ALAMEDA COUNTY

Strobridge and Norbridge Intersection Improvements Project

Draft Initial Study/Negative Declaration

Public Works Agency
Alameda County

September 2022

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Alameda County

Strobridge and Norbridge Intersection Improvements Project

Draft Initial Study/Negative Declaration

Prepared for: **Alameda County Public Works Agency**
399 Elmhurst St,
Hayward, CA 94544

Prepared by: **Horizon Water and Environment, LLC**
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September 2022

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ACRONYMS AND ABBREVIATIONS

A	
AB	assembly bill
ABAG	Association of Bay Area Governments
ACCWP	Alameda Countywide Clean Water Program
ACFCWCD	Alameda County Flood Control and Water Conservation District
ACWMA	Alameda County Waste Management Authority
ADA	American with Disabilities Act
Alameda CTC	Alameda County Transportation Commission
AMM	avoidance and minimization measures
APN	**a**ssessor's parcel number
Ave	avenue
B	
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
BMP	best management practice
C	
CAFÉ	corporate average fuel economy
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emission Estimator Model
CalRecycle	California Department of Resources Recycling and Recovery
Cal/OSHA	California Occupational Safety and Health Administration
CAP	clean air plan
CARB	California Air Resources Board
CBD	central business district
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFC	chlorofluorocarbon
CFR	Code of Federal Regulations
CH4	methane
CNEL	**community noise equivalent level**
CO	carbon monoxide
CO2	carbon dioxide
CO2e	carbon dioxide equivalent
CRHR	California Register of Historical Resources
CVSD	Castro Valley Sanitary District
CWA	Clean Water Act
cy	cubic yards
D	
dB	decibel

dBA	A-weighted decibel
DPM	diesel particulate matter
DSDD	design standard decision document
DTSC	California Department of Toxic Substances Control
E	
EBMUD	East Bay Municipal Utility District
EIA	U.S. Energy Information Administration
EIR	environmental impact report
EO	executive order
F	
FTA	Federal Transit Administration
G	
GWP	global warming potential
H	
Hz	Hertz
I	
ICBO	International Conference of Building Officials
in/sec	inches per second
IS/ND	initial study/negative declaration
L	
lb/day	pounds per day
Ldn	day-night sound level
Leq	equivalent sound level
Lmax	maximum sound level
Lmin	minimum sound level
LOS	level of service
Lxx	percentile-exceeded sound level
M	
MBTA	Migratory Bird Treaty Act
mgd	million gallons per day
MLD	most likely descendant
MT	metric tons
MT CO2e	metric tons of carbon dioxide equivalents
N	
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NOx	nitrogen oxides
NO2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWIC	Northwest Information Center

O

OEHHA	Office of Environmental Health Hazard Assessment
OLSD	Oro Loma Sanitary District
OSHA	Occupational Safety and Health Administration

P

PM	particulate matter
PPE	personal protective equipment
PPV	peak particle velocity

R

RCPS	regional climate protection strategy
RCRA	Resource Conservation and Recovery Act
ROW	right-of-way
RPS	renewables portfolio standard
RRFB	rectangular rapid flashing beacon
RWQCB	regional water quality control board

S

SAFE	safer affordable fuel-efficient
SB	senate bill
SFBAAB	San Francisco Bay Area Air Basin
SMAQMD	Sacramento Metropolitan Air Quality Management District
SR	state route
SWPPP	storm water pollution prevention plan

T

TAC	toxic air contaminant
TCP	traditional cultural property
TCR	tribal cultural resource
TMDL	total maximum daily load
TWSC	two-way stop-control

U

UBC	Uniform Building Code
USACE	United States Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

V

VdB	velocity in decibels
VMT	vehicle miles traveled

W

WDR	waste discharge requirement
WQO	water quality objective

DRAFT NEGATIVE DECLARATION

Alameda County Public Works Agency (Lead Agency)

1. **Project Name**: Strobridge and Norbridge Intersection Improvements Project

2. **Description and Location:** The Strobridge and Norbridge Intersection Improvement Project (Project) is located in Castro Valley, Alameda County and includes four distinct road segments: (1) Strobridge Avenue; (2) Norbridge Avenue, including the Interstate (I)-580 off-ramp; (3) Castro Valley Boulevard; and (4) Stanton Avenue. The Project would modify two intersections to help alleviate congestion and improve the mobility and safety at these highly used intersections within the Project area. Modifications to the intersections would occur at Strobridge Avenue/Norbridge Avenue and Stanton Avenue/Norbridge Avenue.

3. **Responsible Agency:** Alameda County Public Works Agency, 399 Elmhurst Street, Hayward, California 94544

4. **Findings:** Based on the attached Initial Study, the Lead Agency has found that:

   ☒ The project will not have a significant effect on the environment.

   ☐ The significant effects of the project noted in the attached Initial Study have been eliminated or mitigated by revisions to the project so that the potential adverse effects are reduced to insignificant levels.

5. **Mitigation Measures:** NONE

6. **Date of Public Notice of Negative Declaration:** September 2, 2022

7. **End of Review Period:** October 3, 2022

****

ISSUANCE OF THIS
NEGATIVE DECLARATION
DOES NOT IMPLY APPROVAL OF
THE PROJECT

****

_____
Signature

_____
Interim Principal Civil Engineer

Date:_____

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Chapter 1
INTRODUCTION

This Draft Initial Study/Negative Declaration (IS/ND) has been prepared in accordance with California Environmental Quality Act (CEQA), under which the Proposed Project is evaluated at a project level (CEQA Guidelines § 15378). Alameda County Public Works Agency, as the lead agency under CEQA, will consider the Proposed Project's potential environmental impacts when considering whether to approve the Project. This Draft IS/ND is an informational document to be used in the planning and decision-making process for the Proposed Project and does not recommend approval or denial of the Proposed Project.

The site plans for the Proposed Project included in this Draft IS/ND are conceptual. The Alameda County Public Works Agency anticipates that the final design for the Proposed Project would include some modifications to these conceptual plans, and the environmental analysis has been developed with conservative assumptions to accommodate some level of modification.

This Draft IS/ND describes the Proposed Project; its environmental setting, including existing conditions and regulatory setting, as necessary; and the potential environmental impacts of the Proposed Project on or with regard to the following topics:

1	Aesthetics	11	Land Use and Planning
2	Agriculture/Forestry Resources	12	Mineral Resources
3	Air Quality	13	Noise
4	Biological Resources	14	Population and Housing
5	Cultural Resources	15	Public Services
6	Energy	16	Recreation
7	Geology, Soils, and Seismicity	17	Transportation and Traffic
8	Greenhouse Gas Emissions	18	Tribal Cultural Resources
9	Hazards and Hazardous Materials	19	Utilities and Service Systems
10	Hydrology/Water Quality	20	Wildfire

The Proposed Project would incorporate avoidance and minimization measures (AMMs) to avoid or reduce the potential for significant adverse impacts on the environment.

1.1 Public Involvement Process

Public disclosure and dialogue are priorities under CEQA. CEQA Guidelines Section 15073 and Section 15105(b) require that the lead agency designate a period during the Draft IS/ND process when the public and other agencies can provide comments on the potential impacts of the Proposed Project.

The Draft IS/ND is available for review at the following location:

- Alameda County Public Works Agency Office (399 Elmhurst St, Hayward, CA 94544)

The Draft IS/ND will also be available for review on the County's website:

https://www.acpwa.org/document-library.page

All comments submitted in writing and received before 5:00 p.m. on the date identified for closure of the public comment period in the Notice of Intent will be considered by the County.

Comments on the Draft IS/ND should be submitted to the following contact:

Jacquelyn Tom, Assistant Environmental Compliance Specialist
Alameda County Public Works Agency
399 Elmhurst St
Hayward, CA 94544

1.2 Organization of this Document

This Draft IS/ND contains the following components:

Chapter 1, *Introduction*, provides a brief description of the intent and scope of this IS/ND, the public involvement process under CEQA, and the organization of and terminology used in this Draft IS/ND.

Chapter 2, *Project Description*, describes the Proposed Project including its purpose and goals, the site where the Proposed Project would be constructed, the construction approach and activities, operation-related activities, and related permits and approvals.

Chapter 3, *Environmental Checklist*, presents the checklist used to assess the Proposed Project's potential environmental effects, which is based on the model provided in Appendix G of the CEQA Guidelines. This chapter also includes a brief environmental setting description for each resource topic and identifies the Proposed Project's anticipated environmental impacts, as well as any mitigation measures that would be required to reduce potentially significant impacts to a less-than-significant level.

Chapter 4, *References*, provides a bibliography of printed references, websites, and personal communications used in preparing this Draft IS/ND.

Appendices

Appendix A: Noise Calculations

Appendix B: Evaluation of Traffic Operations Report

1.3 Impact Terminology and Use of Language in CEQA

This Draft IS/ND uses the following terminology to describe the environmental effects of the Proposed Project:

- A finding of *no impact* is made when the analysis concludes that the Proposed Project would not affect the particular environmental resource or issue.
- An impact is considered *less than significant* if the analysis concludes that no substantial adverse change in the environment would result and that no mitigation is needed.
- An impact is considered *less than significant with mitigation* if the analysis concludes that no substantial adverse change in the environment would result with the inclusion of the mitigation measures described.
- An impact is considered *significant or potentially significant* if the analysis concludes that a substantial adverse effect on the environment could result.
- *Mitigation* refers to specific measures or activities that would be adopted by the lead agency to avoid, minimize, rectify, reduce, eliminate, or compensate for an otherwise significant impact.
- A *cumulative impact* refers to one that can result when a change in the environment would result from the incremental impacts of a project along with other related past, present, or reasonably foreseeable future projects. Significant cumulative impacts might result from impacts that are individually minor but collectively significant. The cumulative impact analysis in this Draft IS/ND focuses on whether the Proposed Project's incremental contribution to significant cumulative impacts caused by the project in combination with past, present, or probable future projects is cumulatively considerable.
- Because the term "significant" has a specific usage in evaluating the impacts under CEQA, it is used to describe only the significance of impacts and is not used in other contexts within this document. Synonyms such as "substantial" are used when not discussing the significance of an environmental impact.

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Chapter 2
PROJECT DESCRIPTION

2.1 Background and Need for the Proposed Project

The Alameda County Public Works Agency (County) proposes to implement the Strobridge and Norbridge Intersection Improvements Project (Proposed Project or Project) located at the Strobridge Avenue (Ave) and Norbridge Ave intersection and roadways in Castro Valley, Alameda County.

The Project would improve the mobility and safety in the area adjacent to the intersections of Strobridge Ave/Norbridge Ave and Stanton Ave/Norbridge Ave. The goal of the Project is to increase traffic handling capacity by converting existing one-way roads into two-way roads. In addition to the operation improvement, the Project would enhance safety by constructing high visibility crosswalks, bicycle facilities, restripe lanes, and additional traffic signals.

2.2 Project Purpose and Objectives

The purpose of the Project is to improve mobility and safety at these highly used intersections.

Project objectives include:

- Improve traffic circulation within the Strobridge Ave and Norbridge Ave intersection corridor.
- Improve traffic handling capacity within the Strobridge Ave and Norbridge Ave intersection corridor.
- Improve infrastructure for non-motorized road users (i.e., bicyclists and pedestrians).
- Provide alternative East-West connections to the Castro Valley – Bay Area Rapid Transit (BART) station via Norbridge Ave.
- Provide alternative East-West connections to the Castro Valley Library.

2.3 Project Location and Setting

The Project area encompasses approximately 5.5 acres in Castro Valley, Alameda County (see **Figure 2-1**). The Proposed Project includes four distinct road segments: (1) Strobridge Ave; (2) Norbridge Ave, including the Interstate (I)-580 off-ramp; (3) Castro Valley Boulevard; and (4) Stanton Avenue. The Project area includes roadways, storm drains, and roadway embankments. The site and surrounding area are developed with a mix of commercial, industrial, and residential uses. North of the Project area is primarily resident uses with a smaller mix of commercial uses, including the Eden Medical Center. East of the Project area is a lumber yard, mini-golf center, and residential uses. South of the Project area is the I-580, and beyond that is

residential uses. West of the Project area is commercial uses, a hotel, and the I-580/State Route (SR)-238 interchange. **Figure 2-2** shows the Project area and immediate surroundings.

2.4 Project Components

2.4.1 Roadway Improvements

The Project would modify two intersections to help alleviate congestion and improve the mobility and safety within the Project area. Modifications to the intersections would occur at Strobridge Ave/Norbridge Ave and Stanton Ave/Norbridge Ave. **Figure 2-3** shows the existing roadway configuration of the Project area. **Figure 2-4** shows the Project's alterations to the roadway configuration of the Project area.

Strobridge Ave and Norbridge Ave Intersection

The Strobridge Ave/Norbridge Ave intersection would be modified to be stop controlled (controlled by stop signs), with no new signals added. The Project would remove the existing concrete island at the confluence of Strobridge Ave, Norbridge Ave, and the I-580 off-ramp. The new configuration would remove the left-hand turn in the southbound direction on Strobridge Avenue heading northeast onto Norbridge Avenue. As part of the removal of the left-hand turn from Strobridge Ave to Norbridge Ave, the roadway would be reconfigured to include a wider sidewalk. Plaza treatment and green infrastructure may be installed at this location. The new concrete island would also remove the right-hand turns from Stanton Ave onto Norbridge Ave in the northbound direction. The Project would relocate the existing crosswalk to the new intersection.

Stanton Ave and Norbridge Ave Intersection

The Project would modify a second intersection at Stanton Ave/Norbridge Ave. This intersection would also be stop controlled, with no new signals added. Improvements would include widening the existing sidewalk to shorten the crossing distance, realignment of the curb and gutter system on the western edge of the roadway, and modifications to the existing drainage facilities. Turns from this intersection would be restricted to one left-hand turn onto northbound Norbridge Ave.

Travel Lane Alterations

Stanton Ave would be restriped to reduce it to a single lane in the northbound direction underneath the I-580 overpass. Strobridge Ave would be restriped to alter the travel paths between Castro Valley Boulevard and the new intersection at Strobridge Ave /Norbridge Ave. Under current conditions, there are two southbound lanes on Strobridge Ave. The Project would restripe Strobridge Ave to allow for one southbound lane and one northbound lane and a right-turn lane in the northbound direction. The modified intersection at Strobridge Ave and Norbridge Ave would allow a new right-hand turn onto the one northbound lane on Strobridge Ave and a left-hand turn onto southbound Strobridge Ave.

Stanton Ave under existing conditions has one northbound lane and two turn lanes between the Stanton Ave/Norbridge Ave intersection and Castro Valley Boulevard. The Project would restripe

the roadway to create one new southbound lane and maintain one northbound lane and one turn lane. The newly created southbound lane would be accessed via Castro Valley Boulevard. The existing concrete island at the Castro Valley Boulevard/Stanton Ave intersection would be modified to allow access for the newly created southbound travel lane.

2.4.2 Signals, Signage & Markings

Traffic Signals

To facilitate the alteration of travel lanes, the Project would modify a number of traffic signals within the Project area. These modifications would include alterations to include the additional turn signals required by the new northbound and southbound travel lanes. Signals to be altered would include:

- Westbound Castro Valley Boulevard at Stanton Ave.
- Northbound and southbound Stanton Ave at Castro Valley Boulevard.
- Northbound John Drive at Castro Valley Boulevard.

Signage & Markings

The Project would include the required and recommended roadway signage and marking standards developed by the California Department of Transportation (Caltrans) and/ or the most current version of the California Manual of Uniform Traffic Control Devices. The final striping, marking, and signage plan would be reviewed by a licensed traffic or civil engineer. All roadway signs would be located outside the edge of the paved roadway. Horizontal and vertical clearances would also be in accordance with the most current edition of the California Manual of Uniform Traffic Control Devices. The new crosswalks would utilize rectangular rapid flashing beacon (RRFB) system.

2.4.3 Utilities

The Project would be designed to avoid impacts to active surface utilities, such as fire hydrants, utility boxes, etc. Installation of the Project would include coordination with various utility companies via the Underground Service Alert to prevent conflicts with subterranean utilities.

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Figure 2-1
Project Vicinity

Strobridge and Norbridge Intersection
Improvements Project
Initial Study/Negative Declaration

Horizon
WATER and ENVIRONMENT

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Figure 2-2
Project Location

Horizon WATER and ENVIRONMENT

Strobridge and Norbridge Intersection
Improvements Project
Initial Study/Negative Declaration

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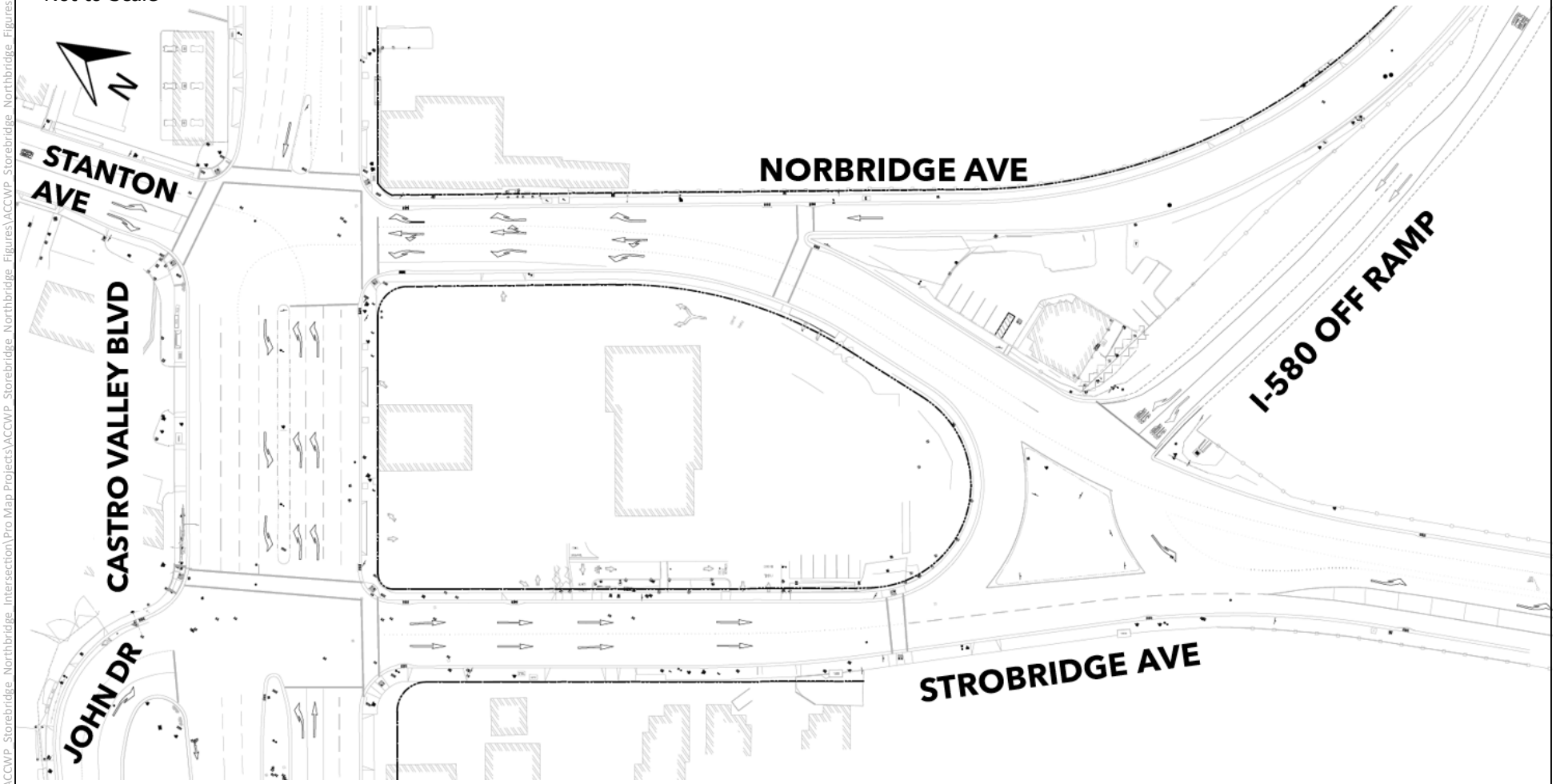

Source: Alameda County public Works Agency

Figure 2-3
Existing Travel Lane Configuration

Horizon WATER and ENVIRONMENT

Strobridge and Norbridge Intersection
Improvements Project
Initial Study/Negative Declaration

