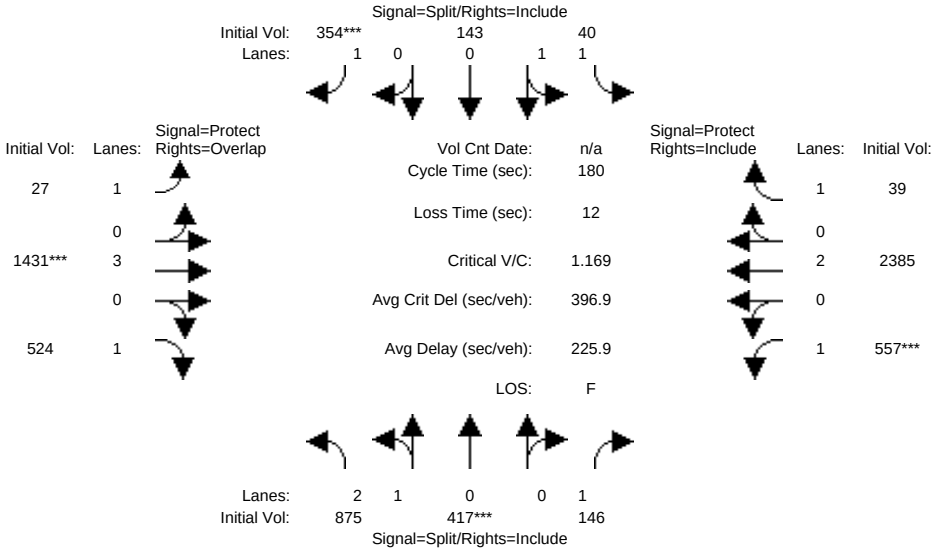
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative + Project AM

Intersection #3: MONTAGUE EXPWY/TRADE ZONE BLVD



Street Name:	Trade Zone Blvd						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	10	10	10	10	10	10	7	100	10	7	107	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	875	417	146	40	143	354	27	1431	524	557	2385	39
Growth 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
Initial Bse:	875	417	146	40	143	354	27	1431	524	557	2385	39
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	875	417	146	40	143	354	27	1431	524	557	2385	39
User 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
PHF 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
PHF Volume:	875	417	146	40	143	354	27	1431	524	557	2385	39
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	875	417	146	40	143	354	27	1431	524	557	2385	39
PCE 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
MLF 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
FinalVolume:	875	417	146	40	143	354	27	1431	524	557	2385	39
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.80	0.97	0.78	0.91	0.99	0.78	0.87	1.00	0.78	0.87	1.00	0.78
Lanes:	2.15	0.85	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	3275	1561	1488	1731	1879	1488	1663	5700	1488	1663	3800	1488
Capacity Analysis Module:												
Vol/Sat:	0.27	0.27	0.10	0.02	0.08	0.24	0.02	0.25	0.35	0.34	0.63	0.03
Crit Moves:		****				****		****		****		
Green/Cycle:	0.12	0.12	0.12	0.11	0.11	0.11	0.04	0.56	0.68	0.15	0.66	0.66
Volume/Cap:	2.22	2.22	0.82	0.22	0.71	2.22	0.39	0.45	0.52	2.22	0.94	0.04
Delay/Veh:	635.6	636	101.8	73.6	86.6	651.0	87.8	23.8	15.1	640.0	35.3	10.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	635.6	636	101.8	73.6	86.6	651.0	87.8	23.8	15.1	640.0	35.3	10.4
LOS by Move:	F	F	F	E	F	F	F	C	B	F	D	B
HCM2kAvgQ:	60	60	10	2	9	47	2	15	15	74	62	1

Note: Queue reported is the number of cars per lane.

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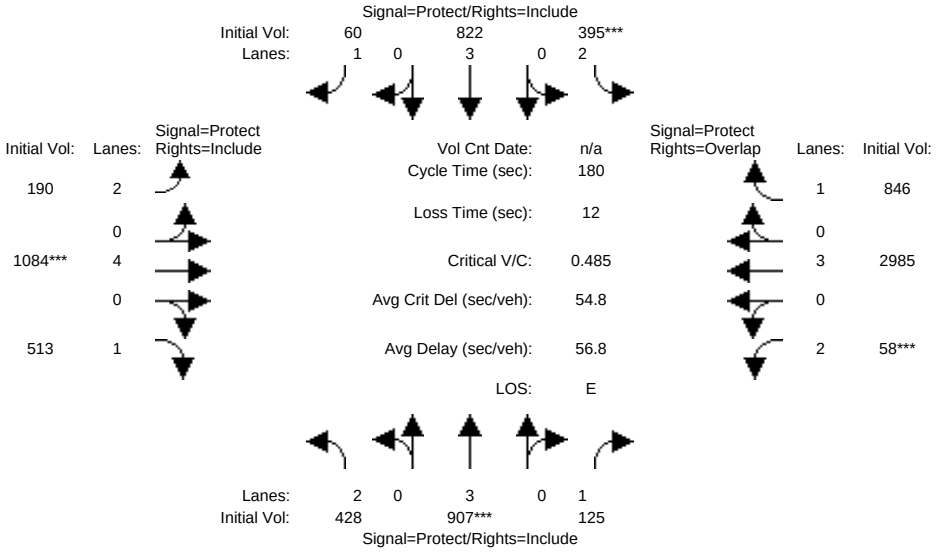
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative AM

Intersection #4: MONTAGUE EXPWY/CAPITOL AVE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	100	10	7	90	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	428	907	125	395	822	60	190	1084	513	58	2985	846
Growth 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
Initial Bse:	428	907	125	395	822	60	190	1084	513	58	2985	846
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	428	907	125	395	822	60	190	1084	513	58	2985	846
User 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
PHF 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
PHF Volume:	428	907	125	395	822	60	190	1084	513	58	2985	846
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	428	907	125	395	822	60	190	1084	513	58	2985	846
PCE 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
MLF 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
FinalVolume:	428	907	125	395	822	60	190	1084	513	58	2985	846
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	4.00	1.00	2.00	3.00	1.00
Final Sat.:	2993	5700	1488	2993	5700	1488	2993	7600	1488	2993	5700	1488
Capacity Analysis Module:												
Vol/Sat:	0.14	0.16	0.08	0.13	0.14	0.04	0.06	0.14	0.34	0.02	0.52	0.57
Crit Moves:		****		****				****		****		
Green/Cycle:	0.17	0.19	0.19	0.15	0.17	0.17	0.06	0.56	0.56	0.04	0.53	0.68
Volume/Cap:	0.85	0.86	0.45	0.86	0.85	0.24	0.99	0.26	0.62	0.50	0.99	0.83
Delay/Veh:	85.2	78.3	66.4	89.2	79.5	65.1	145.3	20.8	28.6	88.1	55.3	26.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	85.2	78.3	66.4	89.2	79.5	65.1	145.3	20.8	28.6	88.1	55.3	26.8
LOS by Move:	F	E	E	F	E	E	F	C	C	F	E	C
HCM2kAvgQ:	16	18	7	15	17	3	9	7	20	3	59	38

Note: Queue reported is the number of cars per lane.

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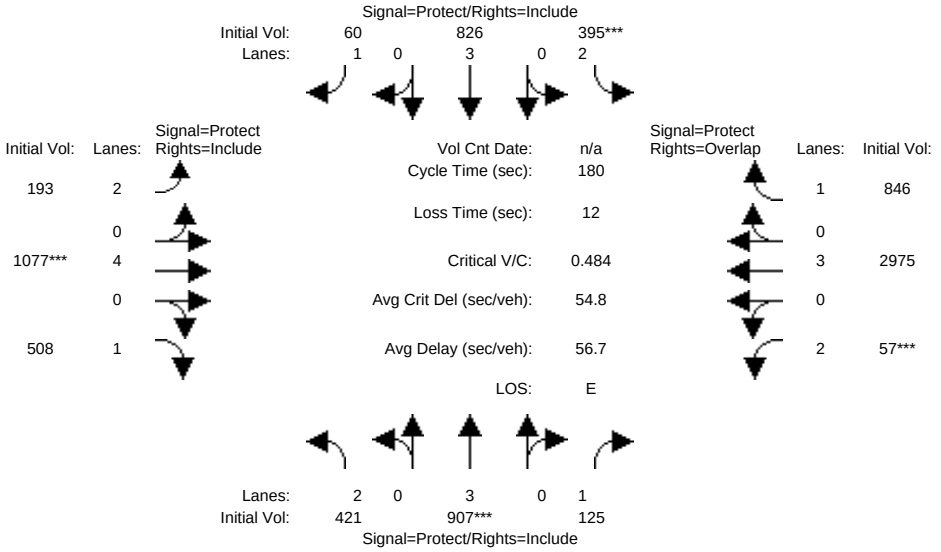
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative + Project AM

Intersection #4: MONTAGUE EXPWY/CAPITOL AVE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	100	10	7	90	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	421	907	125	395	826	60	193	1077	508	57	2975	846
Growth 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
Initial Bse:	421	907	125	395	826	60	193	1077	508	57	2975	846
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	421	907	125	395	826	60	193	1077	508	57	2975	846
User 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
PHF 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
PHF Volume:	421	907	125	395	826	60	193	1077	508	57	2975	846
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	421	907	125	395	826	60	193	1077	508	57	2975	846
PCE 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
MLF 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
FinalVolume:	421	907	125	395	826	60	193	1077	508	57	2975	846
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	4.00	1.00	2.00	3.00	1.00
Final Sat.:	2993	5700	1488	2993	5700	1488	2993	7600	1488	2993	5700	1488
Capacity Analysis Module:												
Vol/Sat:	0.14	0.16	0.08	0.13	0.14	0.04	0.06	0.14	0.34	0.02	0.52	0.57
Crit Moves:		****		****				****		****		
Green/Cycle:	0.17	0.19	0.19	0.15	0.17	0.17	0.07	0.56	0.56	0.04	0.53	0.68
Volume/Cap:	0.84	0.86	0.45	0.86	0.84	0.23	0.99	0.26	0.61	0.49	0.99	0.83
Delay/Veh:	85.0	78.3	66.4	89.2	78.9	64.8	144.3	20.7	28.4	88.0	55.1	27.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	85.0	78.3	66.4	89.2	78.9	64.8	144.3	20.7	28.4	88.0	55.1	27.0
LOS by Move:	F	E	E	F	E	E	F	C	C	F	E	C
HCM2kAvgQ:	16	18	7	15	17	3	10	7	20	2	59	38

Note: Queue reported is the number of cars per lane.