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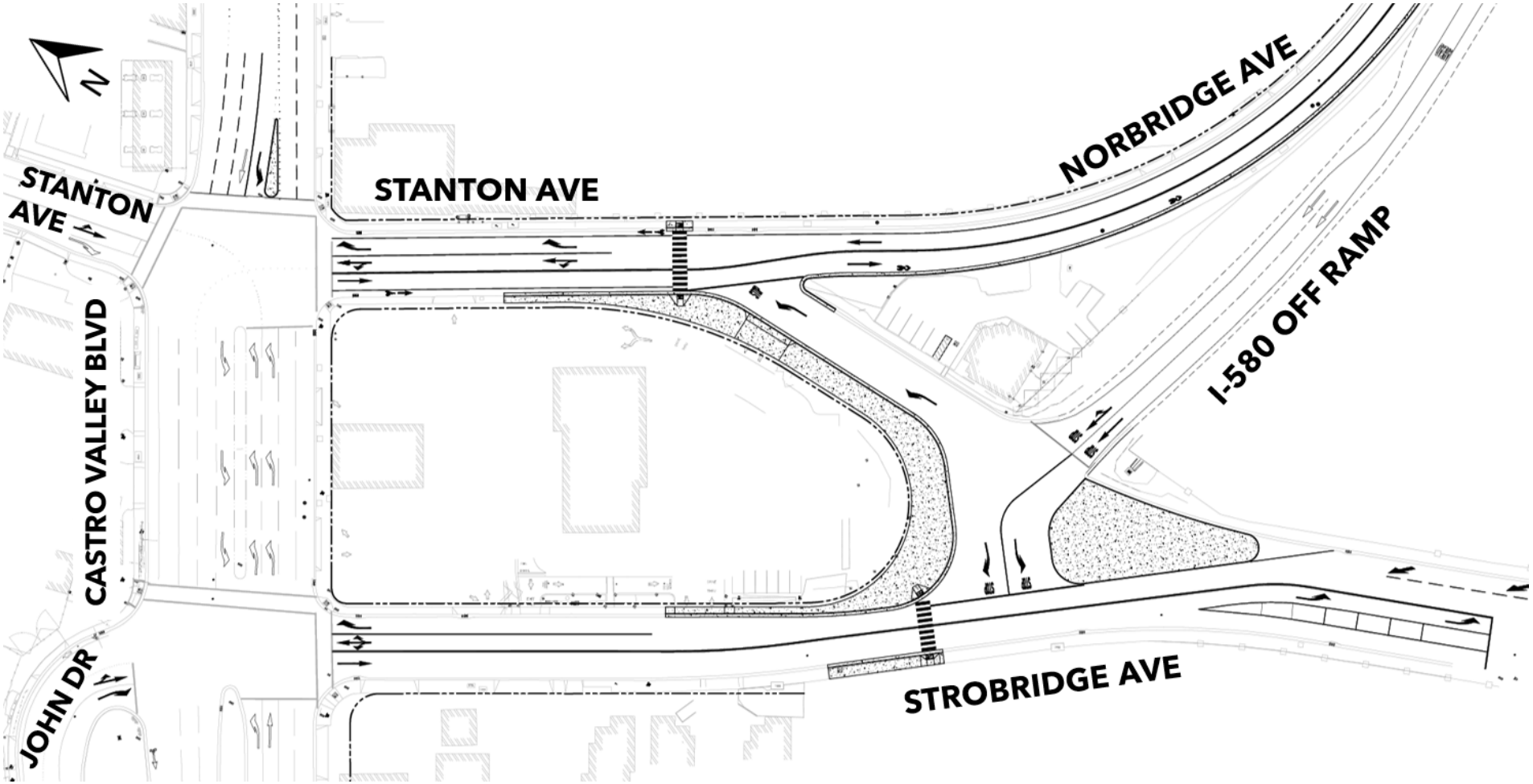

Source: Alameda County Public Works Agency

Figure 2-4
Project Site Plan

Horizon WATER and ENVIRONMENT

Strobridge and Norbridge Intersection
Improvements Project
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2.4.4 Project Construction

Construction Methods

Site Preparation and Earthwork: Site preparation would include removing and modifying existing concrete islands, clearing and grubbing, minor grading and excavation, importing and placing fill, and compacting fill and other materials. The existing 5,100-square foot, concrete island at the Strobridge Ave/Norbridge Ave intersection would be demolished and removed from the site. The 600-square-foot, concrete island at the Castro Valley Boulevard/Stanton Ave intersection would be modified. Approximately 150 cubic yards (cy) of concrete would be removed from the Project area. Clearing and grubbing of the site, including the potential removal of all on-site vegetation, would be conducted using bulldozers, standard excavators, and with hand tools. All demolished material and debris would be disposed of off-site at an appropriate facility selected by the construction contractor. For the purposes of this analysis, the disposal site is presumed to be located within 1 hour of travel time from the Project area.

To the extent feasible, excavated soil would be reused on site. It is not anticipated that any fill would be imported for the Project. Fill material would be placed with an excavator and compacted with a compactor/roller. The Project would remove approximately 150 cy of existing concrete and install approximately 250 cy of new concrete, for a net approximate of 100 cy of new concrete.

The final step in the construction process would be to restore the ground surface. Site restoration activities would generally involve paving, installing landscaping, and installing erosion controls, as necessary. This phase would also include sidewalk and street resurfacing improvements within the Project area.

Project Equipment: The following presents a typical list of equipment that would be used during Project construction:

- Boom truck/cherry picker
- Baker tanks
- Concrete truck and boom pump
- Concrete saw
- Dump trucks
- Drill
- Excavator (small and medium)
- Flatbed trucks
- Generators and air compressors
- Grader
- Jackhammer
- Loader
- Pickup trucks (small and large)
- Pump
- Roller/Compactor
- Paver

The typical work crew would be between 4 and 10 personnel.

Construction Staging and Access

Project construction activities would result in short-term, temporary lane closures on Norbridge Ave, Strobridge Ave, and Stanton Ave. Construction staging and stockpile areas would be limited to areas within the County's right-of-way, including within road shoulders, pull-outs, and

temporary closed lanes designated as construction areas. Vegetation, primarily ruderal plants, within the staging and stockpiling areas would be trimmed and removed as needed and the limits of the work area would be clearly defined by the construction contractor.

2.4.5 Operation and Maintenance

Once the Project is constructed, the Proposed Project would not involve any operation-related activities, facilities, or equipment. Maintenance activities would be consistent with existing practices, and include street cleaning, trash and debris removal, and storm drain clearing. Maintenance activities would be conducted by the County only when determined to be necessary.

2.4.6 Timing and Implementation

Construction of the Proposed Project is anticipated to last for approximately six months, beginning in April 2023 and ending in October 2023. Construction activities would typically be performed Monday through Friday between 7 a.m. and 5 p.m. in compliance with applicable noise standards. Construction would be scheduled to avoid peak traffic hours. After-hours work and work on Saturdays, Sundays, and State holidays would be permitted at the discretion of the County.

2.5 Impact Avoidance and Minimization Measures

Avoidance and minimization measures (AMMs), which include general construction practices, dust control, street sweeping, biological resources and habitat protection measures, and cultural resources protection measures, are incorporated into the design of the Project and would be implemented during Project construction. The complete list of Project AMMs is provided in **Table 2-2**.

2.6 Permits and Approvals

The permits and regulatory compliance requirements, along with the regulatory permitting agency, are described for the Proposed Project in **Table 2-1.**

Table 2-1. Applicable Permit and Regulatory Requirements

State Agencies

Regulatory Agency	Law/Regulation	Purpose	Permit/ Authorization Type
Caltrans (District 4)	Design Standard Decision Document (DSDD) American with Disabilities Act (ADA)	Ensures compliance with Caltrans regulation on properties owned by Caltrans	Encroachment Permit and ADA Certification
Native American Heritage Commission	Assembly Bill (AB) 52	Requires consultation with California Native American tribes that may be traditionally and culturally affiliated with the Project area	N/A

Notes: N/A= not applicable

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Table 2-2. Project Avoidance and Minimization Measures

General

AMM Number	AMM Title	AMM Description
GEN-1	Minimize the Area of Disturbance	Ground disturbance within the project area will be kept to the minimum footprint necessary to complete project construction.
GEN-2	Erosion and Sediment Control	▪ At no time shall silt laden runoff be allowed to leave the project area into a storm drain system. Silt control structures will be monitored for effectiveness and will be repaired or replaced as needed. ▪ Erosion control measures will be installed according to manufacturer's specifications. Appropriate erosion control measures include, but are not limited to, the following: silt fences, straw bale barriers, erosion control blankets and mats, and soil stabilization measures (e.g., tackified straw with seed, jute blankets, broadcast and hydroseeding). ▪ Erosion control fabrics will consist of natural fibers that will biodegrade over time and are wildlife friendly. No plastic or other non-porous material will be used as part of a permanent erosion control approach. ▪ All temporary construction-related erosion control methods (e.g., silt fences) will be removed at the completion of construction.
GEN-3	Fill, Spoils, and Stockpiled Materials	▪ Temporary fill materials, excavated spoils that have not yet been hauled off site, and stockpiled material not moved within 14 days will be isolated with silt fence, filter fabric, and/or straw bales/fiber rolls. ▪ The Contractor shall designate areas suitable for material storage near construction entrances and at least 10-feet away from drainage courses. ▪ During wet weather or when rain is forecast within 72 hours, the Contractor will cover materials that can contaminate rainwater or be transported by runoff to storm drains with a tarp or other waterproof material secured in a manner that would prevent any of the materials from contacting the rainwater.
GEN-4	On-site Hazardous Materials Management	▪ An inventory of all hazardous materials used (and/or expected to be used) at the worksite and the end products that are produced (and/or expected to be produced) after their use will be maintained by the worksite manager. ▪ As appropriate, containers will be properly labeled with a "Hazardous Waste" label and hazardous waste will be properly recycled or disposed of off-site.

		▪ Exposure of chemicals to precipitation will be minimized by storing chemicals in watertight containers or in a storage shed (completely enclosed), with appropriate secondary containment to prevent any spillage or leakage. ▪ Petroleum products, chemicals, cement, fuels, lubricants, and non-storm drainage water or water contaminated with the aforementioned materials will not contact soil and will not be allowed to enter surface waters. ▪ All toxic materials, including waste disposal containers, will be covered when they are not in use, and located as far away as possible from a direct connection to the storm drainage system or surface water. ▪ The storage and disposal of all hazardous materials, such as pesticides, paints, thinners, solvents, and fuels; and all hazardous wastes, such as waste oil and antifreeze; will comply with all federal, state, and local standards and requirements. ▪ When rain is in the forecast within 72 hours or during wet weather, the Contractor will not apply chemicals in the outside areas. ▪ If hazardous materials are encountered at the project area, the Contractor will remove and dispose of them according to the Spill Prevention and Response Plan (see GEN-5).
GEN-5	Spill Prevention and Response Plan	To minimize the potential adverse effects due to the release of chemicals, fuels, lubricants, and non-storm drainage water into waterways, the County or the Contractor shall develop a Spill Prevention and Response Plan to be implemented by the Contractor and all field personnel. The plan will contain guidelines for cleanup and disposal of spilled and leaked materials at the project area. The plan will include, but not be limited to, the following measures: ▪ Contractor's designated field personnel will be appropriately trained in spill prevention, hazardous material control, and cleanup of accidental spills. ▪ Equipment and materials for cleanup of spills will be available on site, and spills and leaks will be cleaned up immediately and disposed of according to the following guidelines: – For small spills on impervious surfaces, absorbent materials will be used to remove the spill, rather than hosing it down with water. – For small spills on pervious surfaces such as soil, the spill will be excavated and properly disposed of rather than being buried. ▪ Absorbent materials will be collected and disposed of properly and promptly. ▪ If the waste is hazardous, the Contractor shall comply with all federal, state, and local hazardous waste requirements.

		▪ Spill response kits and a stockpile of spill cleanup materials such as rags or absorbents will be on hand at all times while hazardous materials are in use (e.g., at crew trucks and other logical locations). All field personnel will be advised of these locations. ▪ The Contractor will routinely inspect the work site to verify that spill prevention and response measures are properly implemented and maintained.
GEN-6	Vehicle and Equipment Maintenance/ Cleaning	▪ Servicing of vehicles will be conducted in designated staging areas away from storm drains to avoid contamination through accidental drips and spills. The Contractor will use secondary containment such as a drip pan, to catch leaks or spills any time that vehicle or equipment fluids are dispenses, changed, or poured. ▪ Incoming equipment will be checked for leaking oil and fluids. No equipment servicing will take place in a water body. If emergency repairs are required, only those repairs necessary to move equipment to a more secure location will be permissible. ▪ All vehicles and equipment will be kept clean. Excessive build-up of oil and grease will not be permitted. ▪ Refueling will be done outside of waterways/storm drains unless equipment stationed in these locations cannot be readily relocated (e.g., pumps and generators). For stationary equipment that must be fueled on-site, secondary containment, such as a drain pan or drop cloth, will be used to prevent accidental spills of fuels from reaching the soil or the storm drain system.
GEN-7	Dust Management Controls and Air Quality Protection	The Contractor will implement the following applicable Bay Area Air Quality Management District's Basic Construction Mitigation Measures to reduce emissions of fugitive dust and equipment exhaust: ▪ All haul trucks transporting soil, sand, or other loose material off-site will be covered. ▪ All vehicle speeds on unpaved roads will be limited to 15 mph. ▪ Idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure [13 California Code of Regulations Section 2485]). ▪ All construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. All equipment will be checked by a certified mechanic and determined to be running in proper condition prior to operation. ▪ All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
GEN-8	Pavement Saw-cutting Operations	The Contractor will prevent any saw-cutting debris from entering the storm drain system. The Contractor shall use dry cutting techniques and sweep up residue when practicable. If wet methods are used, the Contractor will vacuum slurry as cutting proceeds or collect all wastewater by constructing a sandbag sediment barrier.

		The bermed area will be of adequate size to collect all wastewater and solids. The Contractor will allow collected water to evaporate if the wastewater volume is minimal and if maintaining the ponding area does not interfere with public use of the street area or create a safety hazard. ▪ If approved by the Engineer, the Contractor may direct or pump saw-cutting wastewater to a dirt area and allow to infiltrate. The dirt area will be adequate to contain all the wastewater. After wastewater has infiltrated, all remaining saw-cutting residue must be removed and disposed of properly. Remaining silt and debris from the ponding or bermed area will be removed or vacuumed and disposed of properly. ▪ If a suitable dirt area is not available, with the approval of the Engineer, the Contractor will filter the saw-cutting wastewater through filtering materials and methods meeting the Association of Bay Area Governments (ABAG) Standards for Erosion and Sedimentation Control Measures (latest edition) before discharging off-site.
GEN-9	Concrete Operations	The Contractor will prevent the discharge of pollutants from concrete operations by properly disposing of waste, and by implementing the following practices: ▪ Store all materials in waterproof containers or under cover away from drain inlets or drainage areas. ▪ Avoid mixing excess amounts of Portland cement material. ▪ Do not wash out concrete trucks into storm drains, open ditches, streets, streams, etc. Whenever possible, perform washout of concrete trucks off site where discharge is controlled and not permitted to discharge into the storm drain system. For onsite washout, locate washout area at least 50 feet from storm drains, open ditches or other water bodies, preferably in a dirt area. Control runoff from the area by constructing a temporary pit or bermed area large enough for the liquid and solid waste. ▪ Wash out concrete wastes into the temporary pit where the concrete can set, be broken up and then disposed of properly. If the volume of water is greater than what will allow concrete to set, allow the water to infiltrate and/or evaporate, if possible. Remove or vacuum the remaining silt and debris from the pond area and dispose of it properly. ▪ Dispose of water from washing of exposed aggregate to dirt area. The dirt area will be adequate to contain all the wastewater and once the wastewater has infiltrated, any remaining residue must be removed. If a suitable dirt area is not available, then the Contractor will filter the wash water through straw bales or other filtering materials meeting ABAG Standards for Erosion and Sediment Control Measures before discharging to the sanitary sewer with approval from the Engineer. ▪ Collect and return sweepings from exposed aggregate concrete to a stockpile or dispose of the waste in trash containers.

GEN-10	Fire Prevention	All earthmoving and portable equipment with internal combustion engines will be equipped with spark arrestors. During the high fire danger period (April 1–December 1), work crews will: ▪ Have appropriate fire suppression equipment available at the work site. ▪ Keep flammable materials, including flammable vegetation slash, at least 10 feet away from any equipment that could produce a spark, fire, or flame. ▪ Not use portable tools powered by gasoline-fueled internal combustion engines within 25 feet of any flammable materials unless a round-point shovel or fire extinguisher is within immediate reach of the work crew (no more 25 feet away from the work area).
GEN-11	Traffic Flow and Safety Measures	▪ Work will be staged and conducted in a manner that maintains at least one open travel lane of traffic on roadways in the project area. ▪ Construction signs will be posted at job sites warning the public of construction work and to exercise caution. ▪ Any temporary one-lane closures will include advance warning signage, a detour route, and flaggers in both directions to direct traffic to safeguard construction workers, provide safe passage for vehicles, and minimize traffic impacts. Work will also be coordinated with local emergency service providers and local jurisdictions as necessary to ensure that emergency vehicle access and response is not impeded. ▪ Access to driveways and private roads will be maintained. If brief periods of maintenance would temporarily block access, property owners will be notified prior to maintenance activities.
GEN-12	Minimize Noise Disturbances to Residential Areas	▪ The County will implement construction practices that minimize disturbances to residential areas surrounding work sites. ▪ With the exception of emergencies, work will be conducted during normal working hours (7:00 a.m. – 5:00 p.m.). ▪ Construction activities will not occur on Saturdays, Sundays, or County observed holidays except during emergencies, or with approval by the local jurisdiction and advance notification of surrounding residents. Advanced notification will be provided 1-week prior to the start of construction to adjacent properties within 180 feet of the project area where heavy equipment will be used. ▪ Powered equipment (vehicles, heavy equipment, and hand equipment such as chainsaws) will be equipped with adequate mufflers.

Biological Resources

AMM Number	AMM Title	AMM Description
BIO-1	Nesting Birds	To the extent feasible, construction activities will be scheduled to avoid the nesting season (February 1 – August 31). ▪ If it is not possible to schedule project activities outside the nesting bird, pre-construction surveys for nesting birds will be conducted by a qualified biologist to ensure that no nests will be disturbed during project construction. These surveys will be conducted no more than seven days prior to the initiation of project activities. During this survey, the biologist will inspect all trees and other potential nesting habitats (e.g., shrubs, ruderal grasslands, and structures) in and immediately adjacent to the construction areas for nests. ▪ If an active nest is found sufficiently close to work areas to be disturbed by these activities, a non-disturbance buffer zone will be established around the nest at the biologist's discretion and in accordance with regulatory permits and conditions to ensure that no nests of species protected by the Migratory Bird Treaty Act and California Fish and Game Code will be disturbed during project implementation. The boundary of each buffer zone will be marked with fencing, flagging, or other easily identifiable marking if work will occur immediately outside the buffer zone. All protective buffer zones will be maintained until the nest becomes inactive, as determined by a qualified biologist.

Cultural Resources

AMM Number	AMM Title	AMM Description
CUL-1	Cultural Resources and Human Remains	▪ If cultural resources are encountered during ground disturbing activities, the contractor will stop work within 100 feet of the find and protect the find until the County can notify a qualified archaeologist or other such qualified individual to assess the significance of the discovery. Work may proceed on other parts of the Project area while the find is assessed. ▪ If any find is determined to be significant (CEQA Guidelines 15064.5[a][3] or as unique archaeological resources per Section 21083.2 of the Public Resources Code), representatives of the Proponent and a qualified archaeologist shall meet to determine the appropriate course of action. The County will first

		strive to avoid the find. However if avoidance of the find is not feasible, other appropriate measures (e.g., data recovery) will be instituted. ▪ Project personnel will not collect or retain found cultural resources. ▪ The treatment of human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity within the project area will comply with applicable State laws and include immediate notification of the Alameda County Coroner. ▪ In the event of the coroner's determination that the human remains are Native American, notification of the Native American Heritage Commission (NAHC) is required. The NAHC will be notified by phone within 24 hours of the discovery and shall be afforded the opportunity to appoint a Most Likely Descendant (MLD) (Public Resources Code Section 5097.98).

Notes: ABAG = Association of Bay Area Governments; MLD = Most Likely Descendant; NAHC = Native American Heritage Commission.

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Chapter 3
ENVIRONMENTAL CHECKLIST

This chapter of the Draft Initial Study/Negative Declaration (IS/ND) assesses the environmental impacts of the Strobridge and Norbridge Intersection Improvements Project (Proposed Project) based on the environmental checklist provided in Appendix G of the California Environmental Quality Act (CEQA) Guidelines. The environmental resources and potential environmental impacts of the Proposed Project are described in the individual subsections below. Each section includes a discussion of the rationale used to determine the significance level of the Proposed Project's environmental impact for each checklist question. For environmental impacts that have the potential to be significant, mitigation measures are identified that would reduce the severity of the impact to a less-than-significant level.