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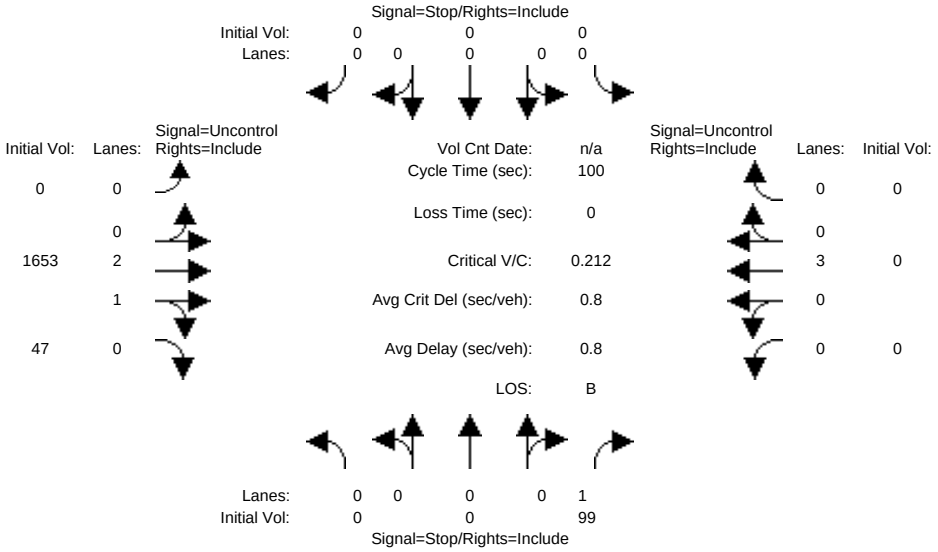
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative AM

Intersection #5: Montague Expressway/Sango Ct



Street Name:	Sango Ct						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	99	0	0	0	0	1653	47	0	0	0
Growth 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
Initial Bse:	0	0	99	0	0	0	0	1653	47	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	99	0	0	0	0	1653	47	0	0	0
User 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
PHF 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
PHF Volume:	0	0	99	0	0	0	0	1653	47	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	99	0	0	0	0	1653	47	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	575	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	467	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	467	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	0.21	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	0.8	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	14.8	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	14.8			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

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Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	99	0	0	0	0	1653	47	0	0	0
ApproachDel:	14.8			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=99]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=1799]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	99	0	0	0	0	1653	47	0	0	0

Major Street Volume: 1700
Minor Approach Volume: 99
Minor Approach Volume Threshold: 102

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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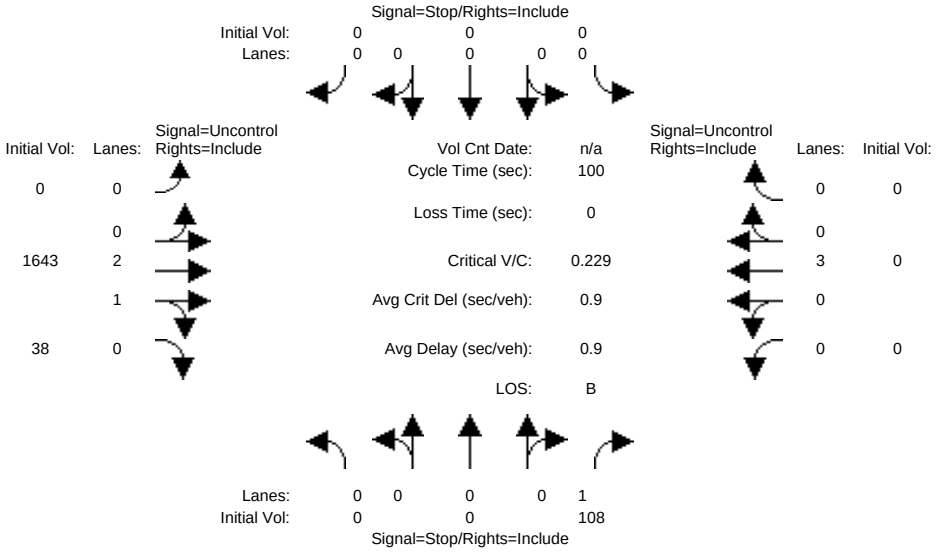
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Project AM

Intersection #5: Montague Expressway/Sango Ct



Street Name:	Sango Ct						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	108	0	0	0	0	1643	38	0	0	0
Growth 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
Initial Bse:	0	0	108	0	0	0	0	1643	38	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	108	0	0	0	0	1643	38	0	0	0
User 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
PHF 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
PHF Volume:	0	0	108	0	0	0	0	1643	38	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	108	0	0	0	0	1643	38	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	567	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	472	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	472	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	0.23	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	0.9	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	14.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	14.9			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

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Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	108	0	0	0	0	1643	38	0	0	0
ApproachDel:	14.9			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.4]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=108]
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=1789]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	108	0	0	0	0	1643	38	0	0	0

Major Street Volume: 1681
Minor Approach Volume: 108
Minor Approach Volume Threshold: 106

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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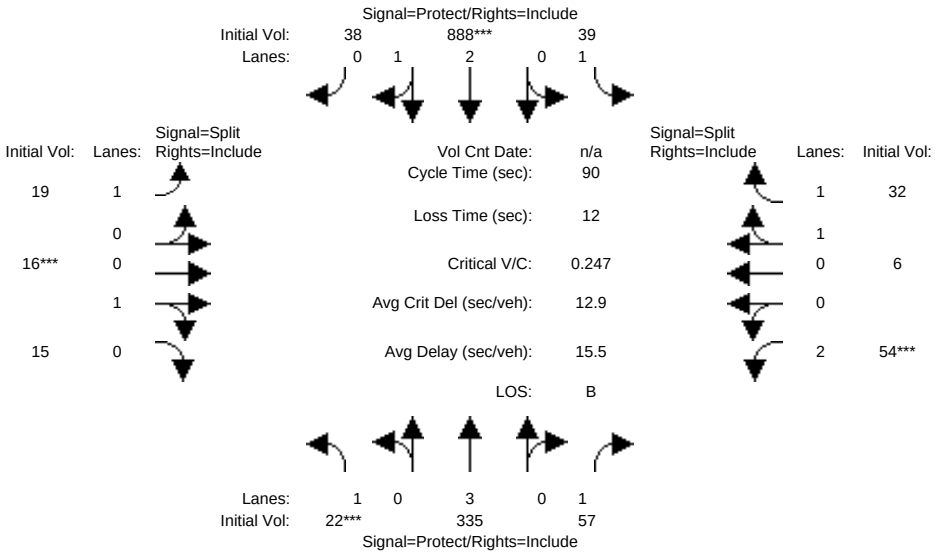
Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing PM

Intersection #1: CAPITOL AVE/MILPITAS BLVD



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	22	335	57	39	888	38	19	16	15	54	6	32
Growth 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
Initial Bse:	22	335	57	39	888	38	19	16	15	54	6	32
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	22	335	57	39	888	38	19	16	15	54	6	32
User 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
PHF 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
PHF Volume:	22	335	57	39	888	38	19	16	15	54	6	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	22	335	57	39	888	38	19	16	15	54	6	32
PCE 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
MLF 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
FinalVolume:	22	335	57	39	888	38	19	16	15	54	6	32
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	1.00	0.74	0.87	0.99	0.91	0.87	0.93	0.85	0.79	0.87	0.80
Lanes:	1.00	3.00	1.00	1.00	2.87	0.13	1.00	0.50	0.50	2.00	0.29	1.71
Final Sat.:	1663	5700	1406	1663	5414	232	1663	873	818	2993	487	2598
Capacity Analysis Module:												
Vol/Sat:	0.01	0.06	0.04	0.02	0.16	0.16	0.01	0.02	0.02	0.02	0.01	0.01
Crit Moves:	****				****			****			****	
Green/Cycle:	0.08	0.38	0.38	0.27	0.57	0.57	0.11	0.11	0.11	0.11	0.11	0.11
Volume/Cap:	0.17	0.16	0.11	0.09	0.29	0.29	0.10	0.16	0.16	0.16	0.11	0.11
Delay/Veh:	39.4	18.5	18.2	25.0	10.2	10.2	36.2	36.6	36.6	36.4	36.1	36.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	39.4	18.5	18.2	25.0	10.2	10.2	36.2	36.6	36.6	36.4	36.1	36.1
LOS by Move:	D	B	B	C	B	B	D	D	D	D	D	D
HCM2kAvgQ:	1	2	1	1	4	4	1	1	1	1	1	1

Note: Queue reported is the number of cars per lane.

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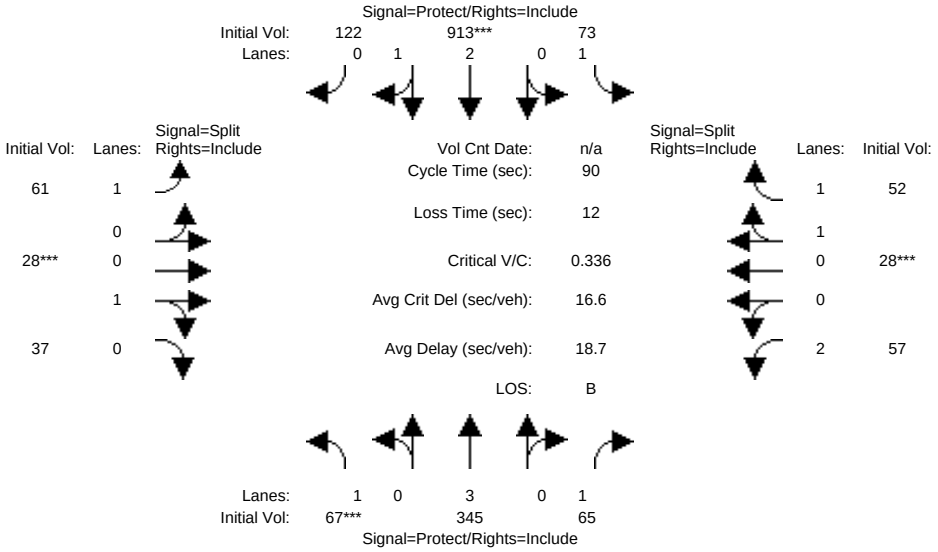
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background PM

Intersection #1: CAPITOL AVE/MILPITAS BLVD



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	67	345	65	73	913	122	61	28	37	57	28	52
Growth 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
Initial Bse:	67	345	65	73	913	122	61	28	37	57	28	52
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	67	345	65	73	913	122	61	28	37	57	28	52
User 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
PHF 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
PHF Volume:	67	345	65	73	913	122	61	28	37	57	28	52
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	67	345	65	73	913	122	61	28	37	57	28	52
PCE 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
MLF 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
FinalVolume:	67	345	65	73	913	122	61	28	37	57	28	52
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	1.00	0.78	0.87	0.98	0.90	0.87	0.92	0.84	0.79	0.90	0.83
Lanes:	1.00	3.00	1.00	1.00	2.62	0.38	1.00	0.41	0.59	2.00	0.66	1.34
Final Sat.:	1663	5700	1488	1663	4888	653	1663	714	944	2993	1138	2113
Capacity Analysis Module:												
Vol/Sat:	0.04	0.06	0.04	0.04	0.19	0.19	0.04	0.04	0.04	0.02	0.02	0.02
Crit Moves:	****				****			****			****	
Green/Cycle:	0.11	0.38	0.38	0.27	0.53	0.53	0.11	0.11	0.11	0.11	0.11	0.11
Volume/Cap:	0.35	0.16	0.12	0.17	0.35	0.35	0.33	0.35	0.35	0.17	0.22	0.22
Delay/Veh:	37.9	18.5	18.2	25.6	12.3	12.3	37.9	38.2	38.2	36.5	36.8	36.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	37.9	18.5	18.2	25.6	12.3	12.3	37.9	38.2	38.2	36.5	36.8	36.8
LOS by Move:	D	B	B	C	B	B	D	D	D	D	D	D
HCM2kAvgQ:	2	2	1	2	6	6	2	2	2	1	1	1

Note: Queue reported is the number of cars per lane.

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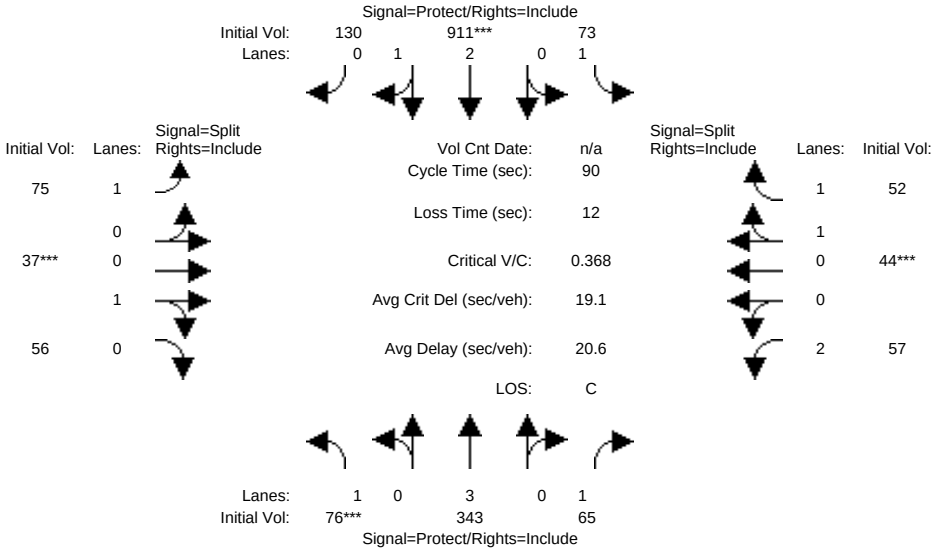
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background + Project PM

Intersection #1: CAPITOL AVE/MILPITAS BLVD



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	76	343	65	73	911	130	75	37	56	57	44	52
Growth 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
Initial Bse:	76	343	65	73	911	130	75	37	56	57	44	52
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	76	343	65	73	911	130	75	37	56	57	44	52
User 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
PHF 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
PHF Volume:	76	343	65	73	911	130	75	37	56	57	44	52
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	76	343	65	73	911	130	75	37	56	57	44	52
PCE 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
MLF 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
FinalVolume:	76	343	65	73	911	130	75	37	56	57	44	52
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	1.00	0.78	0.87	0.98	0.90	0.87	0.91	0.84	0.79	0.92	0.85
Lanes:	1.00	3.00	1.00	1.00	2.60	0.40	1.00	0.38	0.62	2.00	0.88	1.12
Final Sat.:	1663	5700	1488	1663	4842	691	1663	654	990	2993	1530	1808
Capacity Analysis Module:												
Vol/Sat:	0.05	0.06	0.04	0.04	0.19	0.19	0.05	0.06	0.06	0.02	0.03	0.03
Crit Moves:	****				****			****			****	
Green/Cycle:	0.12	0.36	0.36	0.25	0.49	0.49	0.15	0.15	0.15	0.11	0.11	0.11
Volume/Cap:	0.38	0.17	0.12	0.18	0.38	0.38	0.31	0.38	0.38	0.17	0.26	0.26
Delay/Veh:	37.9	19.8	19.5	26.6	14.5	14.5	35.0	35.7	35.7	36.5	37.0	37.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	37.9	19.8	19.5	26.6	14.5	14.5	35.0	35.7	35.7	36.5	37.0	37.0
LOS by Move:	D	B	B	C	B	B	C	D	D	D	D	D
HCM2kAvgQ:	3	2	1	2	6	6	2	3	3	1	1	1

Note: Queue reported is the number of cars per lane.