1.	**Project Title**	Strobridge and Norbridge Intersection Improvements Project
2.	**Lead Agency Name and Address**	Alameda County Public Works Agency 399 Elmhurst St Hayward, CA 94544
3.	**Contact Person, Phone Number and Email**	Jacquelyn Tom, Assistant Environmental Compliance Specialist (510) 670-5248 Jacquelyn@acpwa.org
4.	**Project Location and Assessor's parcel number (APN)**	Strobridge and Norbridge Avenues right-of-way, Castro Valley, Alameda County
5.	**Property Owner(s)**	Alameda County; Caltrans right-of-way
6.	**General Plan Designation**	Right-of-way
7.	**Zoning**	Right-of-way
8.	**Description of Project**	The Project would improve two existing intersections at Strobridge Ave/Norbridge Ave and Stanton Ave/Norbridge Ave. The purpose of the Project is to help with traffic flows, which are currently backed up due to the existing design. In addition to the intersections, the Project would construct high visibility crosswalks, bicycle facilities, restripe lanes, and add additional traffic signals.
9.	**Surrounding Land Uses and Setting**	The Project site includes roadways, storm drains, and roadway embankments. The site and surrounding area are developed with a mix of commercial, industrial, and

	residential uses. North of the Project area is primarily residential uses with a smaller mix of commercial uses, including the Eden Medical Center. East of the Project area is a lumber yard, mini-golf center, and residential uses. South of the Project site is the I-580, and beyond that is residential uses. West of the Project site is commercial uses, a hotel, and the I-580/State Route (SR)-238 interchange.
10. Other Public Agencies whose Approval or Input May Be Needed	Caltrans
11. Native American Consultation	Assembly Bill (AB) 52 consultation letters were sent out to the tribes on June 20, 2022. Kanyon Sayers-Roods on behalf of the Indian Canyon Band of Costanoan Ohlone People responded to the County via email on July 1, 2022. The County is currently engaging in consultation with Kanyon Sayers-Roods about the Project.

Environmental Factors Potentially Affected

The environmental factors checked below would potentially be affected by the Proposed Project, as indicated by the checklist on the following pages.

1	☒ Aesthetics	12	☐ Mineral Resources
2	☐ Agriculture and Forestry Resources	13	☒ Noise
3	☒ Air Quality	14	☐ Population/Housing
4	☒ Biological Resources	15	☒ Public Services
5	☒ Cultural Resources	16	☐ Recreation
6	☒ Energy	17	☒ Transportation
7	☒ Geology/Soils	18	☒ Tribal Cultural Resources
8	☒ Greenhouse Gas Emissions	19	☒ Utilities/Service Systems
9	☒ Hazards and Hazardous Materials	20	☐ Wildfire
10	☒ Hydrology/Water Quality	21	☒ Mandatory Findings of Significance
11	☐ Land Use/Planning		

Determination

The conclusions and recommendations contained herein are professional opinions derived in accordance with current standards of professional practice. They are based on a review of sources of information cited in this document, and the comments received, conversations with knowledgeable individuals; the preparer's personal knowledge of the area; and, where necessary, a visit to the site.

On the basis of this initial evaluation:

☒ I find that the Proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the Proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT (EIR) is required.

☐ I find that the Proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the Proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature Jim Browne Date 9-1-2022

Name: Jim Browne, Acting Environmental Services Supervisor

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3.1 AESTHETICS

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

3.1.1 Regulatory Setting

Federal and State Laws, Regulations, and Policies

There are no federal or state plans, policies, regulations, or laws related to aesthetics or visual resources applicable to the Project.

Regional and Local Laws, Regulations, and Policies

Castro Valley General Plan

The Castro Valley General Plan (Alameda County Community Development Agency 2012) is the comprehensive long-range general plan that guides land use and development in the unincorporated area of Castro Valley, Alameda County. Goals and policies related to the Proposed Project and the aesthetics analysis include the following:

> **GOAL 5.2-1** Preserve and enhance the small-town character of Castro Valley, while allowing for infill development.

3.1.2 Environmental Setting

The site and surrounding area are developed with a mix of commercial, industrial, and residential uses. The Project is located at the intersection of Strobridge Avenue and Norbridge Avenue with no substantial views of the San Francisco Bay or scenic hillsides from or across the site. The I-580 is located adjacent to the Project area.

The segment of I-580 that passes through Castro Valley is eligible to be a California Scenic Highway, although it has not been officially designated as such (Alameda County Community Development Agency. 2007); however, it has been identified as a scenic route in the Alameda County General Plan, which designates all major thoroughfares in Alameda County as Scenic Routes (Alameda County 1966).

3.1.3 Discussion of Checklist Responses

a. Adverse effects on scenic vistas

A scenic vista is generally considered a view of an area that has remarkable scenery or a natural or cultural resource that is indigenous to the area. The Project vicinity is developed with a mix of one- and two-story buildings. There are intermittent views to the hillsides from Castro Valley Boulevard and Norbridge Avenue; however, these views are limited by existing development, including uses adjacent to the Project site. Therefore, the project would not have a substantial adverse effect on a scenic vista, and the impact would be **less than significant.**

b. Damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway

Interstate 580 in Alameda County is designated as a scenic highway; however, the section of highway near the project site is not a designated or eligible State Scenic Highway (Alameda County 1966). Neither the Castro Valley General Plan (Alameda County Community Development Agency 2012 nor the Castro Valley Central Business District Specific Plan (Alameda County Planning Department 1993) identify a visual corridor, scenic street, or scenic highway in the project area. Implementation of the project would have **no impact** on scenic resources within a scenic highway.

c. Conflict with applicable zoning and other regulations governing scenic quality

The Project site is in an urbanized area characterized by a mix of residential and single- and multi-story commercial uses, and includes roadway uses. Development of the project would alter an existing roadway within its existing footprint. The Project would include amenities such as landscaping. Additionally, the County will review the proposed design as part of the entitlement approval process to ensure that the design is consistent with existing zoning and regulations governing scenic quality. Therefore, the Project would have **no impact** on applicable zoning and other regulations governing scenic quality.

d. New sources of substantial light or glare

The project site and vicinity generate outdoor lighting typical for an urban area. The proposed Project would add to the existing light sources with street signal lamps. The project would be

required to design lighting to be sensitive to neighboring land uses and to minimize energy use. Project compliance with County lighting guidelines would reduce light and glare associated with the project to levels consistent with surrounding uses. Increases at the closest residential and commercial uses would be consistent with the existing urban conditions, and potential impacts related to light and glare would be **less than significant**.

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3.2 AGRICULTURE AND FORESTRY RESOURCES

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the Project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non- agricultural use?	☐	☐	☐	☒
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

3.2.1 Discussion of Checklist Responses

a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non- agricultural use?

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

c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

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

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

The Project site is in a developed urban area and is itself fully developed. The Project area does not contain land designated as Prime Farmland, Unique Farmland, Farmland of Statewide Importance or forestland. Therefore, there will be no potential to convert any land to non-agricultural use as a result of Project implementation. Further, there are no parcels currently under a Williamson Act contract in the vicinity of the Project site. Implementation of the project would have **no impact** on agriculture and forestry resources.

3.3 AIR QUALITY

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
When available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

3.3.1 Regulatory Setting

The Clean Air Act is implemented by the U.S. Environmental Protection Agency (USEPA) and sets ambient air quality limits, the National Ambient Air Quality Standards (NAAQS), for six criteria pollutants: particulate matter (PM), carbon monoxide, nitrogen oxides (NOx), ground-level ozone and lead. Of these criteria pollutants, PM and ground-level ozone pose the greatest threat to human health. The California Air Resources Board (CARB) sets California's ambient air quality standards for criteria pollutants that are more stringent than the NAAQS. CARB has enacted numerous regulations regulating mobile sources such as off-road construction equipment and on-road vehicles that are more stringent than the federal regulations.

The proposed Project is located in the San Francisco Bay Area Air Basin (SFBAAB) and under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). BAAQMD is responsible for implementation of regional air quality and regulations in the SFBAAB. It regulates air quality through its planning, review, and permitting activities and have established thresholds of significance for project emissions of criteria pollutants (BAAQMD 2017a). **Table 3.3-1** provides recommended significance criteria for analysis of air quality impacts, including cumulative impacts. The BAAQMD recommends implementing best management practices (BMPs) for all projects to reduce fugitive dust emissions. With implementation of fugitive dust BMPs, BAAQMD considers the impact of fugitive dust emissions to be less than significant. The BAAQMD has also established screening criteria that specify an acceptable distance between sensitive receptors and common sources of odors, such as landfills and wastewater treatment plants. BAAQMD specifies that an odor source with five or more confirmed complaints per

year averaged over 3 years would be considered to have a significant impact on receptors within the screening distance. BAAQMD acknowledges that a lead agency has discretion under CEQA to use other established odor detection thresholds or other significance thresholds for CEQA review.

Table 3.3-1. BAAQMD Air Quality Thresholds of Significance

Pollutant	Daily Emissions (pounds per day)	Annual Emissions (tons per year)
ROG	54	10
NO_X	54	10
PM10 (Exhaust)	82	15
PM2.5 (Exhaust)	54	10
PM10/PM2.5 (Fugitive Dust)	BMPs	None
Local CO	None	None

Source: BAAQMD 2017a

The SFBAAB is a state and federal non-attainment area for ozone and PM2.5 and state non-attainment area for PM10. BAAQMD's Final 2017 Clean Air Plan (CAP), titled Spare the Air, Cool the Climate, describes how BAAQMD will reduce emissions of toxic air contaminants (TACs) and continue to make progress toward attaining state and federal air quality standards (BAAQMD 2017b). These proposed measures include controlling PM emissions from paving operations, fugitive dust, trackout during construction, and bulk material handling and transport.

3.3.2 Environmental Setting

The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns. The potential for high pollutant concentrations developing at a given location depends upon the quantity of pollutants emitted into the atmosphere in the surrounding area or upwind, and the ability of the atmosphere to disperse the contaminated air. The topographic and climatological factors of the SFBAAB influence the atmospheric pollution potential of an area which include wind circulation, inversions, solar radiation, and sheltered terrain. Atmospheric pollution potential is independent of the location of emission sources and is instead a function of topographic and climatological factors.

The project is located in Castro Valley, Alameda County in a suburban development setting with the surrounding area developed with a mix of commercial, industrial and residential uses. Interstate 580 is located adjacent to the project intersections. The project is located in the Southwestern Alameda County Subregion. This subregion is indirectly affected by marine air flow. Marine air entering through the Golden Gate is blocked by the East Bay hills, forcing the air to diverge into northerly and southerly

paths. The southern flow is directed down the bay, parallel to the hills, where it eventually passes over southwestern Alameda County. These sea breezes are strongest in the afternoon. The further from the ocean the marine air travels, the more the ocean's effect is diminished. Although the climate in this region is affected by sea breezes, it is affected less so than the regions closer to the Golden Gate.

The climate of southwestern Alameda County is also affected by its close proximity to San Francisco Bay. The Bay cools the air with which it comes in contact during warm weather, while during cold weather the Bay warms the air. The normal northwest wind pattern carries this air onshore. Bay breezes push cool air onshore during the daytime and draw air from the land offshore at night.

Winds are predominantly out of the northwest during the summer months. In the winter, winds are equally likely to be from the east. Easterly-southeasterly surface flow into southern Alameda County passes through three major gaps: Hayward/Dublin Canyon, Niles Canyon and Mission Pass. Areas north of the gaps experience winds from the southeast, while areas south of the gaps experience winds from the northeast. Wind speeds are moderate in this subregion, with annual average wind speeds close to the Bay at about 7 mph, while further inland they average 6 mph.

Air temperatures are moderated by the subregion's proximity to the Bay and to the sea breeze. Temperatures are slightly cooler in the winter and slightly warmer in the summer than East Bay cities to the north. During the summer months, average maximum temperatures are in the mid- 70's. Average maximum winter temperatures are in the high-50's to low-60's. Average minimum temperatures are in the low 40's in winter and mid-50's in the summer.

Pollution potential is relatively high in this subregion during the summer and fall. When high pressure dominates, low mixing depths and Bay and ocean wind patterns can concentrate and carry pollutants from other cities to this area, adding to the locally emitted pollutant mix. The polluted air is then pushed up against the East Bay hills. In the wintertime, the air pollution potential in southwestern Alameda County is moderate. Air pollution sources include light and heavy industry, and motor vehicles. Increasing motor vehicle traffic and congestion in the subregion may increase Southwest Alameda County pollution as well as that of its neighboring subregions.

Emissions Inventory

During construction of the Proposed Project, the combustion of fossil fuels for operation of construction equipment, material hauling, and worker trips would result in construction-related emissions of criteria air pollutants and greenhouse gas emissions (GHGs). In addition, construction activities would generate fugitive dust from grading and excavation activities. The Proposed Project's criteria air pollutant and GHG emissions during construction were modeled using conservative assumptions for equipment use, scheduling, and haul routes. This assumed that the equipment listed in the project description were used during the full 6-month project schedule for 8 hours, 5 days a week, as detailed in Attachment 1, Air Quality and Greenhouse Gas Emission Calculations. The calculations assumed that a total of 40 hauling trips would be needed to remove concrete and other material from the site and to import new material for the site based on an estimate of 150 cubic yards of concrete removed and 250 cubic yards of new concrete required. The default worker trips were used based on the equipment list. Emissions were estimated using the California Emission Estimator Model (CalEEMod) version 2020.4.0 included in Air Quality and Greenhouse Gas Analysis (Horizon 2022a). Modeled emissions are shown in **Table 3.3-2**. The emissions shown in Table 3.3-2 indicate that the construction emissions estimated for the proposed project are less than the BAAQMD significance thresholds for both criteria pollutants and GHGs.

Table 3.3-2. Criteria Pollutant and GHG Emissions for the Proposed Project Construction

	Pollutant							
	ROG	**NO_X**	**CO**	**PM10 Exhaust**	**PM10 Fugitive**	**PM2.5 Exhaust**	**PM2.5 Fugitive**	**CO2e**
Unmitigated Construction (lb/day)								MT/ project
Unmitigated Project Construction Maximum Daily Emissions – 2021 (lbs/day)	5.5	45.2	53.2	1.9	0.42	1.8	0.11	869
BAAQMD Daily Emissions Threshold (lbs/day)	54	54	None	82	BMPs*	54	BMPs*	1,100 MT/yr
Exceed Threshold?	N	**N**	N	N	N	N	N	N

Note: lb/day = pounds per day. MT=Metric tons

* BMPs indicates that no calculation is required because compliance with BMPs is considered by BAAQMD to reduce the emission to below the threshold.

Project operation would emit criteria air pollutants and GHG emissions from vehicles using the roadways and intersections. Additional GHGs would be emitted for the indirect use of electricity used to operate intersection controls and lights. It is anticipated that both criteria pollutant and GHG emissions would decrease since there would be less congestion and less cars would be stopped at these intersections idling due to the improved loss of service detailed in the traffic study. The project would not likely result in elevated levels of carbon monoxide (CO) above the ambient air quality standards as the volume of traffic is well below the threshold of 44,000 vehicles per hour established by BAAQMD. Therefore, there is not anticipated to be any increase in criteria pollutant or GHG emissions compared to baseline conditions of the intersection and there may be a slight decrease due to the improved flow of traffic.

3.3.3 Discussion of Checklist Responses

a. Conflict with or obstruct implementation of the applicable air quality plan

Under CEQA, a project is deemed inconsistent with air quality plans if it would result in population and/or employment growth that exceeds growth estimates included in the applicable air quality plan, which, in turn, would generate emissions not accounted for in the applicable air quality plan's emissions budget. Therefore, projects are evaluated to determine whether they would generate population and employment growth and, if so, whether that growth would exceed the growth rates included in the relevant air quality plans. The Proposed

Project would not involve the construction of any residential, commercial, or industrial structures that would generate population and/or long-term employment growth.

As stated above, the Proposed Project is located within the SFBAAB within Castro Valley, Alameda County. The SFBAAB is in a state and federal non-attainment area for ozone and PM2.5 and in a state nonattainment area for PM10. BAAQMD's Final 2017 CAP describes how the BAAQMD plans to reduce emissions of toxic air pollutants and continues to make progress towards attaining state and federal air quality standards (BAAQMD 2017a). These proposed measures included in the 2017 CAP include controlling PM emissions from paving operations, fugitive dust, track out during construction, and bulk material handling and transport.

The Proposed Project would implement BMPs for fugitive dust and would be in compliance with the 2017 CAPs policies. Thus, the Proposed Project would not conflict with or impair implementation of applicable air quality plans established by the BAAQMD or local general plans. Because the Proposed Project would not generate growth or conflict with the applicable policies from the BAAQMD air quality plan (BAAQMD 2017a), the impact related to inconsistency with air quality planning would be **less than significant**.

b. Cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area

BAAQMD established emission thresholds and rules regarding emissions of pollutants. The BAAQMD considers that, if the emissions from a project do not exceed its air quality emission thresholds, the project's emissions are not cumulatively considerable. As shown in Table 3.3-2 and discussed under "Emissions Inventory" above, the emissions from the Project are below the BAAQMD's significance thresholds. In addition, the Project would implement BMPs to control fugitive dust. Emission associated with Project operations as discussed above would not increase and may actually decrease due to improved traffic flow. Thus, the impact related to a net increase in criteria pollutants would be **less than significant.**

c. Expose sensitive receptors to substantial pollutant concentrations

Construction-related activities could result in the generation of TACs, specifically diesel particulate matter (DPM) from off-road equipment exhaust emissions. Due to the variable nature of construction activity, the generation of TAC emissions would be temporary in most cases, especially considering the short amount of time such equipment is typically operated within an influential distance of sensitive receptors.[1] According to the Office of Environmental Health Hazard Assessment (OEHHA), the assessment of cancer risk and chronic non-cancer health impacts is typically based on a 70-year exposure period, and there is considerable uncertainty in trying to evaluate the cancer risk from projects that will only last a small fraction of a lifetime (OEHHA 2015). The nearest sensitive receptors are residences along Strobridge

[1] Sensitive receptors are people (e.g., children, elderly, others) who are at a heightened risk of negative health outcomes due to exposure to air pollution. Sensitive receptors may include, but not be limited to, daycares, schools, hospitals, and residences.

Avenue, approximately 30 feet from the project site. Given the short duration of the project and California construction fleet regulations that require fleets to meet fleet average emission standards, the closest sensitive receptors would have very limited exposure to pollutants generated at the work areas. Thus, TAC emissions generated by the Project would not have a substantial effect on sensitive receptors and this impact would be **less than significant**.

d. Result in other emissions affecting a substantial number of people

Paving activities and diesel exhaust from construction activities may generate temporary odors during construction of the Proposed Project. Excavated and recently exposed vegetation, soil, or sediment may contain decaying organic material that may create objectionable odors. The intensity of the odor perceived by a receptor depends on the distance of the receptor from excavation areas and the amount and quality of the exposed soil or sediment material. Project-related odors due to exposure of organic material would be minimal because of the disturbed and urban nature of the soils in the Project area. Once construction activities have been completed, any odors would cease. Following completion of excavation and grading activities, exposed sediment and soil in the Project area would be paved or revegetated. Impacts related to potential generation of objectionable odors, if any, are thus expected to be temporary and **less than significant**.

3.4 BIOLOGICAL RESOURCES

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the Project:				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?	☐	☐	☒	☐
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 DFG or USFWS?	☐	☐	☐	☒
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state HCP?	☐	☐	☐	☒

3.4.1 Regulatory Setting

Federal Laws, Regulations, and Policies

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 United States Code [USC] Sections 703–712; 50 Code of Federal Regulations [CFR] Subchapter B) makes it unlawful to pursue, hunt, take, capture, kill, or possess any migratory birds, or part, nests, or eggs of such migratory birds, that are listed in wildlife protection treaties between the U.S. and Canada, Mexico, Japan, and Russia. The MBTA applies to almost all avian species that are native to California. It requires that all federal agencies consult with the U.S. Fish and Wildlife Service (USFWS) on activities or proposed activities authorized, funded, or undertaken by that agency that may adversely affect migratory birds.

State Laws, Regulations, and Policies

California Fish and Game Code Sections 3503, 3503.5, and 3513 (Nesting Bird Protections) states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by code.

3.4.2 Environmental Setting

The Project area is in a developed urban area adjacent to a highway. Immediately adjacent to the Project area are commercial developments and a paved parking lot. There is ruderal vegetation located within the Caltrans right-of-way (ROW) adjacent to the southern portions of the Project area. Street landscaping and ornamental trees are located throughout the Project area.

3.4.3 Discussion of Checklist Responses

a. Substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species

b. Substantial adverse effect on any riparian habitat or other sensitive natural community

c. Substantial adverse effects on state or federally protected wetlands

d. Substantial interference with wildlife movement, established wildlife corridors, or the use of native wildlife nursery sites

The project site, located in an urban area, is fully developed and contains existing buildings and associated paved surface parking. On-site vegetation consists of shrubs and street trees throughout the site and a small grass-covered area at the southeastern corner of the site along Strobridge Avenue. There are no wetlands, wildlife corridors, riparian habitat, or sensitive natural communities on the project site or in the vicinity; thus, **no impacts** would occur to criteria (b) and (c). (Alameda County Community Development Agency. Castro Valley General

Plan Draft Environmental Impact Report, April 2007). Special-status species are unlikely to occur in the project vicinity due to its highly disturbed and urbanized nature; however, tree removals during site-preparation activities, if any, have the potential to disturb nesting birds. The Project would be required by law to implement applicable regulations related to nesting birds, as stated in BMP BIO-1. Therefore, the project would have a **less than significant** impact on nesting birds under criteria (a) and (d).

e. Conflict with local policies or ordinances protecting biological resources

f. Conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved local, regional, or state HCP

The Alameda County Tree Ordinance (Chapter 12.11, Regulation of Trees in County Right-of-Way of the County's Municipal Code) regulates tree removal within the County's right-of-way. However, no trees would be removed as part of the project. Thus, there are no local policies, ordinances related to biological resources or habitat conservation plans applicable to the project. Implementation of the project would have **no impact** with respect to conflicts with local policies and ordinances or adopted habitat conservation plans

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3.5 CULTURAL RESOURCES

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

3.5.1 Regulatory Setting

Federal Laws, Regulations, and Policies

No federal regulations related to cultural resources are applicable to the Proposed Project.

State Laws, Regulations, and Policies

CEQA and CEQA Guidelines

The Proposed Project must comply with CEQA (Public Resource Code Section 21000 et seq.) and the CEQA Guidelines (14 California Code of Regulations Chapter 3), which determine, in part, whether a project would have a significant effect on a unique archaeological resource (according to Public Resource Code 21083.2) or a historical resource (according to Public Resource Code Section 21084.1).

CEQA Guidelines Section 15064.5 notes that "a project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment." Lead agencies are required to identify potentially feasible measures or alternatives to avoid or mitigate significant adverse changes in the significance of a historical resource before such projects are approved. According to the CEQA Guidelines, historical resources are:

- Listed in, or determined to be eligible for listing in, the California Register of Historical Resources (Public Resource Code Section 5024.1[e]);

- Included in a local register of historical resources (Public Resource Code Section 5020.1[k]) or identified as significant in a historical resource survey meeting the requirements of Public Resource Code Section 5024.1(g); or

- Determined by a lead state agency to be historically significant.

CEQA Guidelines Section 15064.5 also applies to unique archaeological resources as defined in Public Resource Code Section 21084.1.

California Register of Historical Resources

Public Resource Code Section 5024.1 establishes the California Register of Historical Resources (CRHR). This register lists all California properties considered to be significant historical resources. The CRHR includes all properties listed, or determined to be eligible for listing, in the National Register of Historic Places (NRHP), including properties evaluated under Section 106 of the National Historic Preservation Act (NHPA). The criteria for listing are similar to those of the NRHP. Criteria for listing in the CRHR include resources that:

(1) Are associated with the events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(2) Are associated with the lives of persons important in our past;

(3) Embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values; or

(4) Have yielded, or may be likely to yield, information important in prehistory or history.

The regulations set forth the criteria for eligibility as well as guidelines for assessing historical integrity and resources that have special considerations.

Local Laws, Regulations, and Policies

Castro Valley Area Plan

The Castro Valley Area Plan (Alameda County Community Development Agency 2012) is a comprehensive long-range general plan that guides land use and development in the unincorporated area of Castro Valley. The following goals and policies in the Castro Valley are relevant to the Proposed Project and the cultural resources analysis.

GOAL 5.6-1 Protect historic sites and structures and other cultural resources that help to maintain the special character and identity of Castro Valley and represent important physical connections to the community's past.

> **Policy 5.6-1 Preserve Designated Historic Sites.** Protect and preserve Federal and State-designated historic sites, structures, and properties that are deemed eligible for designation to the maximum extent feasible. Enhance the maintenance of key historic structures such as the Stanton House, Strobridge House, and the Adobe Arts Center, and ensure that they

remain, or are relocated, to attractive and prominent settings consistent with their character and history.

3.5.2 Environmental Setting

Prehistory

The pre-contact (or prehistoric) era of the Project area reflects information known about the indigenous population from the time the region was first populated with humans until the arrival of the first Europeans, who visited and recorded their journeys through the written record. The pre-contact record is derived from over a century of archaeological research, and while much has been gleaned from these studies, large gaps in the data record remain. The following pre-contact culture sequence, derived from Milliken et al. (2010:114-118), briefly outlines the prehistory of the San Francisco Bay region.

The Early Holocene (Lower Archaic; 8000 to 3500 B.C.) is considered a time when populations continued to be very mobile as they practiced a foraging subsistence pattern around the region. Artifacts that characterize this period include the milling slab and handstone to process seeds, as well as large wide-stemmed and leaf-shaped projectile points.

The Early Period (Middle Archaic; 3500 to 500 B.C.) is marked by the appearance of cut shell beads in the archaeological record, as well as the presence of the mortar and pestle for processing acorns. House floors with postholes indicate substantial living structures, which suggests a move toward establishing a more sedentary lifestyle and an increasing population.

The Middle Period, which includes the Lower Middle Period (Initial Upper Archaic; 500 B.C. to A.D. 430) and Upper Middle Period (Late Upper Archaic; A.D. 430 to 1050), appears to be a time when geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range of resources could be exploited. The first rich black middens are recorded from this period. The addition of milling tools, obsidian and chert concave-base projectile points, and the occurrence of sites in a wider range of environments suggest that the economic base was more diverse. By the Upper Middle Period, mobility was being replaced by the development of numerous small villages. Around A.D. 430 a "dramatic cultural disruption" occurred, as evidenced by the sudden collapse of the Olivella saucer bead trade network.

The Initial Late Period (Lower Emergent; A.D. 1050 to 1550) reflects a social complexity that had developed toward lifeways of large, central villages with resident political leaders and specialized activity sites. Artifacts associated with the period include the bow and arrow, small corner-notched projectile points, and a diversity of beads and ornaments.

The Terminal Late Period (Upper Emergent; A.D. 1550 to circa 1750) generally represents the indigenous cultures that were encountered by the Spanish when they first arrived in San Francisco Bay.

Ethnography

The population indigenous to the Project area spoke a language referred to as Costonoan, a derivative from a Spanish term for "coast people." Costonoan, which consisted of six known

languages and various dialects within those languages, was spoken over a broad territory that included all of the San Francisco Peninsula and all lands along the east and south of San Francisco Bay, and that extended south to include Monterey Bay, Salinas Valley, and the area around Hollister. Those residing in the Project area likely spoke the Chochenyo dialect of San Francisco Bay Costonoan (Milliken et al. 2009:33-35).

The Costonoan peoples, who are referred to as the Ohlone, Mutsun, or Rumsen, depending on geography, were not a united cultural or political entity (Milliken et al. 2009:2-4). Rather, there were strong differences, not only in language but also in culture, between the San Francisco and Monterey bay occupants, and political affinity was based on the tribelet, which comprised one or more villages within a specific geographic territory (Levy 1978:487).

Tribelet territory had a range of 10 to 12 miles in diameter and contained a population that consisted of 200 to 400 people living among four or five villages (Milliken et al. 2010:99). Those living in the Project area resided in large villages along permanent streams in locations that allowed access to the diverse resources found in the tidal marshlands, the valley floor, and the hills. (Milliken et al. 2010:106; Moratto 2004:225).

The Ohlone group associated with the Project area are the Huchiuns, who occupied all of the lands bordering San Francisco Bay from Oakland north to Richmond and the Carquinez Strait (Milliken et al. 2009:40). Records indicate that they were closely tied to the Yelamu tribe, who lived across the bay on the northern San Francisco Peninsula, with whom they shared the Chochenyo language dialect, intermarried, and traded. No Huchiun villages are known within proximity to the Project site.

The Huchiuns were among the first in the region to feel the impact created by the arrival of the Spanish. Mission Dolores was founded in San Francisco in 1777, and Mission Santa Clara, in the town of Santa Clara, was established just seven months later. This was followed by the pueblo at San Jose (El Pueblo San Jose de Guadalupe) shortly thereafter (Kyle et al. 2002:423-424). Members of the Huchiuns were quickly conscripted into Mission Dolores, and by 1794 the tribe had the largest population of any local tribe there. The following year, they rebelled, along with their Saclan neighbors who lived around Mount Diablo, and many returned to the East Bay. Mission San Jose, in present-day Fremont, was established in 1797 in response to the rebellion. Most of the Huchiun population appears to have been returned to Mission Dolores or other nearby missions over the next two decades.

Today the Ohlone reside throughout the region and strive to maintain their cultural traditions.

Historical Context

The Castro Valley area was part of the mission lands ascribed to the Mission San Jose, which was established in 1797. California eventually transitioned to Mexican control after Mexican independence in the 1820s. Secularization of the missions resulted in the transfer of land to many of the old Hispanic families. *Rancho San Lorenzo,* at 28,000-acres, was granted to Don Guillermo Castro, a Spanish solider and rancher in 1838. Overall, the land grant included present-day Castro Valley, Hayward and San Lorenzo (Crawford 2015). At the time of its acquisition and for many years following, the land was used for animal husbandry, cattle ranching and sheep herding. In 1848, California became U.S. territory after the conclusion of the

Mexican War between Mexico and the United States. When California became a state in 1850, many of the former rancho lands were lost by the old families.

One prominent family and settler in the area at this time was Michael Stanton, a railroad entrepreneur who was active in many civic affairs of the time. The Stanton's built a large Victorian ranch house on 500 acres at what is today the address 20600 Lake Chabot Road (Annable and Linnell 1974). The house was recorded in as "the oldest house in Castro Valley", built in 1860, and was listed in the California Points of Historical Interest in 1975. The house was saved from demolition and moved to its current location in 1978—1700 Norbridge Avenue, just outside the Project area. It is currently used for private businesses.

Cultural Resources Studies

Archival Search

A records search of all pertinent survey and site data was completed by the Northwest Information Center (NWIC), Sonoma State University on April 14, 2022 (File No. 21-1551) as part of the cultural resources assessment memorandum (Horizon 2022b). The records were accessed by on the Hayward USGS 7.5-minute quadrangle map. The records search included the Proposed Project location and a 0.25-mile radius surrounding the location. Previous surveys, studies, and archaeological site records were accessed as they pertained to these areas. Records were also accessed and reviewed in the Built Environment Resources Directory for Alameda County, the National Register of Historic Places, the California Register of Historic Resources, the California Inventory of Historic Resources (1976), the California Historical Landmarks (1996), the California Points of Historical Interest (1992), the Caltrans State and Local Bridge Survey, and other standard reference sources.

No cultural resources have been identified within the Project area and two have been recorded within the 0.25-mile search radius (see **Table 3.5-1**). Eight previously conducted studies intersect within the Project area. The entire Project area has been previously surveyed (Clark 1997, S-019834, Self and Willis 1999; S-032780).

Table 3.5-1. NWIC Records Search Results – Previously Recorded Resources

Primary No.	Name	Type	Age	Status
P-01-003346	Stanton House	Building	Historic	Listed in California Places of Historic Interest
P-01-012004	T-Mobile West, LLC Candidate BA02070A (PL070 Castro Valley A-N) - Three Crosses Church	Site	Historic	2022-31-Parks

Native American Consultation

The Native American Heritage Commission (NAHC) was contacted via email to request a review of the Sacred Lands file for information on Native American cultural resources in the Project area and to request a list of Native American contacts in this area. The NAHC responded on April 19, 2022 indicating that the sacred lands database review was negative for any known sacred lands. The NAHC also provided a list of tribes and tribal contacts with a traditional and cultural affiliation with the Project area for notification pursuant to Public Resource Code Section 21080.3.1 (AB 52). Coordination with tribes is described in Section 3.18, "Tribal Cultural Resources."

3.5.3 Discussion of Checklist Responses

a. Adverse change in the significance of a historical resource

A cultural resource review was conducted to address the responsibilities of the CEQA, as codified in Public Resource Code sections 5097, and its implementing guidelines 21082 and 21083.2. No cultural resources were identified within the Project area as a result of this investigation. One historical resource, the Stanton House (P-01-003346) was moved to its current location on Norbridge Avenue just east of the Project area limits, but it remains on the list of California Places of Historical Interest. However, this resource will not be impacted by the project directly or indirectly; the house is no longer in its original location and, as a result, the historic setting of the property is not affected by the project. The Proposed Project entails some removal of concrete or asphalt for the purposes of realigning the intersections, including the restriping of roadways, the addition of stop signs and an adjustment to the existing traffic signals. As such, the potential to disturb intact, unknown historical deposits is considered very low. Further, no alteration of the existing setting is proposed that would affect any historical resources, if any exist within the viewshed of the Project area. Therefore, this impact would be **less than significant**.

Historical resources that are archaeological in nature may be accidentally discovered during Project construction; archaeological resources are discussed further in Section 3.5.3(b) below.

b. Adverse change in the significance of an archaeological resource

No archaeological resources, as defined in Section 15064.5 of the CEQA Guidelines, have been identified within the Project area. A model for predicting a location's sensitivity for buried Native American archaeological sites was formulated by Byrd et al. (2017) based on the age of the landform, slope, and proximity to water. A location is considered to have the highest sensitivity if the landform dates to the Holocene[2] , has a slope of five percent or less, is within 150 meters (500 feet) of fresh water, and 150 meters (500 feet) of a confluence. A basic premise of the model is that Native American archaeological deposits will not be buried within landforms

[2] The Holocene Epoch is the current period of geologic time, which began about 11,700 years ago, and coincides with the emergence of human occupation of the area.

that predate human colonization of the area. Calculating these factors using the buried site model (Byrd et al. 2017: Tables 11 and 12), a location's sensitivity was scored on a scale of 1–10 and classed as follows: lowest (<1); low (1-3); moderate (3-5.5); high (5.5-7.5); highest (>7.5).

Based on landform age and the other factors described above, Byrd et al. (2017) determined that the sensitivity for buried sites at the location of the Project area is considered low. Moreover, a review of Witter et al. (2006), a quaternary geology review of the Bay Area—from which the Byrd et al. (2017) analysis is partially derived—indicates that the Project area is underlain by the Pre-Pliestocene (>2.5 Million years ago) bedrock. This suggests that the location is underlain by a landform that would not have likely supported substantial human activity due to the antiquity of the landform as pre-dating known human occupation for the area, as well as not exhibiting a substantial layer of deposition to contain buried deposits.

If archaeological remains are accidentally discovered that are determined eligible for listing in the CRHR/NRHP, and Proposed Project activities would affect them in a way that would render them ineligible for such listing, a significant impact would result. Implementation of AMM CUL-1 would require that work stop, should any archaeological remains be discovered during construction and would reduce impacts related to currently unknown archaeological resources to a **less-than-significant** level.

c. Disturbance of any human remains, including those interred outside of formal cemeteries

No evidence of human remains was observed at any of the Project sites. Although the locations have been previously disturbed by installation of the culverts, and most of the locations are in areas of steep terrain, there is the possibility that human remains could be discovered during excavation activities. However, the possibility is extremely low. Should any such remains be discovered during construction, AMM-CUL-1 shall be followed. Adherence to the procedures and provisions of AMM CUL-1 would reduce potential impacts on human remains to a **less-than-significant** level.

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3.6 ENERGY

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

3.6.1 Regulatory Setting

This section describes the federal, state, and local regulations related to energy resources. Section 3.8, "Greenhouse Gas Emissions," contains additional discussions of greenhouse gas- (GHG-) related regulations that may also be relevant to energy resources.

At the federal level, the USEPA and the National Highway Traffic Safety Administration (NHTSA) have developed regulations to improve the efficiency of cars, and light-, medium-, and heavy-duty vehicles. These regulations are discussed in greater detail in Section 3.8.

Energy resource-related regulations, policies, and plans at the state level, require the regular analysis of energy data and developing recommendations to reduce statewide energy use, and setting requirements on the use of renewable energy sources. Senate Bill (SB) 1389, passed in 2002, requires the California Energy Commission (CEC) to prepare an *Integrated Energy Policy Report* for the governor and legislature every 2 years (CEC 2021a). The report analyzes data and provides policy recommendations on trends and issues concerning electricity and natural gas, transportation, energy efficiency, renewable energy, and public interest energy research (CEC 2021a). The *Draft 2021 Integrated Energy Policy Report* discusses the energy-related impacts of the COVID-19 pandemic, extreme summer weather, and drought conditions. The report also includes policy recommendations for building decarbonization, industrial and agricultural decarbonization, and improving reliability by addressing the vulnerability of California's energy infrastructure to extreme events related to climate change, including fire and drought (CEC 2021b).

In addition, since 2002, California has established a Renewables Portfolio Standard (RPS) program, through multiple senate bills (SB 1078, SB 107, SB X1-2, SB 350, SB 100) and executive orders (S-14-08, B-55-18), that requires increasingly higher targets of electricity retail sales be served by eligible renewable resources. The established eligible renewable source targets include 20 percent of electricity retail sales by 2010, 33 percent of electricity retail sales by 2020, 50 percent by 2030, and 100 percent zero-carbon electricity for the state and statewide carbon neutrality by 2045 (CEC 2018, CEC 2020).

Section 3.8, "Greenhouse Gas Emissions," provides additional details on California's *2017 Climate Change Scoping Plan*, which details the state's strategy for achieving the state's GHG targets, including energy-related goals and policies. It contains measures and actions that may pertain to the Proposed Project relating to vehicle efficiency and transitioning to alternatively powered vehicles (CARB 2017).

The BAAQMD 2017 CAP, lays the groundwork for a long-term effort to reduce Bay Area GHG emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. The plan contains multiple key priorities related to energy including reducing demand for fossil fuels and decarbonizing the energy system; and contains transportation control measures aimed at reducing emissions from vehicles and equipment (BAAQMD 2017).

3.6.2 Environmental Setting

California has extensive energy resources, including an abundant supply of crude oil, high production of conventional hydroelectric power, and leads the nation in electricity generation from renewable resources (solar, geothermal, and biomass resources) (U.S. Energy Information Administration (EIA) 2021). California has the second highest total energy consumption in the U.S. but the fourth lowest energy consumption rates per capita due to its mild climate and energy efficiency programs (EIA 2021). A comparison of California's energy consuming end-use sectors indicates that the transportation sector is the greatest energy consumer, by approximately two times compared to the other end-use sectors (Industrial, Commercial, and Residential, which are listed in order of greatest to least consumption) (EIA 2021). California is the largest consumer of motor gasoline and jet fuel in the U.S. (EIA 2021).

As described in Section 3.8, "Greenhouse Gas Emissions," the CAP contains a GHG emissions inventory stating that Community GHG emissions totaled 930,039 metric tons in 2005 and 1,028,500 metric tons projected in 2020, rising 5%, or 94,461 metric tons CO_2e (Alameda County 2014). The largest sources of emissions, a rough indicator of energy consumption, were from transportation, residential, and commercial energy use.

3.6.3 Discussion of Checklist Responses

a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources

b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency

The Proposed Project would require the consumption of energy (fossil fuels) for construction equipment, worker vehicles, and truck trips. The Proposed Project would require a negligible amount of electricity to operate stoplights. The consumption of energy for the Project's equipment and vehicles would be minimized by ensuring construction equipment is properly tuned and maintained and by minimizing vehicle idling (AMM GEN-7). **Table 3.6-1** shows the estimated total fuel use from construction equipment, worker vehicles, and truck trips. The calculations used to develop these estimates are presented in the Air Quality and Greenhouse Gas Analysis (Horizon 2022a).

Table 3.6-1. Project Fossil Fuel Use

Source Type	Gasoline Fuel Use (gallons)	Diesel Fuel Use (gallons)
Construction On-Road Vehicles	2,954	137
Construction Off-Road Equipment		90.590
Total for Construction	2,954	90.726

Source: Horizon 2022

The Proposed Project's energy consumption is necessary for the improvements to transportation infrastructure. These activities would not cause wasteful, inefficient, and unnecessary consumption of energy or cause a substantial increase in energy demand and the need for additional energy resources. Although no mitigation measures are necessary to reduce this impact to a less-than-significant level, implementation of AMM GEN-6 and AMM GEN-7 would reduce the Proposed Project's effect by requiring minimization of idling times and requiring that all equipment be maintained and tuned properly. As a result, the Proposed Project would not result in wasteful, inefficient, or unnecessary consumption of energy.

In addition, the County's activities would not conflict with any of the goals, policies, or implementation actions identified in the applicable plans, such as the *Draft 2021 Integrated Energy Policy Report,* Alameda County's *Unincorporated Area Climate Action Plan*, and BAAQMD's 2017 Clean Air Plan*,* because the Proposed Project would not create any future energy demands and would be completed as efficiently as possible. Thus, the Proposed Project would not conflict with any plans relating to renewable energy or energy efficiency. Therefore, this impact would be considered **less than significant**.