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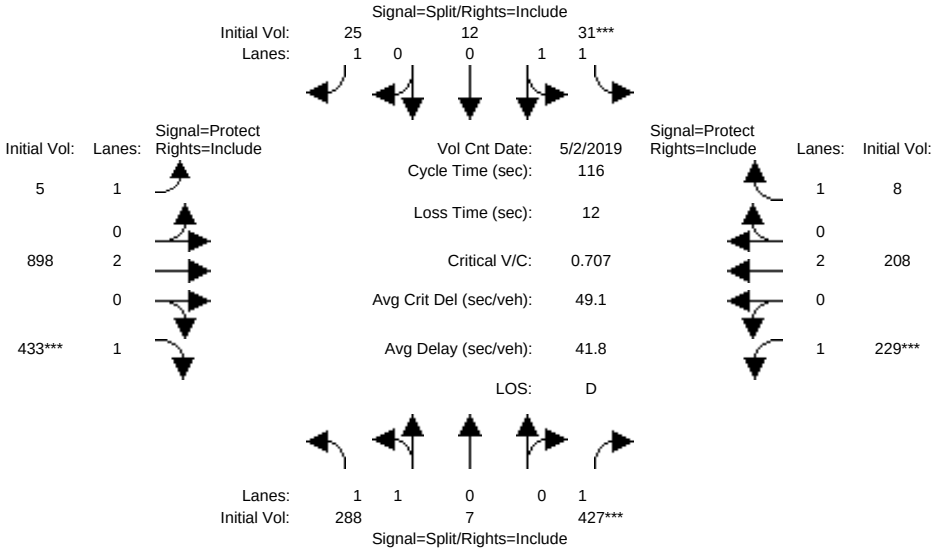
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing PM

Intersection #2: LUNDY/TRADE ZONE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 2 May 2019 << 4:50-5:50												
Base Vol:	288	7	427	31	12	25	5	898	433	229	208	8
Growth 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
Initial Bse:	288	7	427	31	12	25	5	898	433	229	208	8
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	288	7	427	31	12	25	5	898	433	229	208	8
User 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
PHF 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
PHF Volume:	288	7	427	31	12	25	5	898	433	229	208	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	288	7	427	31	12	25	5	898	433	229	208	8
PCE 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
MLF 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
FinalVolume:	288	7	427	31	12	25	5	898	433	229	208	8
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.96	0.04	1.00	1.47	0.53	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	3423	83	1750	2580	999	1750	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.08	0.08	0.24	0.01	0.01	0.01	0.00	0.24	0.25	0.13	0.05	0.00
Crit Moves:			****	****					****	****		
Green/Cycle:	0.32	0.32	0.32	0.09	0.09	0.09	0.20	0.32	0.32	0.17	0.29	0.29
Volume/Cap:	0.26	0.26	0.77	0.14	0.14	0.17	0.01	0.73	0.77	0.77	0.19	0.02
Delay/Veh:	30.1	30.1	45.5	50.0	50.0	51.5	37.0	38.8	45.1	63.1	31.3	29.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.1	30.1	45.5	50.0	50.0	51.5	37.0	38.8	45.1	63.1	31.3	29.4
LOS by Move:	C	C	D	D	D	D	D	D	D	E	C	C
HCM2kAvgQ:	4	4	16	1	1	1	0	15	16	10	3	0

Note: Queue reported is the number of cars per lane.

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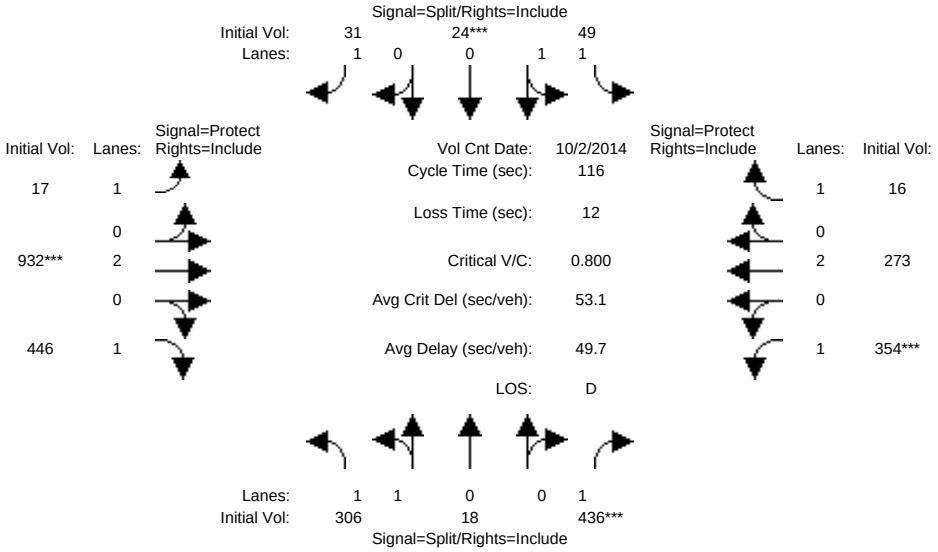
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background PM

Intersection #2: LUNDY/TRADE ZONE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 2 Oct 2014 << 4:50-5:50												
Base Vol:	306	18	436	49	24	31	17	932	446	354	273	16
Growth 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
Initial Bse:	306	18	436	49	24	31	17	932	446	354	273	16
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	306	18	436	49	24	31	17	932	446	354	273	16
User 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
PHF 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
PHF Volume:	306	18	436	49	24	31	17	932	446	354	273	16
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	306	18	436	49	24	31	17	932	446	354	273	16
PCE 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
MLF 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
FinalVolume:	306	18	436	49	24	31	17	932	446	354	273	16
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.90	0.10	1.00	1.38	0.62	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	3320	195	1750	2412	1181	1750	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.09	0.09	0.25	0.02	0.02	0.02	0.01	0.25	0.25	0.20	0.07	0.01
Crit Moves:			****		****			****		****		
Green/Cycle:	0.29	0.29	0.29	0.09	0.09	0.09	0.21	0.29	0.29	0.24	0.31	0.31
Volume/Cap:	0.32	0.32	0.86	0.24	0.24	0.21	0.05	0.86	0.89	0.86	0.23	0.03
Delay/Veh:	33.0	33.0	56.1	51.2	51.2	52.4	36.4	48.2	60.8	62.8	30.6	28.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	33.0	33.0	56.1	51.2	51.2	52.4	36.4	48.2	60.8	62.8	30.6	28.3
LOS by Move:	C	C	E	D	D	D	D	D	E	E	C	C
HCM2kAvgQ:	5	5	19	1	1	1	1	18	20	16	4	0

Note: Queue reported is the number of cars per lane.

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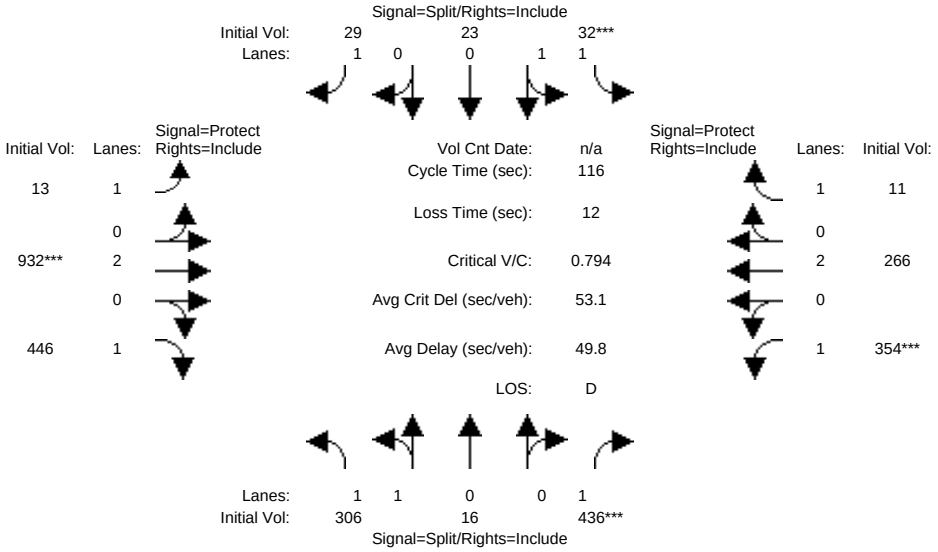
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background + Project PM

Intersection #2: LUNDY/TRADE ZONE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	306	16	436	32	23	29	13	932	446	354	266	11
Growth 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
Initial Bse:	306	16	436	32	23	29	13	932	446	354	266	11
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	306	16	436	32	23	29	13	932	446	354	266	11
User 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
PHF 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
PHF Volume:	306	16	436	32	23	29	13	932	446	354	266	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	306	16	436	32	23	29	13	932	446	354	266	11
PCE 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
MLF 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
FinalVolume:	306	16	436	32	23	29	13	932	446	354	266	11
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.91	0.09	1.00	1.20	0.80	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	3339	175	1750	2106	1514	1750	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.09	0.09	0.25	0.02	0.02	0.02	0.01	0.25	0.25	0.20	0.07	0.01
Crit Moves:			****	****				****		****		
Green/Cycle:	0.29	0.29	0.29	0.09	0.09	0.09	0.21	0.29	0.29	0.24	0.31	0.31
Volume/Cap:	0.32	0.32	0.86	0.18	0.18	0.19	0.03	0.86	0.89	0.86	0.23	0.02
Delay/Veh:	33.0	33.0	56.1	50.4	50.4	52.1	36.2	48.2	60.8	62.8	30.5	28.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	33.0	33.0	56.1	50.4	50.4	52.1	36.2	48.2	60.8	62.8	30.5	28.2
LOS by Move:	C	C	E	D	D	D	D	D	E	E	C	C
HCM2kAvgQ:	5	5	19	1	1	1	0	18	20	16	3	0

Note: Queue reported is the number of cars per lane.