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3.7 GEOLOGY, SOILS, AND SEISMICITY

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

3.7.1 Regulatory Setting

Federal Laws, Regulations, and Policies

Uniform Building Code

The 1997 Uniform Building Code (UBC) was developed by the International Conference of Building Officials (ICBO) and is used in most states, including California, and local jurisdictions to set basic standards for acceptable design of structures and facilities. The UBC provides information on criteria for seismic design, construction, and load-bearing capacity associated with various buildings and other structures and features. Additionally, the UBC identifies design and construction requirements to address and mitigate potential geologic hazards. New construction generally must meet the requirements of the most recent version of the UBC.

State Laws, Regulations, and Policies

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (Public Resource Code Section 2621 *et seq*.) was passed to reduce the risk to life and property from surface faulting in California. The Alquist-Priolo Act prohibits construction of most types of structures intended for human occupancy directly on or across the surface traces of active faults and strictly regulates construction in the corridors along active faults (earthquake fault zones). It also defines criteria for identifying active faults, giving legal weight to terms such as "active," and establishes a process for reviewing building proposals in and adjacent to earthquake fault zones. Under the Alquist-Priolo Act, faults are zoned and construction along or across them is strictly regulated if they are "sufficiently active" and "well defined." Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (Public Resource Code Sections 2690–2699.6) establishes statewide minimum public safety standards for mitigation of earthquake hazards. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, such as strong ground shaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act: The State of California is charged with identifying and mapping areas at risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped seismic hazard zones. In addition, the act addresses expansive soils, settlement, and slope stability. Under the Seismic Hazards Mapping Act, cities and counties may withhold the development permits for a site within a seismic hazard zone until appropriate site-specific geologic and/or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans.

California Building Standards Code

Title 24 of the California Building Standards Codes (specifically Title 24 CCR, Part 2) specifies standards for geologic and seismic hazards other than surface faulting. These codes are administered and updated by the California Building Standards Commission. This code specifies criteria for open excavation, seismic design, and load-bearing capacity directly related to construction in California. The seismic building requirements under the California Building Standards Codes are more stringent than those of the federal UBC.

California Public Resources Code

Public Resource Code Section 5097.5 states that "no person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor." As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

Local Laws, Regulations, and Policies

Castro Valley Area Plan

The Castro Valley Area Plan (Alameda County Community Development Agency 2012) is a comprehensive long-range general plan that guides land use and development in the unincorporated area of Castro Valley. The following goals and policies in the Castro Valley Area Plan are relevant to the Proposed Project and the geology and soils analysis.

GOAL 10.3-1 Minimize risks of property damage and personal injury posed by geologic and seismic hazards.

> **Policy 10.3-1 Consideration of Ground Shaking Forces During Design Process.** Design and construct structures to withstand ground shaking forces of a minor earthquake without damage, of a moderate earthquake without structural damage, and of a major earthquake without collapse. Design and construct critical and essential structures and facilities to remain standing and functional following a major earthquake.

3.7.2 Environmental Setting

The San Francisco Bay Area is a seismically active region and frequently has strong seismic ground shaking. There are no active earthquake faults known to pass through the Project area; the closest fault is the Hayward Fault just over four miles to the east (California Department of Conservation. 2021). The Project area is relatively flat located within a built out urban environment. Castro Valley is largely underlain by relatively young Quaternary-age alluvial soils, and there are no known significant paleontological resources in the Project area or unique geologic features on the Project site (Alameda County Community Development Agency 2007).

3.7.3 Discussion of Checklist Responses

a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Seismic-related rupture of a known earthquake fault

ii. Strong seismic ground shaking

iii. Seismic-related ground failure, including liquefaction

iv. Landslides

The San Francisco Bay Area is a seismically active region and, as is true throughout the region, the project site is susceptible to very strong seismic ground shaking. No faults have been identified on the project site or in the vicinity, and the site is not within an Alquist-Priolo zone. The project site is not within a mapped earthquake fault zone or landslide zone; however, a portion of the site is within a liquefaction zone (California Department of Conservation 2022). The Castro Valley General Plan EIR does not identify the project site as having a high or very high susceptibility to liquefaction (Alameda County Community Development Agency 2007). These identified seismic hazards are fully addressed through compliance with the California Building Code. Direct and indirect impacts of the project related to seismic hazards would be **less than significant**.

b. Substantial soil erosion or the loss of topsoil

Development of the project would involve construction activities (e.g., grading) on an approximately 5.4-acre site, resulting in the potential for erosion and sedimentation of downstream receiving waters. Erosion control standards are set by the Regional Water Quality Control Board and administered through the National Pollutant Discharge Elimination System permit process which requires implementation of best management practices to reduce the amount of constituents, including eroded sediment, that enter streams and other water bodies. The project would be required to comply with all regulatory and permit requirements related to erosion control, including County Ordinance Code regulations to limit erosion during construction (Section 15.36.600, Erosion and sediment control). Construction of the project would not result in substantial soil erosion and the impact would be **less than significant**.

c. Location on a geologic unit or soil that is unstable or that would become unstable as a result of the Proposed Project and potentially result in an on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse

d. Location on expansive soil, creating substantial direct or indirect risks to life or property

The soils underlying the project area are Azule clay loam, a well-drained soil with low permeability (Alameda County Community Development Agency 2007. Construction activities

would result in ground disturbance, but the expected grading depth of one foot would not be expected to result in a significant alteration to soil stability. Further, the Project would be required to be constructed to the current building code standards. Therefore, impacts related to unstable or expansive soils would be **less than significant**.

e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater

The project would not include the use of septic tanks and associated disposal facilities, and the site would continue to be served by existing municipal sewage systems. Implementation of the project would have **no impact** related to this topic.

f. Destruction of a unique paleontological resource or site or unique geological feature

Castro Valley is largely underlain by relatively young Quaternary-age alluvial soils, such as the Azule clay loam soils in the project area. There are no known significant paleontological resources in the project area or unique geologic features on the project site (Alameda County Community Development Agency 2007). Construction activities would result in ground disturbance, but the expected grading depth of one foot would not be expected to result in the discovery of paleontological resources. The potential impact of the project on paleontological resources would be **less than significant**.

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3.8 GREENHOUSE GAS EMISSIONS

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

3.8.1 Regulatory Setting

This section describes the federal, state, and local regulations related to GHG emissions and climate change. At the federal level, the USEPA has developed regulations to reduce GHG emissions from motor vehicles and has developed permitting and reporting requirements for large stationary emitters of GHGs. The USEPA and NHTSA set standards for passenger cars and light trucks for the Corporate Average Fuel Economy (CAFE) standards and greenhouse gas GHG emissions standards. In March 2020, NHTSA and the USEPA revised these standards under the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, which increases the stringency of fuel economy and carbon dioxide standards by 1.5% percent in stringency each year for model years 2021 through 2026. This is less than previous standards issued in 2012, which would have had increase of about 5 percent per year.

In recent years, California has enacted numerous policies and plans to address GHG emissions and climate change. In 2006, the California State Legislature enacted AB 32, the Global Warming Solutions Act, which set the overall goals for reducing California's GHG emissions to 1990 levels by 2020. SB 32, a follow-up to the California Global Warming Solutions Act of 2006 (AB 32), similarly calls for a statewide GHG emissions reduction to 40 percent below 1990 levels by December 31, 2030. Executive Orders (EOs) S-3-05 and B-16-2012 further extend this goal to 80 percent below 1990 levels by 2050. The CARB has completed rulemaking to implement several GHG emission reduction regulations and continues to investigate the feasibility of implementing additional regulations. These include the low carbon fuel standard, which reduces GHG emissions associated with fuel usage, and the renewable portfolio standard, which requires electricity suppliers to increase the amount of electricity generated from renewable sources. CARB has implemented a mandatory reporting regulation and a cap-and-trade program for large emitters of GHGs.

California's 2017 Climate Change Scoping Plan outlines the strategies that will be implemented to reach the 2030 goal (CARB 2017). This includes focusing on increasing building efficiency, increasing renewable power, using clean and renewable fuels, using cleaner aero or near zero vehicles, enhancing walkable and bikeable communities with transit, cleaner freight and goods movement, reduce emissions of pollutants with high global warming potential (GWP) pollutants, cap emissions from key sectors, and invest in communities to reduce emissions.

The BAAQMD has adopted and released the Final 2017 Bay Area Clean Air Plan (also known as Spare the Air – Cool the Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area) and Regional Climate Protection Strategy (RCPS) that updates the 2010 Bay Area Clean Air Plan; provides a road map for the BAAQMD's future efforts to reduce air pollution; and identifies rules, control measures, and strategies to reduce GHG emissions throughout the Bay Area. As part of this update, 85 control measures have been identified and categorized within nine economic sectors, including stationary sources, transportation, waste, water, and energy. In addition, the BAAQMD has established a Climate Protection Planning Program, which aims to achieve its goal of reducing GHG emissions in the Bay Area by establishing GHG reduction goals, developing and implementing the 2017 Clean Air Plan, and working with local governments (BAAQMD 2020b). The BAAQMD's GHG emission reduction goals are 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050 (BAAQMD 2020b).

The BAAQMD CEQA Guidelines (BAAQMD 2017) included operation-related thresholds of significance for land use development and stationary-source projects. Stationary sources have a threshold of 10,000 metric tons (MT) of carbon dioxide equivalents (MT CO2e). For land use development projects, including residential, commercial, industrial, and public land uses and facilities, the threshold includes compliance with a qualified GHG reduction strategy or annual emissions of less than 1,100 MT CO2e or efficiency performance criteria based on service population (BAAQMD 2017). This "bright-line threshold" of 1,100 MT CO2e was set for the 2020 goal established in AB 32. The BAAQMD just adopted new GHG significance thresholds for land use projects and plans (BAAQMD 2022). These thresholds are not applicable to the project as they are applicable to buildings or projects that include trip generation and does not apply to infrastructure projects such as roadway improvements. These also do not include a threshold for the short-term construction emissions. Because implementation of the Proposed Project would take place after 2020, the GHG analysis should consider whether the project would make substantial progress toward these future goals. In absence of guidance from the BAAQMD for construction emissions, the relevance of an appropriate threshold for post-2020 GHG emissions must be considered.

This Project is going to use the bright-line threshold for construction emissions of 1,100 MT CO2e threshold. This threshold was established by the BAAQMD by conducting a "gap" analysis, considering the emissions reductions required from projects undergoing CEQA review that are not otherwise addressed by existing regulations or strategies identified in the Scoping Plan. The BAAQMD determined that, with a bright-line threshold of 1,100 MT CO2e, most CEQA projects would be required to implement all feasible mitigation measures because they would exceed this threshold and, most importantly, that 92 percent of GHG emissions above this threshold would be captured (BAAQMD 2017).

Sacramento Metropolitan Air Quality Management District (SMAQMD) initially conducted a similar analysis of the CEQA projects that would be captured by establishing a bright-line threshold for the 2020 goals. Recently, SMAQMD updated its analysis and determined that the existing bright-line threshold would still capture over 98 percent of GHG emissions (SMAQMD 2020). Thus, it would be reasonable to assume that an updated analysis by the BAAQMD would find that projects would continue to achieve a high capture rate of total GHG emissions with use of this bright-line threshold. This conclusion supports the continued use of 1,100 MT CO2e as a significance threshold post-2020 and indicates that continued progress toward the 2030 and 2050 goals is likely to be maintained with this bright-line threshold.

Climate change is caused, in part, from accumulation in the atmosphere of GHGs, which are produced primarily by the burning of fossil fuels for energy. Because GHGs (carbon dioxide [CO2], methane [CH4], nitrogen dioxide [NO2], and chlorofluorocarbons [CFCs]) persist and mix in the atmosphere, emissions

anywhere in the world affect the climate everywhere in the world. Consequently, the cumulative analysis is the same as the discussion concerning Proposed Project impacts. GHG emissions are typically reported in terms of carbon dioxide equivalents (CO2e), which converts all GHGs to an equivalent basis taking into account their global warming potential GWP compared to CO2.

Global climate change is already affecting ecosystems and societies throughout the world. Climate change adaptation refers to the efforts undertaken by societies and ecosystems to adjust to and prepare for current and future climate change, thereby reducing vulnerability to those changes. Human adaptation has occurred naturally over history; people move to more suitable living locations, adjust food sources, and more recently, change energy sources. Similarly, plant and animal species also adapt over time to changing conditions; they migrate or alter behaviors in accordance with changing climates, food sources, and predators.

3.8.2 Environmental Setting

In 2018, total California GHG emissions were 425 million metric tons of carbon dioxide equivalents (MT CO2e) (CARB 2020). This is 6 million MT CO2e below the 2020 GHG limit set by AB 32. This represents a per capita GHG emission rate of 10.7 MT CO2e per person. In 2018, the transportation sector of the California economy was the largest source of emissions, accounting for approximately 40 percent of the total emissions and represented a decrease in emission for this sector for the first time since 2013. Emissions from the electricity sector account for 15 percent of the inventory and showed a slight increase in 2018 due to less hydropower. Emissions from high-GWP gases have continued to increase as they replace ozone depleting substances that are being phased out.

The Alameda County Unincorporated Area Climate Action Plan contains a GHG emissions inventory stating that Community GHG emissions totaled 930,039 metric tons in 2005 and 1,028,500 metric tons projected in 2020, rising 5%, or 94,461 metric tons CO_2e (Alameda County 2014). The largest sources of emissions were from transportation, residential, and commercial energy use.

3.8.3 Discussion of Checklist Responses

a. Generate a net increase in greenhouse gas emissions which may have a significant impact on the environment

The Proposed Project would generate GHG emissions during construction. Construction-related GHG emissions would result from the combustion of fossil-fueled construction equipment, material hauling, and worker trips. Estimated emissions associated with the Project's construction activities would be 869 MT CO2e. Construction-related emissions were estimated using CalEEMod version 2020.4.0, which uses estimates from CARB's models for off-road vehicles and EMFAC 2017. Project construction assumptions, including equipment usage, schedule, and haul routes used for this analysis, were based on in the project description.

Operational GHG emissions will not change as a result of this Project from current conditions and may decrease due to improved traffic flow. The Project does not result in additional trips compared to current trip generation levels as the Project does not involve any new trip generating land uses. Thus, the change in GHG emissions for operation is negligible.

As discussed above, the BAAQMD does not have a recommended threshold for construction GHG emissions. However, the GHG emissions from the Proposed Project are well below the BAAQMD's threshold of 1,100 MT CO2e per year. The BAAQMD just adopted new GHG significance thresholds for land use projects and plans (BAAQMD 2022). These thresholds are not applicable to the Project as they are applicable to buildings or projects that include trip generation and does not apply to infrastructure projects such as roadway improvements. Therefore, the Proposed Project would not conflict with any plans or policies adopted to reduce GHG emissions. Impacts related to generation of GHG emissions would be **less than significant**.

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

The Proposed Project would be subject to statewide and local GHG emission reduction plans and policies. The State of California implemented AB 32 to reduce GHG emissions to 1990 levels by 2020. SB 32 codified an overall goal for reducing California's GHG emissions to 40 percent below 1990 levels by 2030. EOs S-3-05 and B-16-2012 further extend this goal to 80 percent below 1990 levels by 2050. The Proposed Project would not impede implementation of any of the State's goals under AB and SB 32. The Project only consists of temporary construction activities to reconstruct two intersections to improve traffic flow. For these reasons, the Proposed Project would not conflict with AB 32 or SB 32, or the local general plan. Therefore, this impact would be **less than significant**.

3.9 HAZARDS AND HAZARDOUS MATERIALS

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

3.9.1 Regulatory Setting

Federal Laws, Regulations, and Policies

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also called the Superfund Act) (42 USC Section 9601 et seq.) is intended to protect the public and the environment from the effects of past hazardous waste disposal activities and new hazardous material spills. Under CERCLA, USEPA has the authority to identify the parties responsible for hazardous materials releases and to ensure their cooperation in site remediation. CERCLA also provides federal funding (through the "Superfund") for the remediation of hazardous materials contamination. The Superfund Amendments and Reauthorization Act of 1986 (Public Law 99-499) amends some provisions of CERCLA and provides for a Community Right-to-Know program.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) (42 USC Section 6901 *et seq.*) was enacted in 1976 as an amendment to the Solid Waste Disposal Act to address the nationwide generation of municipal and industrial solid waste. RCRA gives USEPA the authority to control the generation, transportation, treatment, storage, and disposal of hazardous waste, including underground storage tanks storing hazardous substances. RCRA also establishes a framework for the management of nonhazardous wastes. RCRA addresses only active and future facilities; it does not address abandoned or historical sites, which are covered by CERCLA (as described above).

Occupational Safety and Health Administration Regulations

The Occupational Safety and Health Act of 1970 created the Occupational Safety and Health Administration (OSHA) to ensure safe and healthful conditions for workers by setting and enforcing standards and by providing training, outreach, education, and assistance. To fulfill this purpose, OSHA develops and enforces mandatory job safety and health standards.

These standards, codified in 29 Code of CFR Part 1910, address issues that range in scope from walking and working surfaces, to exit routes and emergency planning, to hazardous materials and personal protective equipment (PPE). They include exposure limits for a wide range of specific hazardous materials, as well as requirements that employers provide PPE (i.e., protective equipment for eyes, face, or extremities; protective clothing, and respiratory devices) to their employees wherever it is necessary (i.e., when required by the label instructions) (29 CFR Section 1910.132).

State Laws, Regulations, and Policies

California state regulations, which are equal to or more stringent than federal regulations, require those handling hazardous wastes to plan for and manage such wastes to handle, store, and dispose of them properly, to reduce risks to human health and the environment.

Hazardous Waste Control Act

The Hazardous Waste Control Act of 1972 created the Hazardous Waste Management Program, which is similar to, but more stringent than, the federal program under RCRA. The Hazardous Waste Control Act is implemented by regulations contained in Title 26 of the California Code of Regulations. These regulations list more than 800 materials that may be hazardous and establish criteria for their identification, packaging, and disposal. Under the Hazardous Waste Control Act and 26 California Code of Regulations, hazardous waste generators must complete a manifest that accompanies the waste from the generator to the transporter to the ultimate disposal location. Copies of the manifest must be filed with the California Department of Toxic Substances Control (DTSC).

Emergency Services Act

Under the Emergency Services Act, the State of California developed a plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an important part of the plan, which is administered by the California Office of Emergency Services. This office coordinates the responses of other agencies, including USEPA, the California Highway Patrol, the nine regional water quality control boards (RWQCBs), the various air quality management districts, and County disaster response offices.

California Occupational Safety and Health Administration Standards

Title 8 of the California Occupational Safety and Health Administration (Cal/OSHA) regulations specifies that workers who may be exposed to contaminated soils, vapors that could be inhaled, or groundwater containing hazardous levels of constituents are subject to monitoring and personal safety equipment requirements that specifically address airborne contaminants. The primary intent of the Title 8 requirements is to protect worker health.

California Department of Forestry and Fire Protection Wildland Fire Management

The Office of the State Fire Marshal and California Department of Forestry and Fire Protection (CAL FIRE) administer State policies regarding wildland fire safety. Construction contractors must comply with the following requirements in the California Public Resource Code during construction activities at any sites with forest-, brush-, or grass-covered land:

- Earthmoving and portable equipment with internal combustion engines must be equipped with a spark arrestor to reduce the potential for igniting a wildland fire (Public Resource Code Section 4442).
- Appropriate fire-suppression equipment must be maintained from April 1 to December 1, the highest-danger period for fires (Public Resource Code Section 4428).
- On days when a burning permit is required, flammable materials must be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the construction contractor must maintain the appropriate fire-suppression equipment (Public Resource Code Section 4427).

- On days when a burning permit is required, portable tools powered by gasoline-fueled internal combustion engines must not be used within 25 feet of any flammable materials (Public Resource Code Section 4431).

Local Laws, Regulations, and Policies

Castro Valley Area Plan

The Castro Valley Area Plan (Alameda County Community Development Agency 2012) is a comprehensive long-range general plan that guides land use and development in the unincorporated area of Castro Valley. The following goals and policies in the Castro Valley Area Plan are relevant to the Proposed Project and the hazards and hazardous materials analysis.

GOAL 10.4-1 Minimize the risk of life and property from the production, use, storage, and transportation of hazardous materials and waste by complying with all applicable Federal, State, and local requirements.

Policy 10.4-1 Hazardous Materials Exposure Risks. Minimize risks of exposure to or contamination by hazardous materials by educating the public, establishing performance standards for uses that involve hazardous materials, and evaluating soil and groundwater contamination as part of development project review.

Action 10.4-3 Review Process for Proposals Using Hazardous Materials. Coordinate with the Alameda County Department of Environmental Health, Hazardous Materials Division and other appropriate regulatory agencies during the review process of all proposals for the use of hazardous materials or those involving properties that may have toxic contamination such as petroleum hydrocarbons, asbestos, and lead.