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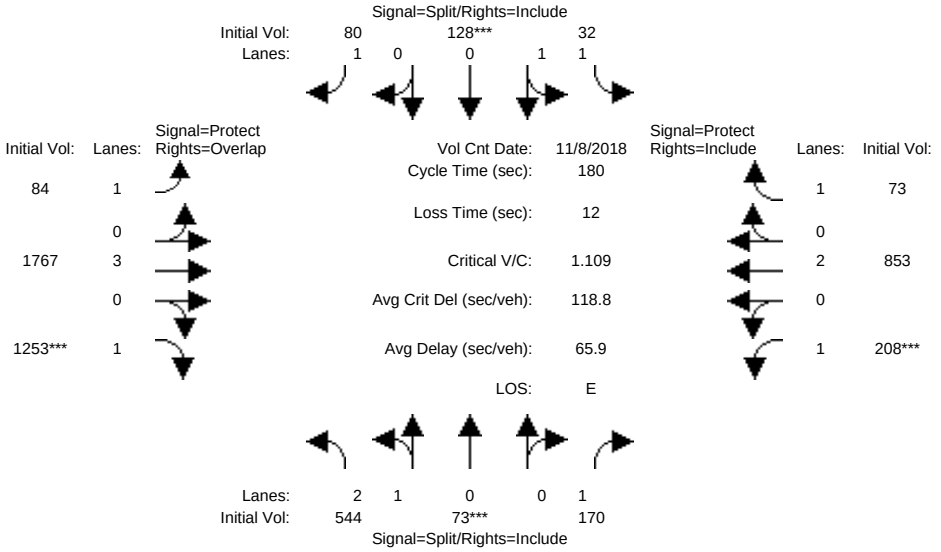
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing PM

Intersection #3: MONTAGUE EXPWY/TRADE ZONE BLVD



Street Name:	Trade Zone Blvd						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	10	10	10	10	10	10	7	100	10	7	107	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Nov 2018 << 5:00 - 6:00 PM												
Base Vol:	544	73	170	32	128	80	84	1767	1253	208	853	73
Growth 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
Initial Bse:	544	73	170	32	128	80	84	1767	1253	208	853	73
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	544	73	170	32	128	80	84	1767	1253	208	853	73
User 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
PHF 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
PHF Volume:	544	73	170	32	128	80	84	1767	1253	208	853	73
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	544	73	170	32	128	80	84	1767	1253	208	853	73
PCE 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
MLF 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
FinalVolume:	544	73	170	32	128	80	84	1767	1253	208	853	73
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	0.96	0.78	0.91	0.99	0.78	0.87	1.00	0.78	0.87	1.00	0.78
Lanes:	2.70	0.30	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	4073	547	1488	1733	1881	1488	1663	5700	1488	1663	3800	1488
Capacity Analysis Module:												
Vol/Sat:	0.13	0.13	0.11	0.02	0.07	0.05	0.05	0.31	0.84	0.13	0.22	0.05
Crit Moves:		****			****				****	****		
Green/Cycle:	0.12	0.12	0.12	0.06	0.06	0.06	0.06	0.64	0.76	0.11	0.69	0.69
Volume/Cap:	1.11	1.11	0.95	0.30	1.11	0.88	0.86	0.49	1.11	1.11	0.32	0.07
Delay/Veh:	150.9	151	131.1	81.1	192	139.9	132.7	17.1	83.8	178.0	11.0	9.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	150.9	151	131.1	81.1	192	139.9	132.7	17.1	83.8	178.0	11.0	9.0
LOS by Move:	F	F	F	F	F	F	F	B	F	F	B	A
HCM2kAvgQ:	19	19	13	2	11	7	7	16	92	18	9	1

Note: Queue reported is the number of cars per lane.

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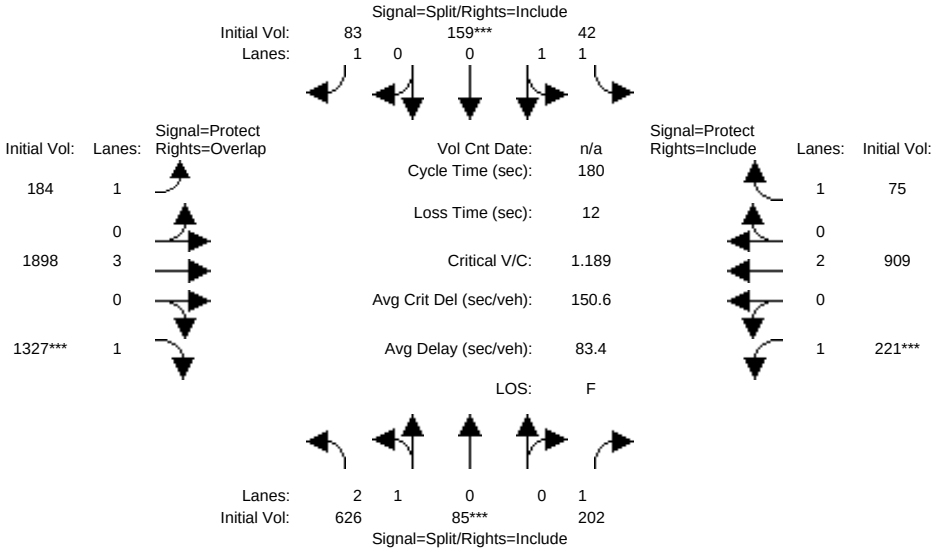
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background PM

Intersection #3: MONTAGUE EXPWY/TRADE ZONE BLVD



Street Name:	Trade Zone Blvd						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	10	10	10	10	10	10	7	100	10	7	107	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	626	85	202	42	159	83	184	1898	1327	221	909	75
Growth 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
Initial Bse:	626	85	202	42	159	83	184	1898	1327	221	909	75
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	626	85	202	42	159	83	184	1898	1327	221	909	75
User 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
PHF 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
PHF Volume:	626	85	202	42	159	83	184	1898	1327	221	909	75
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	626	85	202	42	159	83	184	1898	1327	221	909	75
PCE 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
MLF 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
FinalVolume:	626	85	202	42	159	83	184	1898	1327	221	909	75
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	0.96	0.78	0.91	0.99	0.78	0.87	1.00	0.78	0.87	1.00	0.78
Lanes:	2.70	0.30	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	4069	552	1488	1733	1881	1488	1663	5700	1488	1663	3800	1488
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.14	0.02	0.08	0.06	0.11	0.33	0.89	0.13	0.24	0.05
Crit Moves:		****			****				****	****		
Green/Cycle:	0.13	0.13	0.13	0.07	0.07	0.07	0.12	0.62	0.75	0.11	0.62	0.62
Volume/Cap:	1.19	1.19	1.05	0.34	1.19	0.78	0.96	0.54	1.19	1.19	0.39	0.08
Delay/Veh:	179.3	179	156.8	79.9	213	113.2	133.2	19.5	116.6	206.0	17.4	13.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	179.3	179	156.8	79.9	213	113.2	133.2	19.5	116.6	206.0	17.4	13.9
LOS by Move:	F	F	F	E	F	F	F	B	F	F	B	B
HCM2kAvgQ:	23	23	17	3	14	7	14	19	106	20	12	2

Note: Queue reported is the number of cars per lane.

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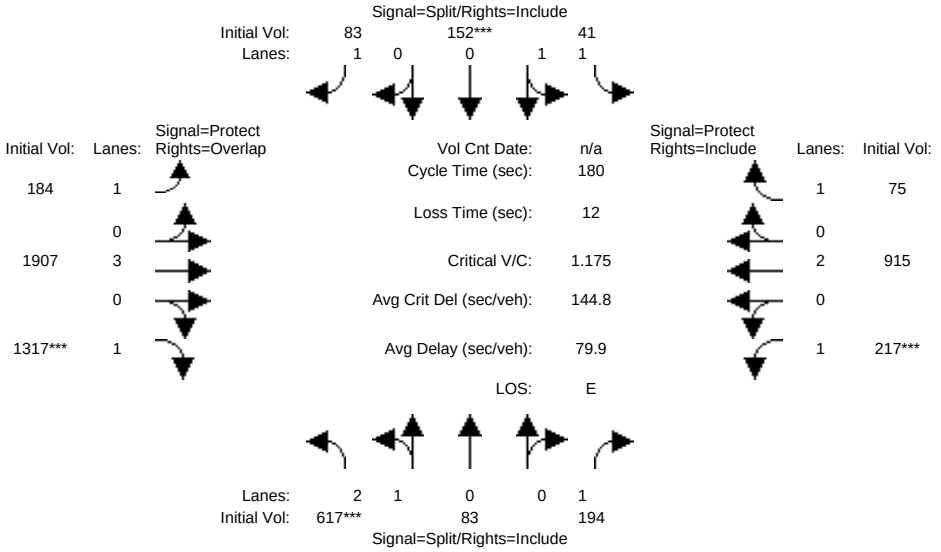
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background + Project PM

Intersection #3: MONTAGUE EXPWY/TRADE ZONE BLVD



Street Name:	Trade Zone Blvd						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	10	10	10	10	10	10	7	100	10	7	107	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	617	83	194	41	152	83	184	1907	1317	217	915	75
Growth 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
Initial Bse:	617	83	194	41	152	83	184	1907	1317	217	915	75
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	617	83	194	41	152	83	184	1907	1317	217	915	75
User 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
PHF 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
PHF Volume:	617	83	194	41	152	83	184	1907	1317	217	915	75
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	617	83	194	41	152	83	184	1907	1317	217	915	75
PCE 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
MLF 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
FinalVolume:	617	83	194	41	152	83	184	1907	1317	217	915	75
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	0.96	0.78	0.91	0.99	0.78	0.87	1.00	0.78	0.87	1.00	0.78
Lanes:	2.70	0.30	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	4072	548	1488	1733	1881	1488	1663	5700	1488	1663	3800	1488
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.13	0.02	0.08	0.06	0.11	0.33	0.89	0.13	0.24	0.05
Crit Moves:	****				****				****	****		
Green/Cycle:	0.13	0.13	0.13	0.07	0.07	0.07	0.12	0.62	0.75	0.11	0.62	0.62
Volume/Cap:	1.18	1.18	1.01	0.34	1.18	0.81	0.96	0.54	1.18	1.18	0.39	0.08
Delay/Veh:	173.9	174	146.4	80.3	209	119.5	132.0	19.2	110.6	201.3	17.2	13.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	173.9	174	146.4	80.3	209	119.5	132.0	19.2	110.6	201.3	17.2	13.7
LOS by Move:	F	F	F	F	F	F	F	B	F	F	B	B
HCM2kAvgQ:	23	23	16	3	14	7	14	19	104	20	12	2

Note: Queue reported is the number of cars per lane.

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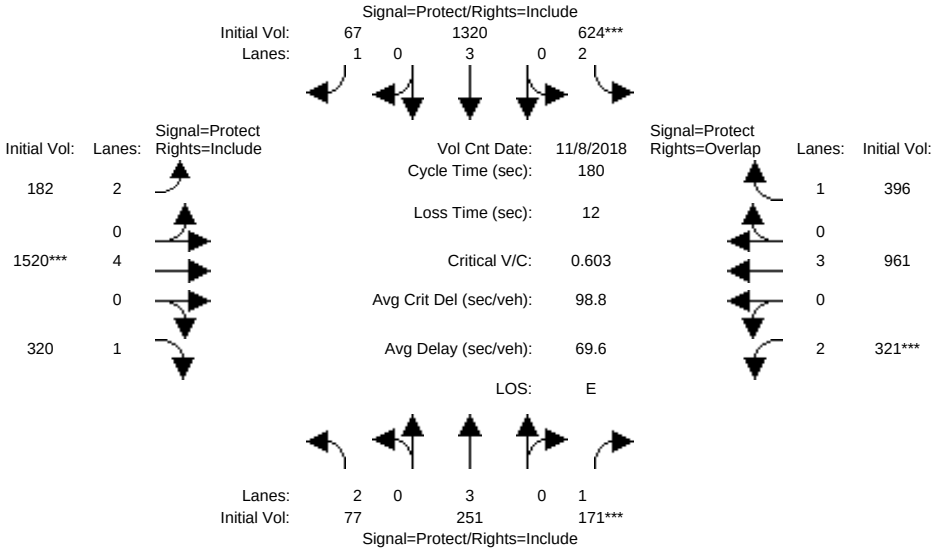
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Existing PM

Intersection #4: MONTAGUE EXPWY/CAPITOL AVE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	100	10	7	90	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 8 Nov 2018 << 5:00 - 6:00 PM												
Base Vol:	77	251	171	624	1320	67	182	1520	320	321	961	396
Growth 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
Initial Bse:	77	251	171	624	1320	67	182	1520	320	321	961	396
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	77	251	171	624	1320	67	182	1520	320	321	961	396
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.66	1.00	1.00	1.00	1.00
PHF 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
PHF Volume:	77	251	171	624	1320	67	182	1003	320	321	961	396
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	77	251	171	624	1320	67	182	1003	320	321	961	396
PCE 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
MLF 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
FinalVolume:	77	251	171	624	1320	67	182	1003	320	321	961	396
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	4.00	1.00	2.00	3.00	1.00
Final Sat.:	2993	5700	1488	2993	5700	1488	2993	7600	1488	2993	5700	1488
Capacity Analysis Module:												
Vol/Sat:	0.03	0.04	0.11	0.21	0.23	0.05	0.06	0.13	0.22	0.11	0.17	0.27
Crit Moves:			****	****				****		****		
Green/Cycle:	0.04	0.10	0.10	0.18	0.24	0.24	0.07	0.56	0.56	0.09	0.58	0.76
Volume/Cap:	0.63	0.44	1.14	1.14	0.95	0.19	0.86	0.24	0.39	1.14	0.29	0.35
Delay/Veh:	95.2	76.7	197.1	156.9	81.7	54.3	111.5	20.5	23.0	178.5	19.2	7.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	95.2	76.7	197.1	156.9	81.7	54.3	111.5	20.5	23.0	178.5	19.2	7.1
LOS by Move:	F	E	F	F	F	D	F	C	C	F	B	A
HCM2kAvgQ:	4	5	16	29	28	3	8	7	10	16	9	8

Note: Queue reported is the number of cars per lane.