3.9.2 Environmental Setting

Schools

The nearest school to the Proposed Project is the Happiness Pre-School, which is located approximately 0.12-mile from the northwest boundary of the Project site. Castro Valley Elementary School is located roughly 0.56-miles northeast. Stanton Elementary is located roughly 0.57-mile north. Mission Hills School Castro Valley- El Portal School is located roughly 0.46-mile northwest.

Existing Hazards and Hazardous Materials Sites

No open hazardous materials cleanup sites are located on the Proposed Project site (DTSC 2022; State Water Resources Control Board [SWRCB] 2022). The nearest such hazardous materials site is located west of Strobridge Avenue, within approximately 500 feet. This site is identified as UNOCAL #3072 / CONOCOPHILLIPS (T0619794453) and the potential contaminants of concern are diesel and gasoline (SWRCB 2022). The case was closed in July 2017 (SWRCB 2022).

Airports

The Project site is approximately 2.75 miles northeast of the Hayward Executive Airport and is outside its Airport Influence Area. The Project site in not within the Airport Influence Area of the Oakland International Airport approximately 6.5 miles to the northwest. There are no other airports, either public or private, within the vicinity of the Project site.

Wildfire Hazards

The Project site is located in an urbanized area removed from areas typically subject to wildland fire, and it has not been identified as a very high fire hazard severity zone (Alameda County Community Development Agency 2007).

3.9.3 Discussion of Checklist Responses

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

During construction, Proposed Project activities would involve the use of hazardous materials and could create a significant hazard to the public or the environment if proper precautions are not taken. As described in Chapter 2, *Project Description,* roadway and sidewalk alterations would involve use of a variety of mechanical equipment. This equipment would contain hazardous materials, such as fuel, oil, lubricant, etc., which may need to be routinely handled and/or transported by construction workers. Additionally, the equipment used during the Project activities may generate waste that is hazardous in nature (e.g., used oil) requiring disposal.

Compliance with OSHA and Cal/OSHA regulations would limit the potential for harmful exposures of hazardous materials to construction workers. These regulations require that the Contractor provide workers, whenever necessary, with PPE to protect them from unsafe exposure. Given the sparsely populated nature of the Project area, there would be limited potential for routine use of hazardous materials at the individual Project sites to expose the public and workers to significant hazards. Additionally, compliance with the RCRA, the Hazardous Waste Control Act, and the Unified Program would reduce the potential for any hazards to be released to the public or the environment during disposal of hazardous materials used during Project construction activities.

Given that activities during Project operation would be minimal and consistent with existing conditions (i.e., infrequent vegetation management, and trash and debris removal) there would be no potential for these activities to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Overall, for both construction and operation, this impact would be **less than significant**.

b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment

As described under Section 3.9.3(a) above, construction activities for the Proposed Project would involve the use of mechanical equipment that would contain hazardous materials, such as fuel, oil, and lubricants. This equipment, and the hazardous materials required for its operation, may need to be stored at staging areas. Additionally, during the course of the construction activities, equipment would need to be refueled and may need to be serviced on-site using hazardous materials (e.g., oil). These activities would provide opportunities for spills or other upset or accident conditions to occur, which could create a significant hazard to the public or the environment.

Several AMMs would serve to minimize potential for upset or accident conditions resulting in a release of hazardous materials, such as AMMs GEN-4, GEN-5, GEN-6, and GEN-7, which require the contractor to cover materials during a rain event, properly manage on-site hazardous materials, implement a spill prevention and response plan if necessary, and ensure vehicles are properly maintained. Implementation of these AMMs, including compliance with applicable federal, state, and local regulations regarding hazardous materials and hazardous wastes, would substantially reduce potential for spills or other upset or accident conditions involving hazardous materials to occur.

Operation and maintenance of the Project facilities would be consistent with existing practices, consisting of infrequent vegetation management, and trash/debris removal. These activities would involve no, or very minimal, use of hazardous materials that could be released through upset or accident conditions.

Overall, during construction and operation, this impact would be **less than significant**.

c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school

As described in Section 3.9.2, Happiness Pre-School is located approximately 0.12-mile from the northwest boundary of the Project site. Construction at this location would involve the use of mechanical and diesel-powered equipment. This would result in emissions of DPM, which is potentially harmful to human health, as described further in Section 3.3, “Air Quality.” Construction activities at this location also may involve handling of hazardous materials and wastes (see discussion above under Sections 3.9.3(a) and (b)).

Given the limited scale of the construction activities and temporary nature of the associated emissions, any hazardous emissions associated with the Proposed Project would not result in significant impacts. The types of equipment and materials (and associated emissions) to be used during Project construction activities would be similar in nature to any road repair/construction project, which may frequently occur in proximity to schools. During operation, the Proposed Project would not result in substantial hazardous emissions in proximity to schools above baseline conditions associated with local roadway traffic. As a result, this impact would be **less than significant**.

d. Located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, create a significant hazard to the public or the environment

Hazardous materials sites compiled pursuant to Government Code Section 65962.5 are identified in DTSC's EnviroStor database. As described in Section 3.9.2, the Project site would not be located on or near any hazardous materials sites identified in EnviroStor or the SWRCB's GeoTracker database. Therefore, **no impact** would occur.

e. Located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a private airport or public airport and result in a safety hazard or excessive noise for people residing or working in the study area

The Project site is approximately 2.75 miles northeast of the Hayward Executive Airport and is outside its Airport Influence Area (Alameda County Airport Land Use Commission. 2012). The Project site in not within the Airport Influence Area of the Oakland International Airport approximately 6.5 miles to the northwest. There are no other airports, either public or private, within the vicinity of the Project site. Implementation of the project would have **no impact** related to airport hazards.

f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan

The project would be subject to Alameda County Fire Department review of the site plans, and construction plan. This review would include verifying that the proposed site ingress and egress is adequate for police protection and emergency response. The project would improve circulation through the site and would not impair implementation of any adopted emergency response plan or emergency evacuation plan. The project would therefore have **no impact** related to an emergency response or evacuation plan.

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

The Project site is located in an urbanized area removed from areas typically subject to wildland fire, and it has not been identified as a very high fire hazard severity zone (Alameda County Community Development Agency 2007). Therefore, the Project would have **no impact** related to wildland fire.

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3.10 HYDROLOGY AND WATER QUALITY

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

3.10.1 Regulatory Setting

Federal Laws, Regulations, and Policies

Clean Water Act and Associated Programs

The Federal Water Pollution Control Act of 1972, also known as the Clean Water Act (CWA), is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." States, territories, and authorized Tribes establish water quality standards that describe the desired condition of a waterbody or the level of protection, which are then approved by the USEPA; these standards form a legal basis for controlling pollution that enters the waters of the U.S. Water quality standards consist of the designated beneficial uses of the waterbody, criteria to protect those designated uses, antidegradation requirements to protect existing uses and high-quality waters, and general policies regarding implementation.

USEPA is responsible for implementing the CWA, although some sections are implemented by other federal agencies under USEPA's oversight, such as Section 404 dealing with discharge of dredged and fill material into waters of the U.S. (which is implemented by the United States Army Corps of Engineers [USACE]). USEPA also has the option to delegate implementation of certain programs to a state agency. In California, the SWRCB and its nine RWQCBs administer various sections of the CWA.

Section 401

CWA Section 401 requires an evaluation of water quality when a proposed activity requiring a federal license or permit could result in a discharge to waters of the U.S. In California, USEPA has delegated the authority to issue water quality certifications to SWRCB and the RWQCBs. Each RWQCB is responsible for implementing Section 401 in compliance with the CWA and that region's water quality control plan (also known as a Basin Plan). Applicants seeking a federal license or permit to conduct activities that might result in a discharge to waters of the U.S. must also obtain a Section 401 water quality certification to ensure that any such discharge would comply with the applicable provisions of the CWA.

Section 404

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the U.S., which include all navigable waters, their tributaries, and some isolated waters, as well as some wetlands adjacent to the aforementioned waters (33 CFR Section 328.3). Areas typically not considered to be jurisdictional waters include non-tidal drainage and irrigation ditches excavated on dry land, artificially irrigated areas, artificial lakes or ponds used for irrigation or stock watering, small artificial waterbodies such as swimming pools, and water-filled depressions (33 CFR Part 328). Areas meeting the regulatory definition of waters of the U.S. are subject to the jurisdiction of USACE under the provisions of CWA Section 404. Construction activities involving placement of fill into jurisdictional waters of the U.S. are regulated by USACE through permit requirements. No USACE permit is effective in the absence of state water quality certification pursuant to Section 401 of the CWA.

Section 402

Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES). Under Section 402, a permit is required for point-source discharges of pollutants into navigable waters of the U.S. (other than dredge or fill material, which are addressed under Section 404). In California, the NPDES permit program is administered by the SWRCB and the RWQCBs. Permits contain specific water-quality-based limits and establish pollutant monitoring and reporting requirements. Discharge limits in NPDES permits may be based on water quality objectives designed to protect designated beneficial uses of surface waters, such as recreation or supporting aquatic life.

Section 303

Section 303 of the federal CWA (as well as the State-level Porter-Cologne Act, discussed further below) requires that states adopt water quality standards. In addition, under CWA Section 303(d), states are required to identify a list of "impaired waterbodies" (i.e., those not meeting established water quality standards), identify the pollutants causing the impairment, establish priority rankings for waters on the list, and develop a schedule for preparation of control plans to improve water quality. USEPA then approves or modifies the state's recommended list of impaired waterbodies. States must update their Section 303(d) list every 2 years. Waterbodies on the list are defined to have no further assimilative capacity for the identified pollutant, and the Section 303(d) list identifies priorities for development of pollution control plans for each listed waterbody and pollutant.

The pollution control plans mandated by the CWA Section 303(d) list are called total maximum daily loads (TMDLs). The TMDL is a "pollution budget," designed to restore the health of a polluted waterbody and provide protection for designated beneficial uses. The TMDL also contains the target reductions needed to meet water quality standards and allocates those reductions among the pollutant sources in the watershed (i.e., point sources, nonpoint sources, and natural sources) (40 CFR Section 130.2). A TMDL is unique to a specific waterbody and its surrounding pollutant sources and is not applicable to other waterbodies. The current effective USEPA-approved Section 303(d) list for waterbodies in California is the 2018 list, which received final approval by USEPA on June 9, 2021. Section 3.10.2 identifies the waterbodies in the Project vicinity that are included on the 303(d) list.

State Laws, Regulations, and Policies

Porter-Cologne Water Quality Control Act

Effective in January 1970, the Porter-Cologne Act (California Water Code Division 7) created water quality regulation on the state level, establishing the SWRCB, and dividing California into nine regions, each overseen by an RWQCB. The act established regulatory authority over waters of the state, defined as "any surface water or groundwater, including saline waters, within the boundaries of the state." More specifically, the SWRCB and RWQCBs have jurisdiction over any surface water or groundwater to which a beneficial use may be assigned. Following enactment of the federal CWA in 1972, the Porter-Cologne Act assigned responsibility for implementing CWA Sections 303, 401, and 402 to the SWRCB and RWQCBs.

The Porter-Cologne Act requires the RWQCBs to adopt water quality control plans (Basin Plans) for the protection of surface water and groundwater quality. The act also authorizes the RWQCBs to issue waste discharge requirements (WDRs) for discharges of waste to waters of the state, including NPDES permits. Any activity, discharge, or proposed activity or discharge from a property or business that could affect California's surface water, coastal waters, or groundwater will (in most cases) be subject to a WDR.

San Francisco Bay Basin Water Quality Control Plan

The Proposed Project is located in the San Francisco Bay Region (Region 2), which is overseen by the San Francisco Bay Region RWQCB (San Francisco Bay Water Board). The San Francisco Bay Water Quality Control Plan (San Francisco Bay Water Board 2019) identifies beneficial uses for surface waters and groundwater within the San Francisco Bay Region, and establishes narrative and numerical water quality objectives (WQOs) to achieve the beneficial uses for those waters. Beneficial uses represent the services and qualities of a waterbody (i.e., the reasons that the waterbody is considered valuable). WQOs reflect the standards necessary to protect and support those beneficial uses.

General Permit for Construction Activities

Most construction projects that disturb 1 acre or more of land are required to obtain coverage under the SWRCB's NPDES *General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Order 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ – "Construction General Permit"). The Construction General Permit requires the applicant to file a notice of intent to discharge stormwater and prepare and implement a storm water pollution prevention Plan (SWPPP). The SWPPP must include a site map and a description of the proposed construction activities; demonstrate compliance with relevant local ordinances and regulations; and present a list of AMMs that will be implemented to prevent soil erosion and protect against discharge of sediment and other construction-related pollutants to surface waters. Enrollees in the Construction General Permit are further required to conduct monitoring and reporting to ensure that AMMs are implemented correctly and are effective in controlling the discharge of construction-related pollutants.

Local Laws, Regulations, and Policies

Castro Valley Area Plan

The Castro Valley Area Plan (Alameda County Community Development Agency 2012) is a comprehensive long-range general plan that guides land use and development in the unincorporated area of Castro Valley. The following goals and policies in the Castro Valley Area Plan are relevant to the Proposed Project and the hydrology and water quality analysis.

GOAL 10.2-1 Protect and improve surface and groundwater quality.

GOAL 10.2-2 Protect the community from risks to life and property posed by flooding and stormwater runoff.

> **Policy 10.2-2 Water Quality Regulations.** Ensure compliance with all federal, state, regional, and local regulations related to protecting and improving water quality.

Policy 10.2-4 Reduce Pollution. Protect surface water quality by reducing the release of non-point source pollutants into storm drain system and waterways.

Action 10.2-4 Alameda Countywide Clean Water Program Stormwater Quality Management Plan.

- Ensure compliance with the Alameda Countywide Clean Water Program (ACCWP) Stormwater Quality Management Plan.
- Require development and redevelopment projects to prepare and implement site-specific plans that control and manage stormwater runoff and quality through the incorporation of appropriate source controls, site design strategies, and post-construction stormwater treatment.

3.10.2 Environmental Setting

The Project site lies approximately 4.5 miles inland from the San Francisco Bay and does not contain any sources of standing water. The Project site has numerous storm drains that connect to the regional stormwater system throughout the site. The vast majority of the site is paved or developed. A minor portion of the site, in the southeast corner, is ruderal vegetation.

3.10.3 Discussion of Checklist Responses

a. Violate any water quality standards, waste discharge requirements or otherwise substantially degrade water quality

Construction activities associated with the project could adversely affect water quality through the potential discharge of construction materials and wastes to the stormwater collection system. The delivery, handling, and storage of construction materials and wastes, as well as use of construction equipment, could also introduce the risk of stormwater contamination.

Heavy equipment used during Project construction (see Chapter 2, *Project Description*) would contain hazardous materials, such as fuel, oil, lubricants, etc. If these materials were to leak, spill, or otherwise be released into the environment, they could be discharged to stormwater facilities. Alternatively, the released materials could infiltrate into the soil and groundwater and thus adversely affect groundwater quality. Additionally, certain types of construction equipment/processes would involve constituents and/or generate wastes that could adversely affect water quality. Pavement cutting would require use of a concrete saw, which may utilize a wet slurry that can pollute surface waters if discharged off-site. Concrete work (e.g., installation of mediums) may create potential for water quality degradation through improper washout of concrete trucks and/or through allowing stormwater facilities to contact uncured concrete.

As described in Chapter 2, *Project Description,* implementation of the following AMMs would minimize impacts to water quality.

- AMM GEN-3: Fill Spoils, and Stockpiled Materials
- AMM GEN-4: On-Site Hazardous Materials Management

- AMM GEN-5: Spill Prevention and Response Plan
- AMM GEN-6: Vehicle and Equipment Maintenance/ Cleaning
- AMM GEN-8: Pavement Saw-cutting Operations
- AMM GEN-9: Concrete Operations

Implementation of the AMMs listed above would reduce the potential for adverse impacts to water quality during construction activities by reducing the potential for pollution entering stormwater facilities, leaks or spills of hazardous materials, and improper discharge of construction wastes to a level that is less than significant. Likewise, with implementation of the measures, the potential for pollution of groundwater quality would be less than significant. Construction of the Proposed Project would result in a less-than-significant impact.

Once constructed, the Proposed Project would not have any operation-related activities, facilities, or equipment, and maintenance would be consistent with existing practices. Therefore, there would be no potential to substantially adversely affect water quality during Project operation and maintenance. Operation of the Proposed Project would result in a less-than-significant impact.

Overall, this impact would be **less than significant.**

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

Project construction may require relatively small amounts of water for dust control, cleaning of equipment and vehicles, mixing concrete, drinking water for construction workers, and other related purposes. It is possible that some of this water could be sourced from groundwater (e.g., municipal sources that obtain some amount of water from groundwater); however, given the limited scale of the Proposed Project construction activities, this would have no potential to substantially decrease groundwater supplies. Due to the small amount of groundwater likely to be encountered (the excavations would not generally extend deeper than 3 feet below ground surface or be large in area), this would not substantially affect groundwater supplies.

Once constructed/repaired, the Proposed Project facilities would not require or use any water, including groundwater. Additionally, the Proposed Project would not create any substantial new areas of impervious surface that could interfere with groundwater recharge. As such, the Proposed Project would have no potential to impede sustainable groundwater management. Therefore, this impact would be **less than significant**.

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i. result in substantial erosion or siltation on- or off-site

As described in Section 3.10.3(a) above, the use of heavy equipment and ground-disturbing activities required would loosen soils, thereby increasing their susceptibility to erosive forces. These Project activities would create the potential for erosion and siltation to occur on- or off-site, which could adversely affect water quality. Implementation of the AMMs described in Section 3.10.3(a) would reduce potential for such adverse effects. Specifically, implementation of AMM GEN-2, which would require implementation of sedimentation and erosion control measures, would help to prevent adverse water quality effects from occurring. With implementation of these measures, the potential for impacts during construction would be less than significant.

Operation and maintenance of the Project site would be consistent with existing practices and thus, would not result in substantial erosion or siltation on- or off-site. Therefore, impacts during the operation phase would be less than significant.

Overall, for the reasons listed above, this impact would be **less than significant.**

i. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite

As described above, the Proposed Project would not create any substantial new areas of impervious surface which could substantially increase the rate of amount of surface runoff. As such, this impact would be **less than significant.**

ii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff

The Proposed Project would not create or establish any substantial new areas of impervious surface. The project would modify a small number of stormwater drainage inlets, and implementation of the Proposed Project would improve the performance of these facilities. During construction, there may be the potential for Project construction activities to provide additional sources of polluted runoff to nearby stormwater facilities (e.g., spills of hazardous materials from construction equipment and subsequent precipitation events). However, implementation of AMMs GEN-3, GEN-4, GEN-5, GEN-6, GEN-7, and GEN-9, in particular, would minimize potential for such adverse effects to occur and would reduce the potential effects to a level that is **less than significant**.

iii. impede or redirect flood flows

The Proposed Project would not create or establish substantial new above-ground structures that could impede or redirect flood flows. The Project site is relatively flat and

largely covered with impervious surfaces and would remain so under the project. Construction activities would take place during the dry season; thus, the potential for construction equipment and materials to impede or redirect the flows would not be substantial. Therefore, this impact would be **less than significant.**

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

The Project site is not within a 100-year flood zone (Federal Emergency Management Agency 2009), and the project does not present a risk for flooding or redirection of flood flows. The Project site lies approximately 4.5 miles inland from the San Francisco Bay and is not considered at risk for tsunami inundation or climate change-induced sea-level rise (ABAG Resilience Program. 2022). Further, the site is not located near an inland body of water. There would be **no impact** related to the release of pollutants due to project inundation.

e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan

With implementation of the measures described in Section 3.10.3(a) above, the Proposed Project would not result in substantial pollutant discharges during construction. Thus, construction activities would not substantially adversely affect beneficial uses, as identified in the San Francisco Bay Basin Plan. No mapped groundwater basins are located in the immediate Project area and no adopted sustainable groundwater management plans are applicable to the Proposed Project. Therefore, the Proposed Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. This impact would be **less than significant.**

3.11 LAND USE AND PLANNING

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the Project:				
a. Physically divide an established community?	☐	☐	☐	☒
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

3.11.1 Discussion of Checklist Responses

a. Divide an established community

The Project site is within a developed commercial and residential area. Construction of the roadway improvements would not involve any physical changes that would have the potential to divide the established community. The Project would increase connectively in the immediate area of the Project site. Therefore, the Proposed Project would have **no impact**.

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

The proposed roadway improvement activities would not result in new development, as no new permanent habitable structures would be created nor would land be altered from its present use. Proposed Project activities would occur within the County right-of-way and within Caltrans right-of-way along and within existing roads.

Although temporary and permanent impacts may occur associated with Proposed Project activities, Project activities would support the guiding principles and goals of the Castro Valley Area Plan (Alameda County Community Development Agency 2014) to reduce in vehicle idling times and reduce traffic congestion. Implementation of the project would not conflict with the Castro Valley Area Plan or the Castro Valley Central Business District Specific Plan and therefore would have **no impact**.

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3.12 MINERAL RESOURCES

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the Project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

3.12.1 Discussion of Checklist Responses

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

b. Result in the loss of availability of a locally- important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan

Castro Valley has no known mineral resources and has not been delineated as a locally important mineral recovery site on any local land use plan (Alameda County Community Development Agency. 2007). Implementation of the project would have **no impact** on mineral resources.

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3.13 NOISE

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the Project 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 area, or, where such a plan has not been adopted, within 2 miles of a public airport or public-use airport, would the project expose people residing or working in the Project site to excessive noise levels?	☐	☐	☐	☒

3.13.1 Overview of Noise and Vibration Concepts and Terminology

Noise

In the CEQA context, noise can be defined as unwanted sound. Sound is characterized by various parameters, including the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient sound level, or sound intensity. The decibel (dB) scale is used to quantify sound intensity. Because sound pressure can vary enormously within the range of human hearing, a logarithmic scale is used to keep sound intensity numbers at a convenient and manageable level. The human ear is not equally sensitive to all frequencies in the spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive, creating the A-weighted decibel (dBA) scale.

Different types of measurements are used to characterize the time-varying nature of sound. Below are brief definitions of these measurements and other terminology used in this chapter.

Decibel (dB) is a measure of sound on a logarithmic scale that indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascals.

A-weighted decibel (dBA) is an overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.

Maximum sound level (Lmax) is the maximum sound level measured during a given measurement period.

Minimum sound level (Lmin) is the minimum sound level measured during a given measurement period.

Equivalent sound level (Leq) is the equivalent steady-state sound level that, in a given period, would contain the same acoustical energy as a time-varying sound level during that same period.

Percentile-exceeded sound level (Lxx) is the sound level exceeded during *x* percent of a given measurement period. For example, L_{10} is the sound level exceeded 10 percent of the measurement period.

Day-night sound level (Ldn) is the energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels during the period from 10:00 p.m. to 7:00 a.m. (typical sleeping hours). This weighting adjustment reflects the elevated sensitivity of individuals to ambient sound during nighttime hours.

Community noise equivalent level (CNEL) is the energy average of the A-weighted sound levels during a 24-hour period, with 5 dB added to the A-weighted sound levels between 7:00 p.m. and 10:00 p.m. and 10 dB added to the A-weighted sound levels between 10:00 p.m. and 7:00 a.m.

In general, human sound perception is such that a change in sound level of 3 dB is barely noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving the sound level. **Table 3.13-1** presents approximate noise levels for common noise sources, measured adjacent to the source.

Table 3.13-1. Examples of Common Noise Levels

Common Outdoor Activities	Noise Level (dBA)
Jet flyover at 1,000 feet	110
Gas lawnmower at 3 feet	100
Diesel truck at 50 feet traveling 50 miles per hour	90
Noisy urban area, daytime	80
Gas lawnmower at 100 feet, commercial area	70
Heavy traffic at 300 feet	60

Common Outdoor Activities	Noise Level (dBA)
Quiet urban area, daytime	50
Quiet urban area, nighttime	40
Quiet suburban area, nighttime	30
Quiet rural area, nighttime	20

Source: Caltrans 2013

Vibration

Ground-borne vibration propagates from the source through the ground to adjacent buildings by surface waves. Vibration may be composed of a single pulse, a series of pulses, or a continuous oscillatory motion. The frequency of a vibrating object describes how rapidly it is oscillating, measured in Hertz (Hz). Most environmental vibrations consist of a composite, or "spectrum," of many frequencies. The normal frequency range of most ground-borne vibrations that can be felt generally starts from a low frequency of less than 1 Hz to a high of about 200 Hz. Vibration information for this analysis has been described in terms of the peak particle velocity (PPV), measured in inches per second, or of the vibration level measured with respect to root-mean-square vibration velocity in decibels (VdB), with a reference quantity of 1 micro-inch per second.

Vibration energy dissipates as it travels through the ground, causing the vibration amplitude to decrease with distance away from the source. High-frequency vibrations reduce much more rapidly than do those characterized by low frequencies, so that in a far-field zone distant from a source, the vibrations with lower frequency amplitudes tend to dominate. Soil properties also affect the propagation of vibration. When ground-borne vibration interacts with a building, a ground-to-foundation coupling loss usually results but the vibration also can be amplified by the structural resonances of the walls and floors. Vibration in buildings is typically perceived as rattling of windows, shaking of loose items, or the motion of building surfaces. In some cases, the vibration of building surfaces also can be radiated as sound and heard as a low-frequency rumbling noise, known as ground-borne noise.

Ground-borne vibration is generally limited to areas within a few hundred feet of certain types of industrial operations and construction/demolition activities, such as pile driving. Road vehicles rarely create enough ground-borne vibration amplitude to be perceptible to humans unless the receiver is in immediate proximity to the source or the road surface is poorly maintained and has potholes or bumps. Human sensitivity to vibration varies by frequency and by receiver. Generally, people are more sensitive to low-frequency vibration. Human annoyance also is related to the number and duration of events; the more events or the greater the duration, the more annoying it becomes.

3.13.2 Regulatory Setting

Federal Laws, Regulations, and Policies

No federal laws, regulations, or policies for construction-related noise and vibration apply to the Proposed Project. However, the Federal Transit Administration (FTA) *Guidelines for Construction Vibration in Transit Noise and Vibration Impact Assessment* state that for evaluating daytime construction noise impacts in outdoor areas, a noise threshold of 90 dBA L_{eq} should be used for residential areas (FTA 2006).

For construction vibration impacts, the FTA guidelines use an annoyance threshold of 80 VdB for infrequent events (fewer than 30 vibration events per day) and a damage threshold of 0.12 inches per second (in/sec) PPV for buildings extremely susceptible to vibration damage (FTA 2006). The groundborne vibration annoyance level is 65 VdB for buildings where vibration would interfere with interior operations, 72 VdB for residences, and 75 VdB for institutional land uses with primarily daytime uses.

State Laws, Regulations, and Policies

California requires each local government entity to implement a noise element as part of its general plan. California Administrative Code, Title 4, presents guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. The state land use compatibility guidelines are listed in **Table 3.13-2**.

For the protection of fragile, historic, and residential structures, Caltrans recommends a more conservative threshold of 0.2 in/sec PPV for normal residential buildings and 0.08 in/sec PPV for old or historically significant structures (Caltrans 2013).

Local Laws, Regulations, and Policies

Castro Valley Area Plan

The Castro Valley Area Plan (Alameda County Community Development Agency 2012) is a comprehensive long-range general plan that guides land use and development in the unincorporated area of Castro Valley. The following goals and policies in the Castro Valley Area Plan are relevant to the Proposed Project and the noise analysis.

GOAL 11.1-1 Protect residents and workers in Castro Valley from noise that affects comfort and health. Reduce noise to within established noise limits to the maximum extent feasible; curtail the increase of noise levels in the future; and mitigate noise impacts on sensitive uses through siting and design.

> **Policy 11.1-2 Traffic Speeds and Noise Standards.** Establish traffic speed limits at levels that will not produce noise levels that exceed established County noise standards.
>
> > **Action 11.1-4 Restriction of Vehicle Speeds at I-580 Entrance/ Exit Points.** Design any adjustments to intersections along Castro Valley Boulevard and at entrance and exit points to I-580 in such a way as to prevent vehicle speeds that would exceed County noise standards.

Table 3.13-2. State Land Use Compatibility Standards for Community Noise Environment

Land Use Category	Community Noise Exposure - L_{dn} or CNEL (dB)						
	55	60	65	70	75	80	
Residential – Low Density Single Family, Duplex, Mobile Homes							
Residential – Multi-Family							
Transient Lodging – Motels, Hotels							
Schools, Libraries, Churches, Hospitals, Nursing Homes							
Auditoriums, Concert Halls, Amphitheaters							
Sports Arenas, Outdoor Spectator Sports							
Playgrounds, Neighborhood Parks							
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business Commercial and Professional							
Industrial, Manufacturing, Utilities, Agriculture							

Normally Acceptable:	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
Conditionally Acceptable:	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
Normally Unacceptable:	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Clearly Unacceptable:	New construction or development generally should not be undertaken.

Source: California Governor's Office of Planning and Research 2017

3.13.3 Discussion of Checklist Reponses

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

Noise impacts resulting from construction depend on 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 receptors. Construction noise impacts primarily occur when construction activities occur during noise-sensitive times of the day (early morning, evening, and nighttime hours), the construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction occurs over an extended period (e.g., longer than one year).

Significant noise impacts do not normally occur when standard construction noise control measures are enforced, or when the duration of the noise-generating construction activities is limited to one construction season or less. 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 the public, promote the general welfare of the community, and maintain the quality of life.

The Project site is in the Central Business District (CBD), which has the highest ambient noise levels in the Castro Valley area. The Project area is characterized by a mix of commercial and residential uses, and the Project site is located near Castro Valley Boulevard and I-580 where noise levels are anticipated to reach 65dB (Alameda County Community Development Agency. 2007). There are sensitive receptors within 500 feet of the Project site to the northwest (preschool) and to the north (residences).

Project construction activities would be typical for roadway improvements and would generate noise from activities such as site grading and concrete pouring. According to Chapter 6.60.070 of the County's General Code, established noise standards do not apply to temporary noise sources associated with construction, provided that all construction activities occur between 7:00 a.m. and 7:00 p.m. on weekdays and between 8:00 a.m. and 5:00 p.m. on weekends. Alameda County standard conditions of approval applicable to all construction projects would reduce the short-term impacts of noise generated by construction equipment and traffic.

Upon completion of construction, the Project would operate nearly identical to existing conditions. Thus, impacts from noise generated by the construction and operation would be **less than significant**.

b. Generation of excessive groundborne vibration or groundborne noise levels

Vibration thresholds for buildings occur at a PPV of 0.12 in/sec for buildings extremely susceptible to vibration damage; the human annoyance threshold is at 80 VdB. Vibration and ground-borne noise levels were estimated following methods described in the FTA Noise and Vibration Impact Assessment (FTA 2018) to determine the PPV that would potentially impact buildings and the VdB for annoyance, since there are no applicable County vibration-related

thresholds or recommended methodology. It was assumed that the equipment would have similar vibration sound levels as a vibratory roller (at Project sites requiring paving) or loaded trucks (which would impact areas along hauling routes). **Table 3.13-3** below shows relevant parameters for the construction equipment used for the Proposed Project and distance to sensitive receptors to be below vibration thresholds.

Table 3.13-3. Construction Equipment and Vibration Distance

Equipment	PPV at 25 ft	Distance to PPV of 0.12 in/sec	Noise Vibration Level at 25 ft	Distance to Noise Vibration of 80 VdB
Vibratory Roller	0.21 in/sec	36.3 feet	94 VdB	73 feet
Loaded Truck	0.076 in/sec	18.4 feet	86 VdB	40 feet

Source: Calculations are provided in Appendix A.

Table 3.13-3 shows that the vibration noise is below the human annoyance level of 80 VdB at 73 feet from the Project area and that the building damage threshold is at 36 feet. There are no sensitive receptors or sensitive buildings within these threshold distances. Therefore, since the vibration is below the annoyance level and there are no buildings within the damage threshold, this impact would be **less than significant**.

c. For a project located within the vicinity of a private airstrip or an airport land use plan area, or, within 2 miles of a public airport or public-use airport, would the project expose people residing or working in the Project site to excessive noise levels

The Project site is approximately 2.75 miles northeast of the Hayward Executive Airport and is outside its Airport Influence Area (Alameda County Airport Land Use Commission. 2012). The Project site is not within the Airport Influence Area of the Oakland International Airport approximately 6.5 miles to the northwest. There are no other airports, either public or private, within the vicinity of the Project site. Implementation of the Project would have **no impact** related to airport noise.

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3.14 POPULATION AND HOUSING

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

3.14.1 Discussion of Checklist Responses

a. Induce unplanned population growth

b. Displace a substantial number of existing people or housing

Although residents are located adjacent to the Project site, main construction activities would occur within the roadway right-of-way. The proposed project would not induce substantial unplanned population growth and would not displace either existing housing or people. Implementation of the project would therefore have **no impact** related to population and housing.

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3.15 PUBLIC SERVICES

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the Project:				
a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i. Fire protection?	☐	☐	☒	☐
ii. Police protection?	☐	☐	☒	☐
iii. Schools?	☐	☐	☐	☒
iv. Parks?	☐	☐	☐	☒
v. Other public facilities?	☐	☐	☐	☒

3.15.1 Discussion of Checklist Responses

a. Result in adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities

i. Fire protection

ii. Police protection

The Proposed Project would not increase population in the Project area (see related discussion in Section 3.14, "Population and Housing") such as to increase demand for fire or police protection services or require/result in the need to construct new or altered fire or police protection facilities. However, temporary lane closures or detours associated with Proposed Project activities could affect response times of fire or police services. Implementation of AMM GEN-11 would help minimize disruptions to existing roadways by requiring signage and flaggers to be present during Project construction activities as well as ensure that emergency response providers are notified in advance of any closures. Within implementation of AMM GEN-11, impacts to fire and police protection services would be **less than significant**.

iii. Schools

iv. Parks

v. Other public facilities

Proposed Project activities would occur within the County roadways and right-of-way and within Caltrans right-of-way. As discussed in Section 3.14, the Proposed Project would not induce population growth such that the provision and construction of new or altered schools, parks or other public facilities would be necessary to meet appropriate performance objectives. As such, **no impact** related to construction of new or altered schools, parks or other public facilities would occur.

3.16 RECREATION

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the Project:				
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

3.16.1 Discussion of Checklist Responses

a. Increase use of existing parks or recreational facilities

b. Creation of new or altered recreational facilities

The Proposed Project would not include any recreational facilities or require the construction or expansion of recreational facilities. Further, the Proposed Project would not spur population growth or lead to other factors that would require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. The Proposed Project construction activities would be limited to roadway and sidewalk improvements. Therefore, **no impact** related to the creation of new or altered recreational facilities would occur with implementation of the Proposed Project.

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3.17 TRANSPORTATION

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

3.17.1 Terminology

Following are definitions of key traffic and transportation terms used in this section, based on materials published by the Transportation Research Board (Transportation Research Board 2000).

Level of service (LOS) – A qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. Roadway LOS is defined according to methodologies presented in the Highway Capacity Manual (Transportation Research Board 2000). Using the Highway Capacity Manual procedures, the quality of traffic operation is graded as one of six LOS designations: A, B, C, D, E, or F. LOS A and B represent the best traffic operations, LOS C and D represent intermediate operations, and LOS E and F represent high levels of congestion and unstable traffic flow.

Delay – The additional travel time experienced by a vehicle or traveler that results from inability to travel at optimal speed, and stops due to congestion or traffic control.

Freeway – A multilane divided highway with a minimum of two lanes in each direction and full access control, with no interruption in traffic flow. Freeways are used exclusively by vehicular traffic.

Highway – A roadway with two or more lanes that is not completely access-controlled, and may have at-grade crossings and/or occasional traffic signals. Multilane highways may be divided. Two-lane highways are typically undivided. Highways may accommodate bicycle traffic.

Local access roadway, local roadway – A roadway designed with the primary function of providing access to an adjacent site or development; a roadway that connects local points but does not accommodate through traffic

3.17.2 Regulatory Setting

Federal Laws, Regulations, and Policies

No federal regulations are applicable to transportation in relation to the Proposed Project.

State Laws, Regulations, and Policies

Transportation analysis in California is guided by policies and standards set at the state level by the California Department of Transportation and at the regional and local level by jurisdictional agencies such as the Alameda County Transportation Commission (Alameda CTC). Local jurisdictions regulate speed limits and other driving standards on local roadways. The California Department of Transportation and local jurisdictions generally assess the impacts of long-term (not short-term) traffic conditions. The goal of state and local plans and policies related to transportation is to prepare for future growth and the vehicular, transit, pedestrian, and bicycle travel demand associated with that growth. However, given that the Project elements would generate construction-related vehicle traffic, the goals and policies presented below are considered to have relevance to this analysis.

3.17.3 Environmental Setting

Existing Conditions

Vehicle counts

Intersection turn movements counts were collected on Thursday, January 23, 2020 for the a.m. and p.m. peak periods while all local schools were in session. Detailed count summaries are included in Appendix B.

Drone-Based Aerial Video Survey Observations

Driver behavior within the Project vicinity, including vehicle queue lengths, lane utilization, lane choice, vehicle routing and traffic signal operations, were observed using an aerial drone quipped with a video recording device. Observations were performed during the a.m. and p.m. peak period on Thursday, January 23, 2020. As there are limitations to the continuous flight time of the drone, documentation of each peak period was divided into short periods lasting approximately 15-20 minutes each with a 5-minute break between observation segments to change batteries on the drone.

Origin and Destination Study

The drone video footage was reviewed to establish the vehicle origin and destination patterns of the Project vicinity. The representative 15-minute sampling was used during the a.m. peak hour and 20-mintue long sampling was used during the p.m. peak hour to estimate the vehicle

routing for the Project vicinity. A summary of these origins and destinations is provided in **Table 3.17-1.**

Table 3.17-1. Peak Hour Origin-Destination Sampling

Streets Used to Exit Project Area	Streets Used to Enter the Project Area							
	John Dr	Castro Valley Blvd (West)	Strobridge Ave (South)	I-580 Off-Ramp	Norbridge Ave	Castro Valley Blvd (East)	Stanton Ave	McDonalds or Wendy's
John Dr	0.0 (0.0)	12.7 (10.5)	5.4 (4.2)	11.5 (8.9)	25 (10.5)	6.5 (7.5)	4.3 (5.8)	0.0 (9.3)
Castro Valley Blvd (West)	25.4 (34.5)	2.6 (0.2)	12.2 (12.5)	31.1 (22.8)	50 (36.8)	78.9 (77.1)	46.6 (66.3)	43.8 (35.2)
Strobridge Ave (South)	28.2 (20.1)	6.3 (6.3)	0.0 (0.0)	1.6 (6.1)	0.0 (1.8)	9.1 (8.1)	27.6 (16.8)	15.6 (7.4)
I-580 Off-Ramp	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Norbridge Ave	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Castro Valley Blvd (East)	35.2 (38.1)	60.3 (31.2)	52.7 (49.2)	27.9 (30.6)	8.3 (17.5)	0.0 (0.0)	19.8 (10.1)	34.4 (42.6)
Stanton Ave	8.5 (5.0)	14.3 (18.9)	23 (25.8)	16.4 (27.2)	8.3 (29.8)	1.1 (1.7)	0.0 (0.0)	6.3 (3.7)
McDonalds or Wendy's	2.8 (2.2)	3.7 (2.9)	6.8 (8.3)	11.5 (4.4)	8.3 (3.5)	4.4 (5.6)	1.7 (1.0)	0.0 (1.9)

Note: XX (XX) = AM Peak Hour (PM Peak Hour); All values are in percent

Intersection Level of Service Analysis

The existing conditions scenario provides an evaluation of current traffic operations based on existing traffic volumes during the a.m. and p.m. peak hours. Under this condition, the signalized intersection of Stanton Avenue/Castro Valley Boulevard operates at LOS E during the a.m. peak hour and the unsignalized intersection of Strobridge Avenue/Westbound I-580 Off-ramp operates at LOS F during both the a.m. and p.m. peak hours. A summary of existing intersection Levels of Service is contained in **Table 3.17-2**, and copies of the SimTraffic output sheets are enclosed in the Evaluation of Traffic Operations (W-Trans 2020) included in Appendix B.

Table 3.17-2. Existing Conditions Intersection Levels of Service

Intersection Control *Approach*	Control	AM Peak Hour		PM Peak Hour	
		Avg Delay	LOS	Avg Delay	LOS
Strobridge Ave- John Dr/Castro Valley Blvd.	Signal	34.7	C	20.8	C
Stanton Ave/Castro Valley Blvd	Signal	**74.5**	**E**	53.3	D
Strobridge Ave/WB I-580 Off-Ramp	TWSC	**100.0**	**F**	**117.4**	**F**
Westbound (I-580 Off-Ramp) Approach		**152.5**	**F**	**211.4**	**F**

Note: Delay is in average seconds per vehicle; **Bold** = LOS E or LOS F; TWSC = Two-Way Stop-Control; Delay for stop-controlled approaches to TWSC Intersection shown in *italics*

Castro Valley Boulevard Evaluation

An evaluation of operation along Castro Valley Boulevard was conducted using SimTraffic to establish the existing conditions baseline for various performance measures. A summary is provided in **Table 3.17-3.**

Table 3.17-3. Existing Conditions Peak Hour Corridor Performance Measures

Castro Valley Blvd. Direction: Segment	AM Peak Hour		PM Peak Hour	
	Avg Travel Time	Avg Speed	AVG Travel Time	Avg Speed
Eastbound: Strobridge Ave to Lake Chabot Rd	**140.8**	**13**	**109.9**	**16**
Westbound: Lake Chabot Rd to Strobridge Ave	**2959.9**	**8**	**131.7**	**16**

Note: Travel Time is measured in seconds; speed is measured in mph.