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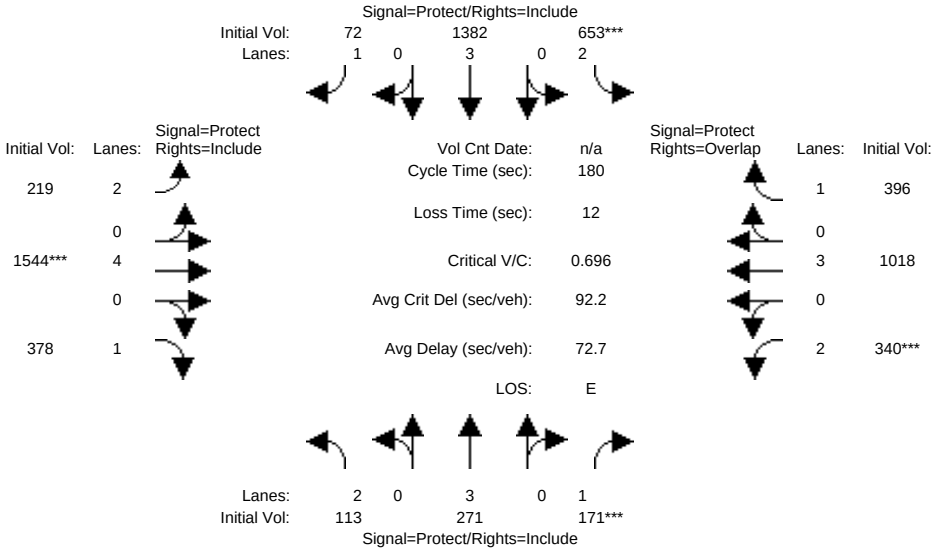
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background PM

Intersection #4: MONTAGUE EXPWY/CAPITOL AVE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	100	10	7	90	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	113	271	171	653	1382	72	219	1544	378	340	1018	396
Growth 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
Initial Bse:	113	271	171	653	1382	72	219	1544	378	340	1018	396
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	113	271	171	653	1382	72	219	1544	378	340	1018	396
User 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
PHF 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
PHF Volume:	113	271	171	653	1382	72	219	1544	378	340	1018	396
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	113	271	171	653	1382	72	219	1544	378	340	1018	396
PCE 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
MLF 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
FinalVolume:	113	271	171	653	1382	72	219	1544	378	340	1018	396
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	4.00	1.00	2.00	3.00	1.00
Final Sat.:	2993	5700	1488	2993	5700	1488	2993	7600	1488	2993	5700	1488
Capacity Analysis Module:												
Vol/Sat:	0.04	0.05	0.11	0.22	0.24	0.05	0.07	0.20	0.25	0.11	0.18	0.27
Crit Moves:			****	****				****		****		
Green/Cycle:	0.04	0.10	0.10	0.18	0.24	0.24	0.08	0.56	0.56	0.10	0.57	0.75
Volume/Cap:	0.97	0.49	1.18	1.18	1.00	0.20	0.88	0.37	0.46	1.18	0.31	0.35
Delay/Veh:	160.0	77.7	213.5	173.0	92.0	54.5	109.7	22.4	24.2	193.3	20.5	7.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	160.0	77.7	213.5	173.0	92.0	54.5	109.7	22.4	24.2	193.3	20.5	7.7
LOS by Move:	F	E	F	F	F	D	F	C	C	F	C	A
HCM2kAvgQ:	6	5	16	31	31	3	10	11	13	18	9	8

Note: Queue reported is the number of cars per lane.

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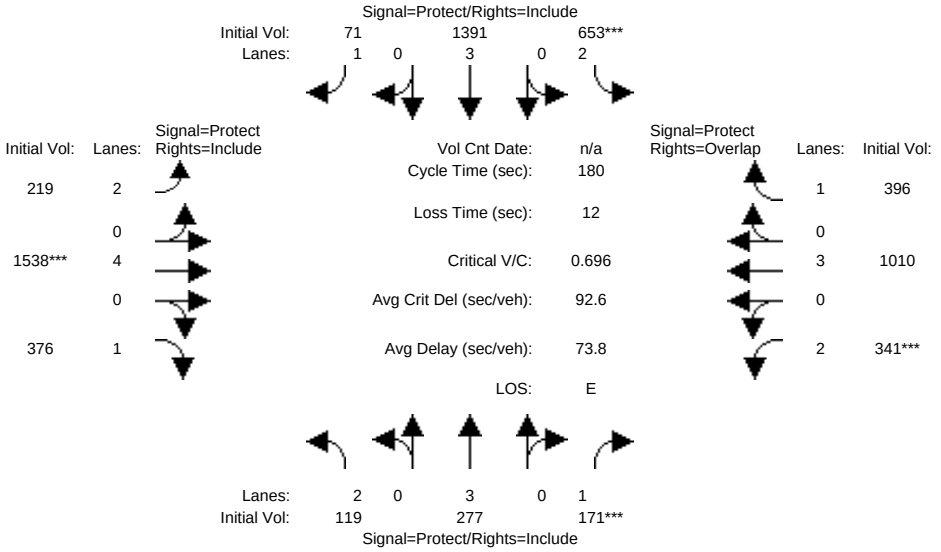
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background + Project PM

Intersection #4: MONTAGUE EXPWY/CAPITOL AVE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	100	10	7	90	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	119	277	171	653	1391	71	219	1538	376	341	1010	396
Growth 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
Initial Bse:	119	277	171	653	1391	71	219	1538	376	341	1010	396
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	119	277	171	653	1391	71	219	1538	376	341	1010	396
User 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
PHF 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
PHF Volume:	119	277	171	653	1391	71	219	1538	376	341	1010	396
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	119	277	171	653	1391	71	219	1538	376	341	1010	396
PCE 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
MLF 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
FinalVolume:	119	277	171	653	1391	71	219	1538	376	341	1010	396
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	4.00	1.00	2.00	3.00	1.00
Final Sat.:	2993	5700	1488	2993	5700	1488	2993	7600	1488	2993	5700	1488
Capacity Analysis Module:												
Vol/Sat:	0.04	0.05	0.11	0.22	0.24	0.05	0.07	0.20	0.25	0.11	0.18	0.27
Crit Moves:			****	****				****		****		
Green/Cycle:	0.04	0.10	0.10	0.18	0.24	0.24	0.08	0.56	0.56	0.10	0.57	0.75
Volume/Cap:	1.01	0.50	1.18	1.18	1.01	0.20	0.88	0.36	0.45	1.18	0.31	0.35
Delay/Veh:	171.5	77.8	213.9	173.4	94.5	54.6	109.6	22.3	24.2	193.6	20.4	7.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	171.5	77.8	213.9	173.4	94.5	54.6	109.6	22.3	24.2	193.6	20.4	7.7
LOS by Move:	F	E	F	F	F	D	F	C	C	F	C	A
HCM2kAvgQ:	7	5	16	31	31	3	10	11	13	18	9	8

Note: Queue reported is the number of cars per lane.

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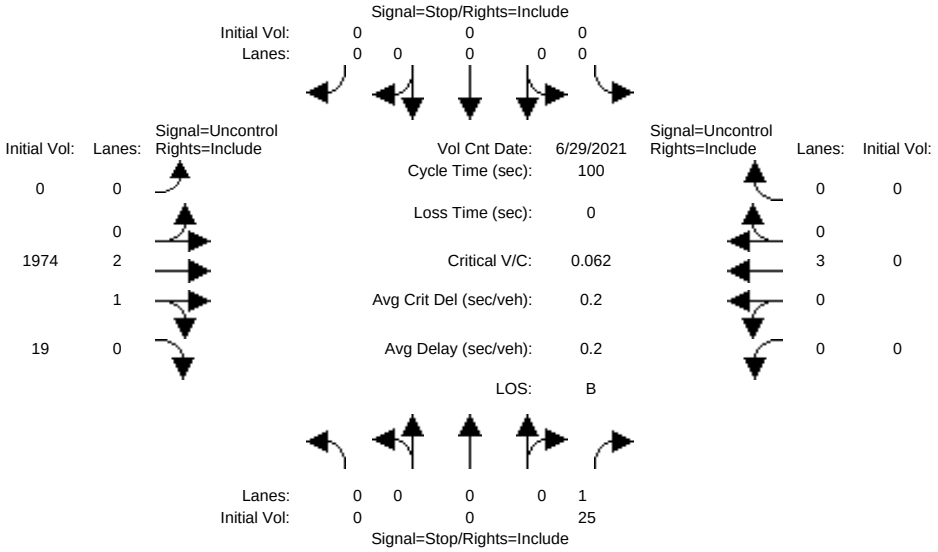
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing PM

Intersection #5: Montague Expressway/Sango Ct



Street Name:	Sango Ct						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module: >> Count Date: 29 Jun 2021 <<												
Base Vol:	0	0	25	0	0	0	0	1974	19	0	0	0
Growth 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
Initial Bse:	0	0	25	0	0	0	0	1974	19	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	25	0	0	0	0	1974	19	0	0	0
User 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
PHF 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
PHF Volume:	0	0	25	0	0	0	0	1974	19	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	25	0	0	0	0	1974	19	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	668	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	406	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	406	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	0.06	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	0.2	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	14.5	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	B	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	14.5			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	B			*			*			*		

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

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Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	25	0	0	0	0	1974	19	0	0	0
ApproachDel:	14.5			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.1]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=25]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=2018]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	25	0	0	0	0	1974	19	0	0	0

Major Street Volume: 1993
Minor Approach Volume: 25
Minor Approach Volume Threshold: 47 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

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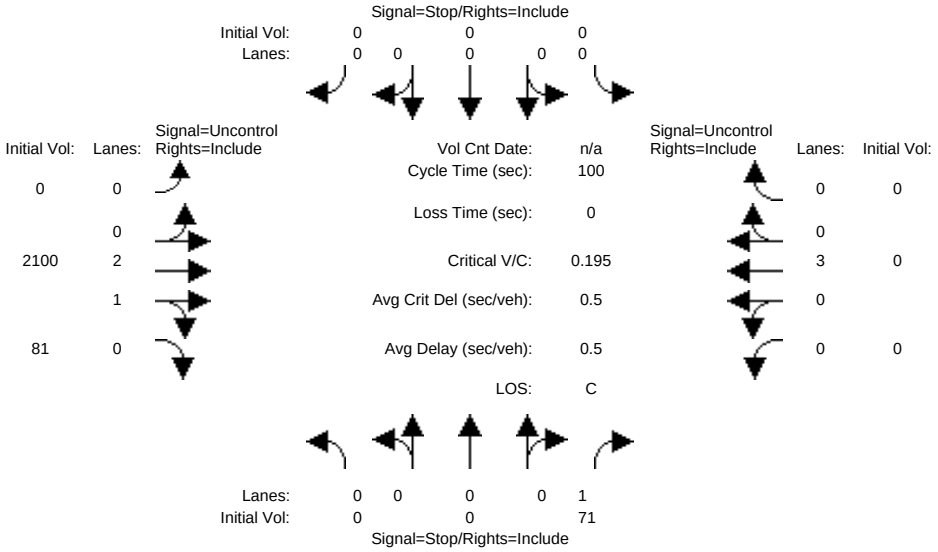
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background PM

Intersection #5: Montague Expressway/Sango Ct



Street Name:	Sango Ct						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	71	0	0	0	0	2100	81	0	0	0
Growth 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
Initial Bse:	0	0	71	0	0	0	0	2100	81	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	71	0	0	0	0	2100	81	0	0	0
User 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
PHF 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
PHF Volume:	0	0	71	0	0	0	0	2100	81	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	71	0	0	0	0	2100	81	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	741	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	363	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	363	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	0.20	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	0.7	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	17.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	C	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	17.3			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	C			*			*			*		

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

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Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	71	0	0	0	0	2100	81	0	0	0
ApproachDel:	17.3			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=71]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=2252]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	71	0	0	0	0	2100	81	0	0	0

Major Street Volume: 2181
Minor Approach Volume: 71
Minor Approach Volume Threshold: 16 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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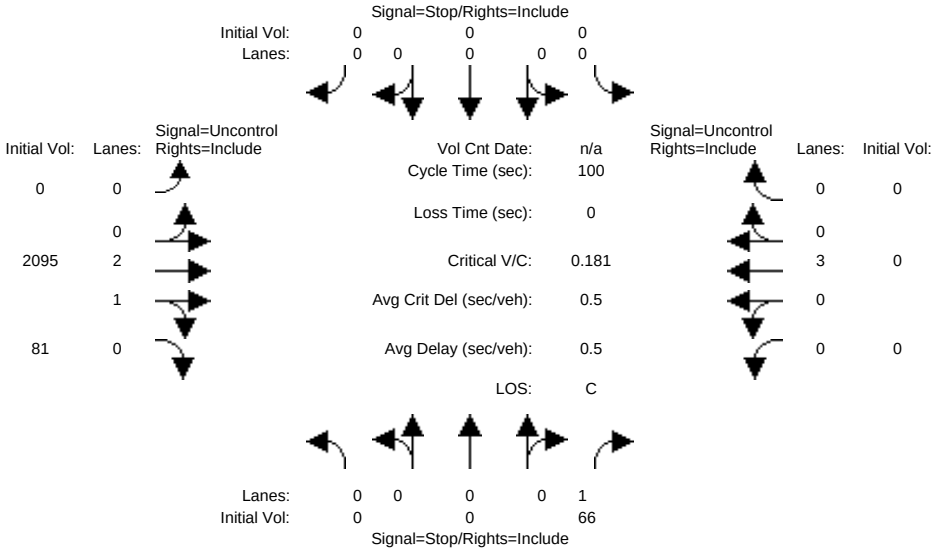
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background + Project PM

Intersection #5: Montague Expressway/Sango Ct



Street Name:	Sango Ct						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	66	0	0	0	0	2095	81	0	0	0
Growth 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
Initial Bse:	0	0	66	0	0	0	0	2095	81	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	66	0	0	0	0	2095	81	0	0	0
User 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
PHF 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
PHF Volume:	0	0	66	0	0	0	0	2095	81	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	66	0	0	0	0	2095	81	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	739	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	364	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	364	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	0.18	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	0.7	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	17.1	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	C	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	17.1			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	C			*			*			*		

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

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Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	66	0	0	0	0	2095	81	0	0	0
ApproachDel:	17.1			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.3]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=66]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=2242]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	66	0	0	0	0	2095	81	0	0	0

Major Street Volume: 2176
Minor Approach Volume: 66
Minor Approach Volume Threshold: 17 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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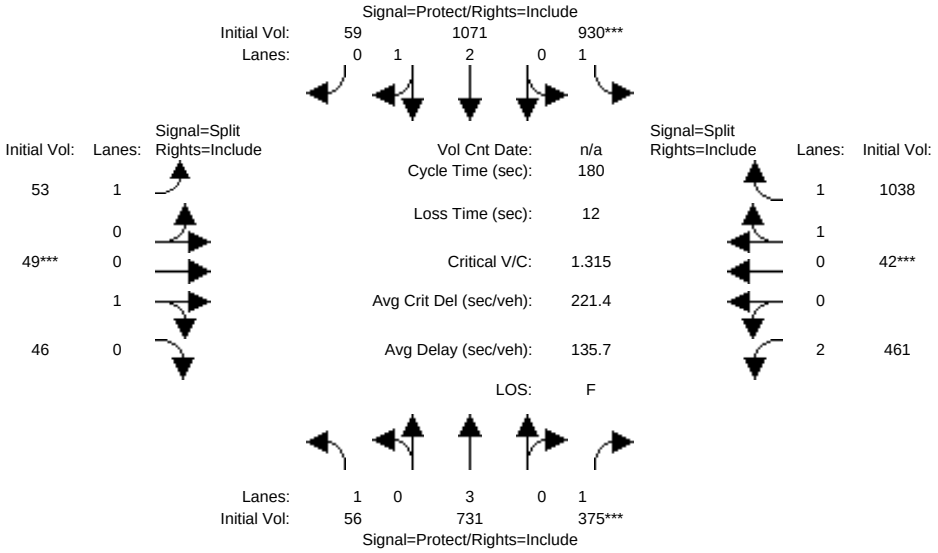
Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative PM

Intersection #1: CAPITOL AVE/MILPITAS BLVD



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	56	731	375	930	1071	59	53	49	46	461	42	1038
Growth 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
Initial Bse:	56	731	375	930	1071	59	53	49	46	461	42	1038
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	56	731	375	930	1071	59	53	49	46	461	42	1038
User 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
PHF 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
PHF Volume:	56	731	375	930	1071	59	53	49	46	461	42	1038
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	56	731	375	930	1071	59	53	49	46	461	42	1038
PCE 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
MLF 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
FinalVolume:	56	731	375	930	1071	59	53	49	46	461	42	1038
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	1.00	0.78	0.87	0.99	0.91	0.87	0.93	0.85	0.79	0.86	0.79
Lanes:	1.00	3.00	1.00	1.00	2.83	0.17	1.00	0.50	0.50	2.00	0.07	1.93
Final Sat.:	1663	5700	1488	1663	5335	294	1663	872	819	2993	117	2888
Capacity Analysis Module:												
Vol/Sat:	0.03	0.13	0.25	0.56	0.20	0.20	0.03	0.06	0.06	0.15	0.36	0.36
Crit Moves:			****	****				****			****	
Green/Cycle:	0.10	0.19	0.19	0.42	0.51	0.51	0.06	0.06	0.06	0.27	0.27	0.27
Volume/Cap:	0.34	0.68	1.33	1.33	0.39	0.39	0.57	1.01	1.01	0.57	1.33	1.33
Delay/Veh:	76.9	69.7	245.5	212.2	27.2	27.2	91.4	181	180.9	57.8	224	224.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	76.9	69.7	245.5	212.2	27.2	27.2	91.4	181	180.9	57.8	224	224.4
LOS by Move:	E	E	F	F	C	C	F	F	F	E	F	F
HCM2kAvgQ:	3	13	36	86	12	12	4	9	9	13	51	51

Note: Queue reported is the number of cars per lane.

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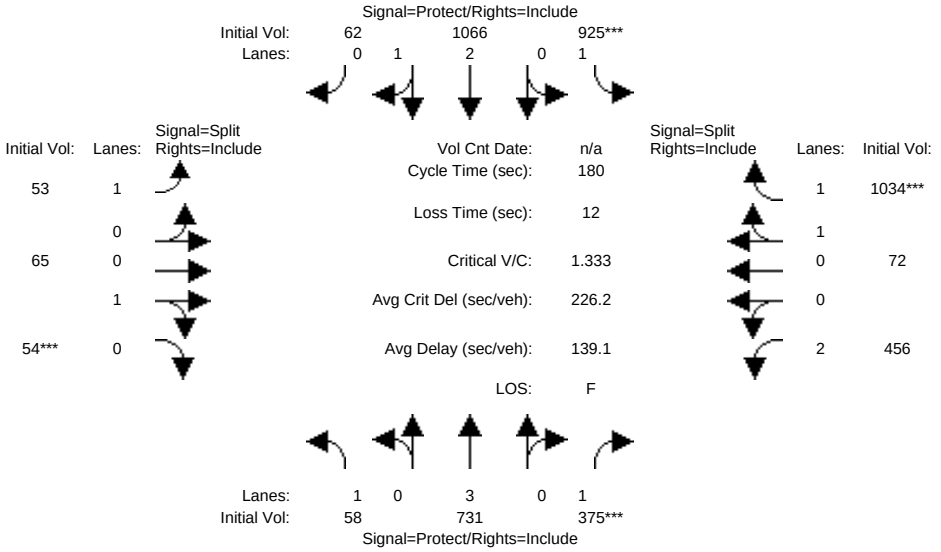
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative + Project PM

Intersection #1: CAPITOL AVE/MILPITAS BLVD



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	58	731	375	925	1066	62	53	65	54	456	72	1034
Growth 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
Initial Bse:	58	731	375	925	1066	62	53	65	54	456	72	1034
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	58	731	375	925	1066	62	53	65	54	456	72	1034
User 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
PHF 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
PHF Volume:	58	731	375	925	1066	62	53	65	54	456	72	1034
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	58	731	375	925	1066	62	53	65	54	456	72	1034
PCE 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
MLF 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
FinalVolume:	58	731	375	925	1066	62	53	65	54	456	72	1034
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	1.00	0.78	0.87	0.99	0.91	0.87	0.93	0.86	0.79	0.86	0.79
Lanes:	1.00	3.00	1.00	1.00	2.82	0.18	1.00	0.53	0.47	2.00	0.12	1.88
Final Sat.:	1663	5700	1488	1663	5319	309	1663	931	773	2993	197	2829
Capacity Analysis Module:												
Vol/Sat:	0.03	0.13	0.25	0.56	0.20	0.20	0.03	0.07	0.07	0.15	0.37	0.37
Crit Moves:			****	****					****			****
Green/Cycle:	0.10	0.19	0.19	0.42	0.51	0.51	0.06	0.06	0.06	0.27	0.27	0.27
Volume/Cap:	0.36	0.68	1.34	1.34	0.40	0.40	0.57	1.26	1.26	0.56	1.34	1.34
Delay/Veh:	77.2	69.8	247.1	214.1	27.5	27.5	91.4	261	261.4	56.9	225	225.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	77.2	69.8	247.1	214.1	27.5	27.5	91.4	261	261.4	56.9	225	225.5
LOS by Move:	E	E	F	F	C	C	F	F	F	E	F	F
HCM2kAvgQ:	3	13	36	85	12	12	4	12	12	13	52	52

Note: Queue reported is the number of cars per lane.

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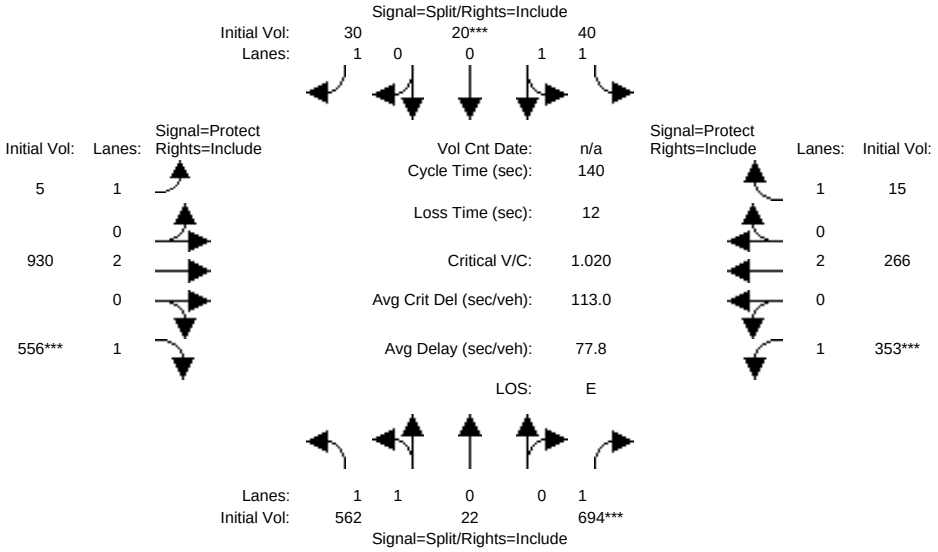
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative PM

Intersection #2: LUNDY/TRADE ZONE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	562	22	694	40	20	30	5	930	556	353	266	15
Growth 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
Initial Bse:	562	22	694	40	20	30	5	930	556	353	266	15
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	562	22	694	40	20	30	5	930	556	353	266	15
User 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
PHF 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
PHF Volume:	562	22	694	40	20	30	5	930	556	353	266	15
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	562	22	694	40	20	30	5	930	556	353	266	15
PCE 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
MLF 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
FinalVolume:	562	22	694	40	20	30	5	930	556	353	266	15
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.93	0.07	1.00	1.37	0.63	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	3378	132	1750	2396	1198	1750	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.17	0.17	0.40	0.02	0.02	0.02	0.00	0.24	0.32	0.20	0.07	0.01
Crit Moves:			****		****				****	****		
Green/Cycle:	0.36	0.36	0.36	0.07	0.07	0.07	0.20	0.29	0.29	0.19	0.28	0.28
Volume/Cap:	0.46	0.46	1.09	0.23	0.23	0.24	0.01	0.84	1.09	1.09	0.25	0.03
Delay/Veh:	35.0	35.0	105.9	63.5	63.5	65.9	45.4	54.0	114.9	132.1	39.5	36.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	35.0	35.0	105.9	63.5	63.5	65.9	45.4	54.0	114.9	132.1	39.5	36.6
LOS by Move:	D	D	F	E	E	E	D	D	F	F	D	D
HCM2kAvgQ:	10	10	43	1	1	2	0	21	36	24	4	0

Note: Queue reported is the number of cars per lane.

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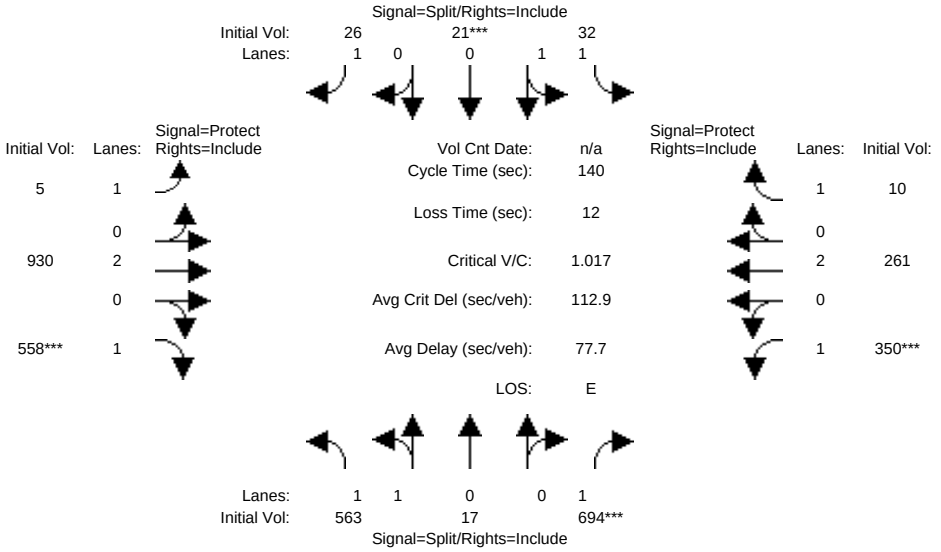
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative + Project PM

Intersection #2: LUNDY/TRADE ZONE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	563	17	694	32	21	26	5	930	558	350	261	10
Growth 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
Initial Bse:	563	17	694	32	21	26	5	930	558	350	261	10
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	563	17	694	32	21	26	5	930	558	350	261	10
User 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
PHF 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
PHF Volume:	563	17	694	32	21	26	5	930	558	350	261	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	563	17	694	32	21	26	5	930	558	350	261	10
PCE 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
MLF 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
FinalVolume:	563	17	694	32	21	26	5	930	558	350	261	10
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	1.95	0.05	1.00	1.25	0.75	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	3405	103	1750	2181	1432	1750	1750	3800	1750	1750	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.17	0.17	0.40	0.01	0.01	0.01	0.00	0.24	0.32	0.20	0.07	0.01
Crit Moves:			****		****				****	****		
Green/Cycle:	0.37	0.37	0.37	0.07	0.07	0.07	0.20	0.29	0.29	0.18	0.28	0.28
Volume/Cap:	0.45	0.45	1.09	0.21	0.21	0.21	0.01	0.83	1.09	1.09	0.24	0.02
Delay/Veh:	35.0	35.0	105.7	63.0	63.0	65.0	45.4	53.6	114.5	132.2	39.4	36.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	35.0	35.0	105.7	63.0	63.0	65.0	45.4	53.6	114.5	132.2	39.4	36.5
LOS by Move:	C	C	F	E	E	E	D	D	F	F	D	D
HCM2kAvgQ:	10	10	43	1	1	1	0	21	36	24	4	0

Note: Queue reported is the number of cars per lane.

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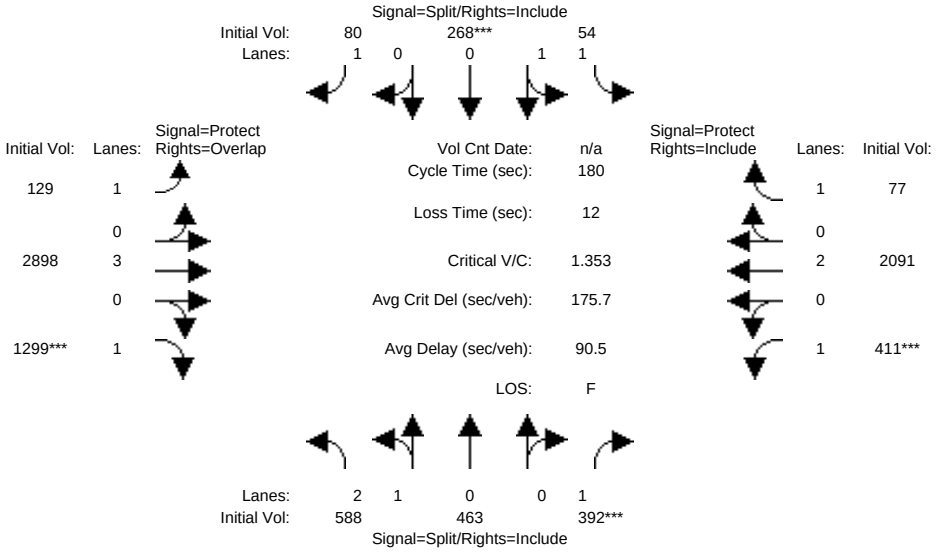
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative PM

Intersection #3: MONTAGUE EXPWY/TRADE ZONE BLVD



Street Name:	Trade Zone Blvd						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	10	10	10	10	10	10	7	100	10	7	107	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	588	463	392	54	268	80	129	2898	1299	411	2091	77
Growth 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
Initial Bse:	588	463	392	54	268	80	129	2898	1299	411	2091	77
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	588	463	392	54	268	80	129	2898	1299	411	2091	77
User 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
PHF 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
PHF Volume:	588	463	392	54	268	80	129	2898	1299	411	2091	77
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	588	463	392	54	268	80	129	2898	1299	411	2091	77
PCE 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
MLF 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
FinalVolume:	588	463	392	54	268	80	129	2898	1299	411	2091	77
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.81	0.97	0.78	0.91	0.99	0.78	0.87	1.00	0.78	0.87	1.00	0.78
Lanes:	2.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	3065	1849	1488	1736	1885	1488	1663	5700	1488	1663	3800	1488
Capacity Analysis Module:												
Vol/Sat:	0.19	0.25	0.26	0.03	0.14	0.05	0.08	0.51	0.87	0.25	0.55	0.05
Crit Moves:			****		****				****	****		
Green/Cycle:	0.19	0.19	0.19	0.11	0.11	0.11	0.08	0.56	0.75	0.18	0.61	0.61
Volume/Cap:	0.98	1.29	1.35	0.30	1.35	0.51	0.98	0.92	1.16	1.35	0.91	0.09
Delay/Veh:	96.0	210	252.3	74.5	264	79.0	154.4	40.9	106.3	252.5	36.5	14.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	96.0	210	252.3	74.5	264	79.0	154.4	40.9	106.3	252.5	36.5	14.7
LOS by Move:	F	F	F	E	F	E	F	D	F	F	D	B
HCM2kAvgQ:	24	40	38	3	25	5	11	50	101	40	52	2

Note: Queue reported is the number of cars per lane.

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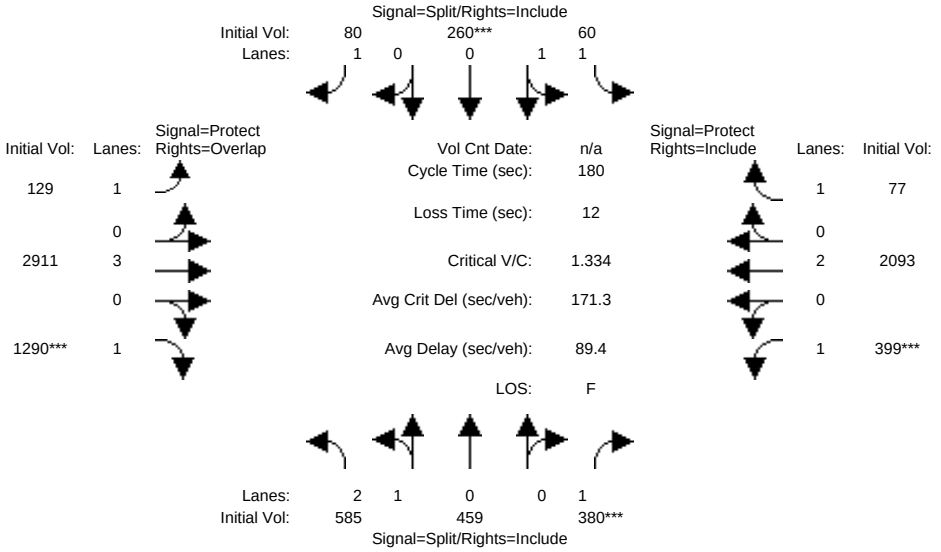
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative + Project PM

Intersection #3: MONTAGUE EXPWY/TRADE ZONE BLVD



Street Name:	Trade Zone Blvd						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Min. Green:	10	10	10	10	10	10	7	100	10	7	107	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	585	459	380	60	260	80	129	2911	1290	399	2093	77
Growth 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
Initial Bse:	585	459	380	60	260	80	129	2911	1290	399	2093	77
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	585	459	380	60	260	80	129	2911	1290	399	2093	77
User 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
PHF 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
PHF Volume:	585	459	380	60	260	80	129	2911	1290	399	2093	77
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	585	459	380	60	260	80	129	2911	1290	399	2093	77
PCE 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
MLF 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
FinalVolume:	585	459	380	60	260	80	129	2911	1290	399	2093	77
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.81	0.97	0.78	0.91	0.99	0.78	0.87	1.00	0.78	0.87	1.00	0.78
Lanes:	2.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	3065	1849	1488	1734	1883	1488	1663	5700	1488	1663	3800	1488
Capacity Analysis Module:												
Vol/Sat:	0.19	0.25	0.26	0.03	0.14	0.05	0.08	0.51	0.87	0.24	0.55	0.05
Crit Moves:			****		****				****	****		
Green/Cycle:	0.19	0.19	0.19	0.10	0.10	0.10	0.08	0.56	0.75	0.18	0.61	0.61
Volume/Cap:	1.00	1.30	1.33	0.33	1.33	0.52	0.98	0.92	1.16	1.33	0.91	0.09
Delay/Veh:	99.7	215	245.2	75.1	257	79.6	154.2	41.3	105.4	245.3	36.5	14.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	99.7	215	245.2	75.1	257	79.6	154.2	41.3	105.4	245.3	36.5	14.7
LOS by Move:	F	F	F	E	F	E	F	D	F	F	D	B
HCM2kAvgQ:	24	40	37	4	24	5	11	51	100	38	52	2

Note: Queue reported is the number of cars per lane.

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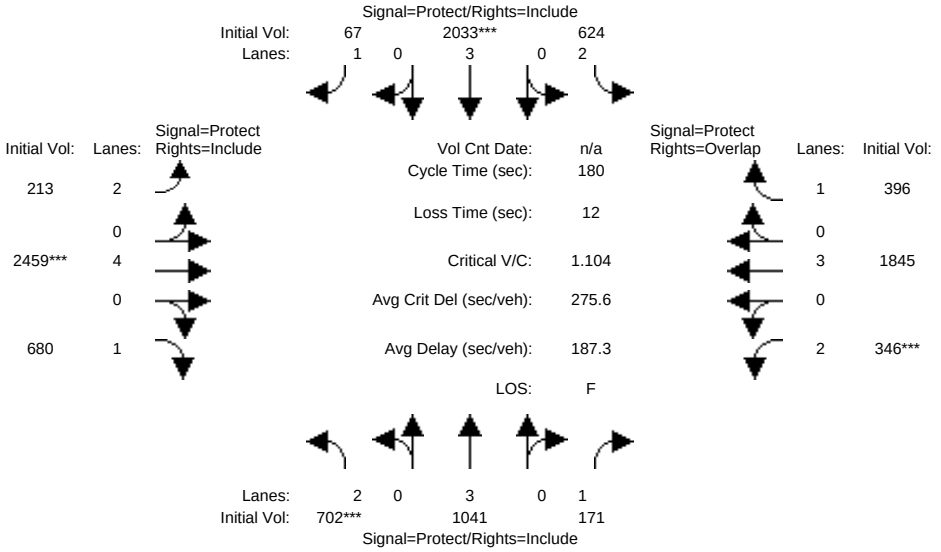
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative PM

Intersection #4: MONTAGUE EXPWY/CAPITOL AVE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	100	10	7	90	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	702	1041	171	624	2033	67	213	2459	680	346	1845	396
Growth 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
Initial Bse:	702	1041	171	624	2033	67	213	2459	680	346	1845	396
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	702	1041	171	624	2033	67	213	2459	680	346	1845	396
User 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
PHF 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
PHF Volume:	702	1041	171	624	2033	67	213	2459	680	346	1845	396
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	702	1041	171	624	2033	67	213	2459	680	346	1845	396
PCE 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
MLF 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
FinalVolume:	702	1041	171	624	2033	67	213	2459	680	346	1845	396
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	4.00	1.00	2.00	3.00	1.00
Final Sat.:	2993	5700	1488	2993	5700	1488	2993	7600	1488	2993	5700	1488
Capacity Analysis Module:												
Vol/Sat:	0.23	0.18	0.11	0.21	0.36	0.05	0.07	0.32	0.46	0.12	0.32	0.27
Crit Moves:	****				****			****			****	
Green/Cycle:	0.13	0.15	0.15	0.17	0.19	0.19	0.08	0.56	0.56	0.06	0.54	0.71
Volume/Cap:	1.87	1.24	0.78	1.24	1.87	0.24	0.93	0.58	0.82	1.87	0.60	0.38
Delay/Veh:	480.8	194	90.1	198.0	468	62.2	121.8	26.5	39.4	496.4	28.4	10.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	480.8	194	90.1	198.0	468	62.2	121.8	26.5	39.4	496.4	28.4	10.6
LOS by Move:	F	F	F	F	F	E	F	C	D	F	C	B
HCM2kAvgQ:	48	29	11	32	75	3	10	22	34	24	22	9

Note: Queue reported is the number of cars per lane.

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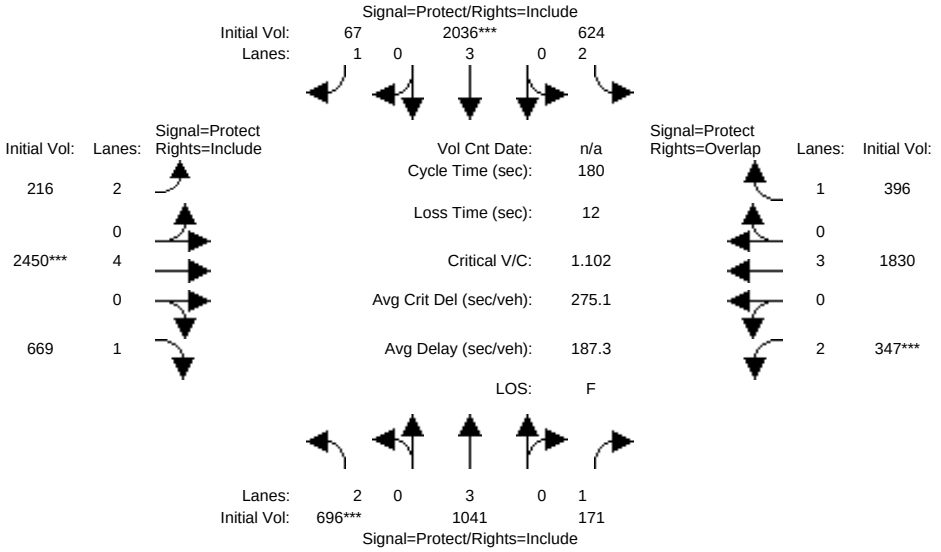
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Cumulative + Project PM

Intersection #4: MONTAGUE EXPWY/CAPITOL AVE



Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	100	10	7	90	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	696	1041	171	624	2036	67	216	2450	669	347	1830	396
Growth 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
Initial Bse:	696	1041	171	624	2036	67	216	2450	669	347	1830	396
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	696	1041	171	624	2036	67	216	2450	669	347	1830	396
User 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
PHF 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
PHF Volume:	696	1041	171	624	2036	67	216	2450	669	347	1830	396
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	696	1041	171	624	2036	67	216	2450	669	347	1830	396
PCE 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
MLF 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
FinalVolume:	696	1041	171	624	2036	67	216	2450	669	347	1830	396
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78	0.79	1.00	0.78
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	4.00	1.00	2.00	3.00	1.00
Final Sat.:	2993	5700	1488	2993	5700	1488	2993	7600	1488	2993	5700	1488
Capacity Analysis Module:												
Vol/Sat:	0.23	0.18	0.11	0.21	0.36	0.05	0.07	0.32	0.45	0.12	0.32	0.27
Crit Moves:	****				****			****			****	
Green/Cycle:	0.12	0.15	0.15	0.17	0.19	0.19	0.08	0.56	0.56	0.06	0.54	0.71
Volume/Cap:	1.87	1.24	0.78	1.24	1.87	0.24	0.93	0.58	0.81	1.87	0.59	0.38
Delay/Veh:	479.6	194	90.2	198.5	467	62.1	121.7	26.4	38.3	494.9	28.4	10.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	479.6	194	90.2	198.5	467	62.1	121.7	26.4	38.3	494.9	28.4	10.7
LOS by Move:	F	F	F	F	F	E	F	C	D	F	C	B
HCM2kAvgQ:	47	29	11	32	75	3	10	21	33	24	22	9

Note: Queue reported is the number of cars per lane.

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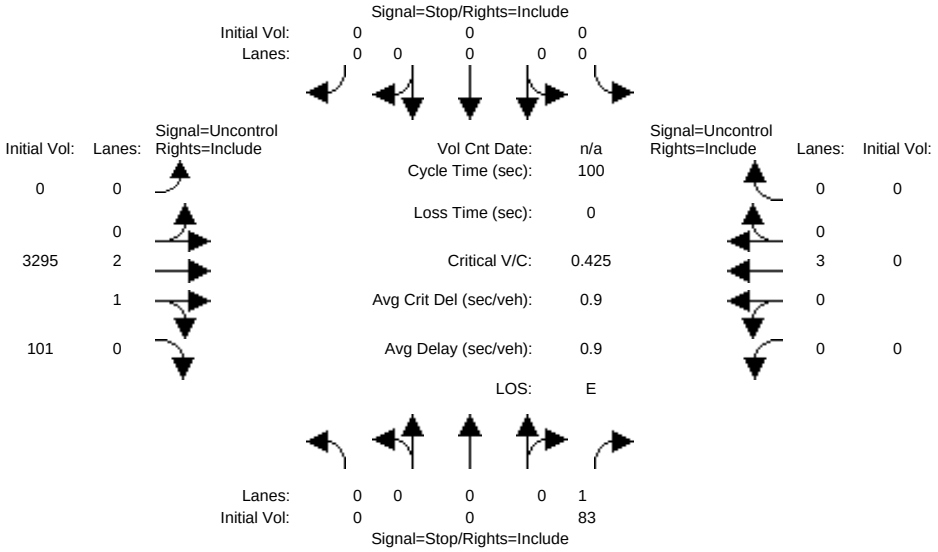
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative PM

Intersection #5: Montague Expressway/Sango Ct



Street Name:	Sango Ct						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	83	0	0	0	3295	101	0	0	0	0
Growth 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
Initial Bse:	0	0	83	0	0	0	3295	101	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	83	0	0	0	3295	101	0	0	0	0
User 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
PHF 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
PHF Volume:	0	0	83	0	0	0	3295	101	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	83	0	0	0	3295	101	0	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	1149	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	195	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	195	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	0.43	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	1.9	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	36.5	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	E	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	36.5			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	E			*			*			*		

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

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Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	83	0	0	0	0	3295	101	0	0	0
ApproachDel:	36.5			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.8]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=83]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=3479]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	83	0	0	0	0	3295	101	0	0	0

Major Street Volume: 3396
Minor Approach Volume: 83
Minor Approach Volume Threshold: -136 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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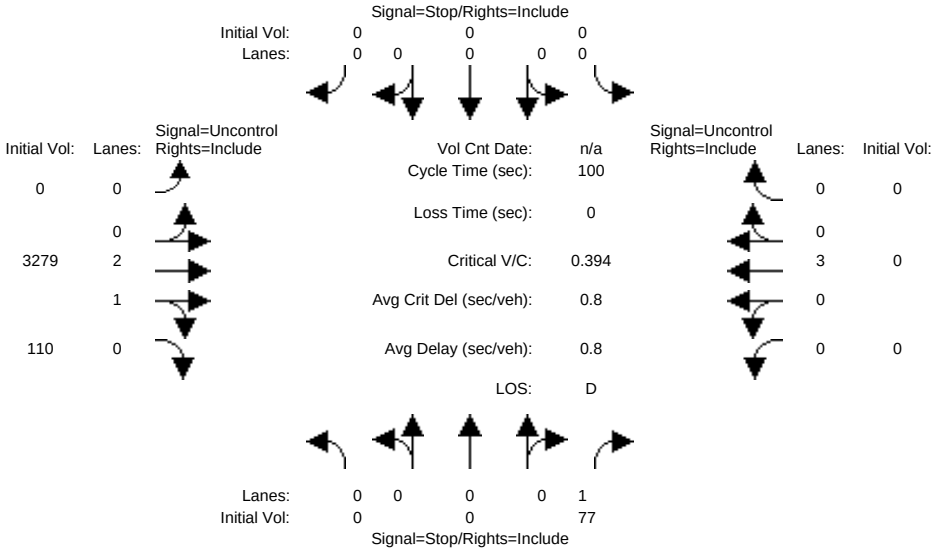
Milpitas Boulevard Extension Bridge

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Project PM

Intersection #5: Montague Expressway/Sango Ct



Street Name:	Sango Ct						Montague Expressway					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Volume Module:												
Base Vol:	0	0	77	0	0	0	0	3279	110	0	0	0
Growth 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
Initial Bse:	0	0	77	0	0	0	0	3279	110	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	77	0	0	0	0	3279	110	0	0	0
User 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
PHF 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
PHF Volume:	0	0	77	0	0	0	0	3279	110	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	77	0	0	0	0	3279	110	0	0	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	1148	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	195	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	195	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	0.39	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	1.7	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	34.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	D	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	34.9			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	D			*			*			*		

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

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Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	77	0	0	0	0	3279	110	0	0	0
ApproachDel:	34.9			xxxxxx			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]
Signal Warrant Rule #1: [vehicle-hours=0.7]
FAIL - Vehicle-hours less than 4 for one lane approach.
Signal Warrant Rule #2: [approach volume=77]
FAIL - Approach volume less than 100 for one lane approach.
Signal Warrant Rule #3: [approach count=2][total volume=3466]
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER
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Peak Hour Volume Signal Warrant Report [Urban]

****

Intersection #5 Montague Expressway/Sango Ct

****

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0 0 0 0 1			0 0 0 0 0			0 0 2 1 0			0 0 3 0 0		
Initial Vol:	0	0	77	0	0	0	0	3279	110	0	0	0

Major Street Volume: 3389
Minor Approach Volume: 77
Minor Approach Volume Threshold: -136 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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