3.17.4 Discussion of Checklist Responses

a. Conflict with applicable circulation plans, ordinances, or policies

The Project's effect on traffic in the Project area would be limited to short-term effects in any given location associated with construction vehicles and haul trips. Construction-related traffic would consist primarily of commutes to and from worksites by construction workers and periodic delivery and removal of materials during the construction period. The number of construction workers and vehicles would vary by project, planned activity, and material needs.

The manner by which Project activities are likely to affect traffic volumes and LOS in the Project area are discussed below.

Temporary Lane Closures

Some Project activities, such as roadway striping and medium construction, may result in temporary one- lane closures. Full closures of the roadway would not be required.

Temporary one-lane closures could lead to traffic delays, temporary reductions in roadway LOS, or create traffic hazards. As described in AMM GEN-11 if temporary lane closures or traffic delays are required, adequate warning and detour signs and flaggers would be provided to safely guide travelers during construction activities. In addition, advance notice of temporary closures would be provided to local jurisdictions and emergency service providers. As such, with implementation of AMM GEN-11, the effects of temporary lane closures on traffic operations would be less than significant.

Construction Worker Trip Generation

Construction workers would need to access the work sites, which would add vehicle traffic to area roadways. The County estimates that a total of approximately 50 trips would be made by both County personnel and contractors to conduct Project-related work in the Project area (refer to Air Quality and Greenhouse Gas Analysis [Horizon 2022a]). The majority of work would be conducted over approximately 180 workdays over six months. Even if all trips were condensed over this peak work period, the maximum number of trips in the Project area (approximately 5 trips per day) would not have a noticeable effect on LOS on regional and local access routes. Both regionally and locally, the temporary added volume of traffic generated on Project area roadways would be negligible relative to roadway capacity and existing traffic volumes. Impacts would be less than significant.

Equipment Deliveries

Hand tools and other smaller equipment types would arrive in construction trucks used by personnel to access the site; however, heavy equipment needed for certain Project activities would need to be delivered to the work site on trailers and/or flatbed trucks. Slower travel speeds, large size and turning radii typically associated with this kind of traffic could temporarily reduce roadway capacity and result in minor increases in congestion and delay for vehicles.

While the specific impact of heavy equipment traffic on roadways would depend on the number of travel lanes on the roadways, existing traffic volumes on these roadways, terrain, and other factors, the use of specialized heavy equipment such as excavators and backhoes would be minimal. Consequently, this impact would be less than significant.

Truck Disposal Trips

Dump trucks would be used to haul excavated materials for reuse or disposal elsewhere, or may haul fill materials to be used for Project activities. Minimal, if any, excess material is expected to be generated that would require off-site disposal (less than 100 cubic yards), and the amount of material to be hauled to the site would be similarly small. Additionally, minimal volumes of removed vegetation may require hauling or disposal, less than 20 cubic yards. Vegetation is

typically chipped and left on site as mulch or taken to County facilities for composting. However, the addition of these trips would not cause substantial degradation of LOS or delay for motorists in the Project area.

Network Measure of Effectiveness

A comparison of select network performance measures is contained in **Table 3.17-4**, and copies of the SimTraffic outputs are enclosed in the Evaluation of Traffic Operations Report (Appendix B).

Table 3.17-4. Comparisons of Peak Hour Network Measures of Effectiveness

Scenario	Period	Avg Vehicles Served		Avg Total Distance Traveled (mi)	Avg Total Vehicle Delay (hr)	Avg Total No. Vehicle Stops
		No. of Vehicles Entered	No. of Vehicles exited			
Existing Condition	AM	3,983	3,766	2,661	284	7,231
	PM	4,505	4,370	2,773	158	7,976
Project	AM	4,358	4,281	2,959	120	8,914
	PM	4,639	4,583	3,162	114	8,982
Project Minus Existing Condition	AM	375	515	298	-164	1,683
	PM	134	213	389	-44	1,006

The network performance under the Project suggests a less congested condition when compared with existing conditions for both the a.m. and p.m. peak hours. During the a.m. peak hour, the total hours of delay are reduced by 164 hours while both the number of entering and existing vehicles increase. For the p.m. peak hour, the number of vehicles increased with the total hours of delay are also reduced by 44 hours. These results indicate that the Project would serve a higher number of vehicles with lower levels of congested conditions for both the a.m. and p.m. peak hours. The Project would have a net positive impact on implementation of a traffic congestion management plan.

Conflict with Alternative Transportation Policies

The Proposed Project would result in permanent effects on public transit, bicycle, or pedestrian traffic. The proposed project would include improved sidewalk facilities, pedestrian crossings, pedestrian crosswalk signage and create additional bicycle lane connections throughout the Project site. These improvements would create a net positive impact to pedestrian facilities within the Project site; Project construction activities could temporarily disrupt bicycle access.

Where temporary one- lane closures are required, implementation of AMM GEN-11 would ensure that Class II bike lanes along Project roadways are maintained to the extent practicable. If temporary lane closures are required, implementation of AMM GEN-11 would minimize impacts to bicycle traffic through the posting of advance warning signs in the vicinity of affected areas to alert bicycle traffic of revised routes and hazards during construction. In addition, warning signage and flaggers would be on-site during construction to safely guide bicyclists around construction activities. Further, one-lane closures would be temporary. With implementation of AMM GEN-11, the Project's temporary impact regarding conflicts with alternative transportation policies would be less than significant.

Summary

In summary, with the implementation of AMM GEN-11, impacts on traffic from temporary one-lane closures, maintenance worker trips, heavy equipment delivery, and truck trips associated with the Proposed Project would be **less than significant**. Therefore, the Project would not conflict with applicable circulation plans, ordinances, or policies.

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

In accordance with SB 743, the new CEQA Guidelines Section 15064.3, subdivision (b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the CEQA Guidelines criteria for determining the significance of transportation impacts are primarily focused on projects within transit priority areas and shifts the focus from driver delay to a reduction of greenhouse gas emissions, creation of multimodal networks, and promotion of a mix of land uses. Vehicle miles traveled (VMT) is a measure of the total number of miles driven to or from a development and is sometimes expressed as an average per trip or per person.

The County has not yet adopted VMT screening criteria and thresholds and, therefore, the statewide guidance as documented in the Technical Advisory on Evaluating Transportation Impacts in CEQA (Technical Guidelines) would apply to the Project. According to the Technical Guidelines, absent substantial evidence indicating that a project would generate a potentially significant level of VMT or inconsistency with a Sustainable Communities Strategy or general plan, projects that create an addition of roadway capacity on local or collector streets may be assumed to cause a less-than-significant transportation impact provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit (Caltrans. 2020).

The Proposed Project would include improved sidewalk facilities, pedestrian crossings, pedestrian crosswalk signage and create additional bicycle lane connections throughout the Project site. These improvements would create a net positive impact to pedestrian facilities within the Project site.

Taking the information discussed above into account, the Project would not conflict with or be inconsistent with CEQA Guidelines Section 15064.3(b). Therefore, VMT generated by the Project would be **less than significant**.

c. Increased hazards resulting from geometric design features

Project activities could result in the temporary closing or narrowing of roadway lanes in the vicinity of the Project sites. Temporary reductions in available travel lanes could subject vehicles using the affected roadways to increased hazards, congestion, and delays. In addition, temporary lane closures could also create traffic hazards affecting vehicle, transit, bicycle, and pedestrian traffic in the area. The temporary one-lane closure could increase the potential for traffic hazards during the construction period. The increase in safety hazards results from several factors, including the increased potential for conflicts between construction vehicles, conflicts between the movement of traffic and Project activities, and confusion of drivers and bicyclists due to temporary alterations in otherwise familiar roadway conditions.

Implementation of AMM GEN-11 requires that temporary one-lane closures are coordinated with the appropriate jurisdictions and that the County install adequate warning signage in the vicinity of the work sites. Implementation of AMM GEN-11 would ensure proper planning of traffic management during Project activities, and would provide adequate public awareness of temporarily altered road conditions and potential hazards.

The Project would modify two existing intersections by creating additional traffic signals and modifying two roadways' mediums. However, as noted in Section 3.17.4(a) above, the Project would improve circulation through the existing interactions and reduce vehicle delay. The improved circulation would reduce the potential for traffic collisions. The Project would also improve safety for pedestrians through creation and modification of pedestrian facilities within the Project site. The Project would provide a net benefit to transportation in the overall Project area. Lastly, the Project would not introduce a substantial number of large construction or delivery vehicles to area roadways during the construction phase.

The Project does not propose any changes that would permanently reconfigure the roadway prism. Overall, the Project would reduce hazards in the Project area. Therefore, the Proposed Project would not result in a permanent adverse impact on roadway safety conditions. With implementation of AMM GEN-11 the Project's temporary and long-term impact on traffic safety hazards would be **less than significant**.

d. Inadequate emergency access

As described above and in Section 3.15, "Public Services," road closures, detours, and Project-related traffic could delay or obstruct traffic in the Project area, including the movement of emergency vehicles. However, as detailed in AMM GEN-11, the County would maintain traffic flow on public roadways to the maximum extent practicable. In the event that temporary one-lane closures are necessary, affected jurisdictional agencies (including police and fire departments) would receive advanced notification of Project schedules for all activities that could affect emergency access.

The Project does not propose any structures that would permanently block or constrain roadways, and therefore would not result in a permanent impact on emergency access. Thus, with implementation of AMM GEN-11, the Project's impact on emergency access would be **less than significant**.

3.18 TRIBAL CULTURAL RESOURCES

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

3.18.1 Regulatory Setting

Federal Laws, Regulations, and Policies

No federal regulations are applicable to tribal cultural resources in relation to the Proposed Project. However, similar resources, called traditional cultural properties (TCPs), fall under the purview of Section 106 of the NHPA, as referenced in Section 3.5, "Cultural Resources." TCPs are locations of cultural value that are historic properties. A place of cultural value is eligible as a TCP "because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (Parker and King 1990). A TCP must be a tangible property, meaning that it must be a place with a referenced location, and it must have been continually a part of the community's cultural practices and beliefs for the past 50 years or more. Unlike TCRs, TCPs can be associated with communities other than Native American tribes, although the

resources are usually associated with tribes. By definition, TCPs are historic properties; that is, they meet the eligibility criteria as a historic property for listing in the National Register of Historic Places. Therefore, as historic properties, TCPs must be treated according to the implementing regulations found under Title 36 CFR Section 800, as amended in 2001.

State Laws, Regulations, and Policies

CEQA and CEQA Guidelines

AB 52, which was approved in September 2014 and went into effect on January 1, 2015, requires that state lead agencies consult with any California Native American tribe that is traditionally and culturally affiliated with the geographic area of a Proposed Project, if requested by the tribe. The bill, chaptered in Public Resource Code Section 21084.2, also specifies that a project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment.

Defined in Public Resource Code Section 21074(a), TCRs are:

(1) Sites, features, places, cultural landscapes, sacred places and objects with cultural value to a California Native American tribe that are either of the following:

(A) Included or determined to be eligible for inclusion in the California Register of Historical Resources; or

(B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

(2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

TCRs are further defined under Public Resource Code Section 21074 as follows:

(b) A cultural landscape that meets the criteria of subdivision (a) is a TCR to the extent that the landscape is geographically defined in terms of the size and scope of the landscape; and

(c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a “nonunique archaeological resource” as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

Mitigation measures for TCRs must be developed in consultation with the affected California Native American tribe pursuant to newly chaptered Section 21080.3.2, or according to Section 21084.3. Section 21084.3 identifies mitigation measures than include avoidance and preservation of TCRs and treating TCRs with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource.

3.18.2 Environmental Setting

As discussed in Section 3.5, "Cultural Resources," the NAHC was contacted via email to request a review of the Sacred Lands file for information on Native American cultural resources in the Project Area and to request a list of Native American contacts in this area. The NAHC responded on April 19, 2022 indicating that the sacred lands database review was negative for any known sacred lands. The NAHC provided a list of local Native American contacts who may have additional information regarding important cultural resources to the local Native American community.

Project notification letters, as required under Public Resource Code Section 21080.3.1 (AB 52), were sent to the tribes via email on June 20, 2022. **Table 3.18-1** lists all those contacted and summarizes the results of the consultation.

3.18.3 Discussion of Checklist Responses

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

iv. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)

v. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

No tribal cultural resources, as defined under Public Resource Code section 21074, have been identified in the Project area, to date. As a result, there would be no impact to known tribal cultural resources. However, construction activities have the potential to uncover significant resources, such as human remains, that would be considered tribal cultural resources. Should any such resources be discovered during construction, AMM-CUL-1 would be followed, which requires work to be stopped within 35 feet of the find until an archaeologist can review the discovery. Adherence to the procedures and provisions of AMM CUL-1 would reduce potential impacts to tribal cultural resources to a **less-than-significant** level.

The County would furthermore continue all requested consultations pursuant to AB 52 until such consultation is concluded by consensus between the County and the tribe. If it is revealed that the Project has the potential to disturb tribal cultural resources, the County would work to avoid such disturbances to the level of a **less-than-significant** impact.

Table 3.18-1. Native American Consultation

Organization/Tribe	Name of Contact	Letter Date	Tribal Response	Comments
Amah MutsunTribal Band of Mission San Juan Bautista	Irene Zwierlein	6/20/22	None	
Costanoan Rumsen Carmel Tribe	Tony Cerda	6/20/22	None	
Indian Canyon Mutsun Band of Costanoan	Ann Marie Sayers	6/20/22	None	
Indian Canyon Mutsun Band of Costanoan	Kanyon Sayers-Roods	6/20/22	Requested consultation on 7/1/22	The County responded on 8/3/22 and is awaiting response.
Muwekma Ohlone Indian Tribe of the SF Bay Area	Charlene Nijmeh	6/20/22	None	
Muwekma Ohlone Indian Tribe of the SF Bay Area	Monica Arellano	6/20/22	None	
North Valley Yokuts Tribe	Timothy Perez	6/20/22	None	
North Valley Yokuts Tribe	Katherine Perez	6/20/22	None	
The Ohlone Indian Tribe	Andrew Galvan	6/20/22	None	
Wuksache Indian Tribe/Eshom Valley Band	Kenneth Woodrow	6/20/22	None	
The Confederated Villages of Lisjan	Corrina Gould	6/20/22	None	

3.19 UTILITIES AND SERVICE SYSTEMS

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

3.19.1 Regulatory Setting

Federal Laws, Regulations, and Policies

No federal laws, regulations, or polices related to utilities are applicable to the Proposed Project.

State Laws, Regulations, and Policies

California Integrated Waste Management Act

The California Integrated Waste Management Act of 1989 (Public Resource Code, Division 30) requires all California cities and counties to reduce, reuse, recycle, and compost solid waste generated in the state to the maximum extent feasible. The State, acting through the California Integrated Waste Management Board (now California Department of Resources Recycling and Recovery [CalRecycle]) determines compliance with this mandate based on jurisdiction's per-capita disposal rates.

In October 2011, AB 341 was adopted by the California legislature which amended the California Integrated Waste Management Act by directing CalRecycle to adopt a state policy to achieve a goal of 75 percent recycling, composting or source reduction of solid waste by 2020. AB 341 focused largely on commercial waste generators because this sector was identified as the most in need of improved waste management. AB 341 is a legislative declaration of policy and does not alter the 50 percent diversion mandate (CalRecycle 2021).

Local Laws, Regulations, and Policies

Castro Valley Area Plan

The Castro Valley Area Plan (Alameda County Community Development Agency 2012) is a comprehensive long-range general plan that guides land use and development in the unincorporated area of Castro Valley. The following goals and policies in the Castro Valley Area Plan are relevant to the Proposed Project and utilities and service systems.

GOAL 9.5-1 Collect, store, and dispose of stormwater in safe, sanitary, and environmentally-acceptable ways.

> **Policy 9.5-1 Watershed Management Approach.** Use a watershed management approach when addressing, planning, and managing stormwater issues.

GOAL 9.6-1 Reduce solid waste generation and disposal

> **Policy 9.6-1 Support Increased Landfill Diversion.** Promote waste reduction and recycling to divert increasingly larger proportions of the waste stream from the Alameda County landfills.

3.19.2 Environmental Setting

Water

Castro Valley is within the service area of the East Bay Municipal Utility District (EBMUD). The EBMUD water supply system collects, transmits, treats, and distributes water to Alameda and Contra Costa counties. EBMUD's primary water source is the Mokelumne River in the western slopes of the Sierra Nevada Mountains. EBMUD has water rights that allow for delivery of up to a maximum of 325 million gallons per day (mgd) from the Mokelumne River, subject to availability. Water from this source requires little treatment to meet high-quality water standards. The secondary water source is runoff from local watersheds which is collected and stored in the system's reservoirs. The amount of local runoff that can be used ranges between 15 and 25 mgd during normal hydrologic years, and none during drought conditions.

EBMUD has two terminal reservoirs adjacent to the planning area— Chabot and Upper San Leandro—that provide standby storage when Mokelumne River supply is temporarily unavailable. The groundwater wells are generally located in rural areas near Crow Canyon Road, Norris Canyon Road, Cull Canyon Road, Sunny Slope Avenue, Eden Canyon Road, Hollis Canyon Road, Palomares Road, and Dublin Canyon Road.

Sewer

The Castro Valley Sanitary District (CVSD) provides and maintains the sewage collection system that serves most of Castro Valley. CVSD's current service area includes virtually all of the land within the voter-approved Urban Growth Boundary. Oro Loma Sanitary District provides the sewage collection system for the Hillcrest Knolls and El Portal Ridge neighborhoods. The only developed areas that continue to rely exclusively on private septic systems are off Crow Canyon Road beyond Cold Water Drive, off Cull Canyon Road, and in Palomares Canyon.

The Oro Loma Sanitary District treats CVSD sewage at the Oro Loma/ Castro Valley Water Pollution Control Plant in San Lorenzo, of which CVSD owns 25 percent. The plant discharges to San Francisco Bay through pipelines operated by the East Bay Dischargers Authority.

Stormwater

The Alameda County Flood Control and Water Conservation District (ACFCWCD) owns and manages most storm drains in Castro Valley, located in Flood Control Zone 2. Within Zone 2 there are 81 miles of natural creek, five miles of earth channel, 12 miles of concrete channel, two miles of improved channel, 44 miles of underground pipe, and two pump stations. In addition, there are two reservoirs, Cull Canyon and Don Castro, which are maintained for flood control.

Solid Waste

The Castro Valley Sanitary District (CVSD) and the Oro Loma Sanitary District (OLSD) handle refuse collection and disposal in the planning area. The Districts collect solid waste, and generally haul it to the Davis Street Transfer Station, and then to the Altamont Landfill east of Livermore, contracts with Waste Management of Alameda County. Altamont Landfill has an expected closure date of 2071. The Districts' solid waste program expenses are mainly funded

by user fees. CVSD and OLSD are both members of the Alameda County Waste Management Authority (ACWMA), a countywide organization to divert materials from the landfill into reuse, recycle and reduction programs.

Electricity and Natural Gas

California has extensive energy resources, including an abundant supply of crude oil, high production of conventional hydroelectric power, and leads the nation in electricity generation from renewable resources (solar, geothermal, and biomass resources) (EIA 2021). California has the second highest total energy consumption in the U.S. but the fourth lowest energy consumption rates per capita due to its mild climate and energy efficiency programs (EIA 2021). PG&E provides electricity and natural gas service for the entire Alameda County. PG&E obtains its energy supplies from natural gas fields and power plants in northern California as well as from energy purchased outside its service area, which is delivered through transmission lines and pipelines.

Communications

Existing communication services (including cable, telephone, and internet services) in the Project area are provided by Comcast and AT&T.

3.19.3 Discussion of Checklist Responses

a. Require the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunications facilities or expansion of existing facilities, the construction or relocation of which could cause significant environmental effects

The Proposed Project would not require or result in the construction or relocation of new or expanded water or wastewater treatment, electric power, natural gas, or telecommunication facilities. The Proposed Project involves minor roadway alterations that would involve converting an existing inlet to a manhole and constructing a new inlet; however, these minor modifications would not result in the construction or expansion of existing stormwater drainage facilities. Under the Project, only minimal new areas of impervious surface would be installed to alter the curb and gutter system on the Project's eastern boundary. The goal of the Proposed Project is to reduce traffic congestions within the Project corridor. As such, **no impact** would occur.

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

Potential activities that may require minimal amounts of water include vehicle cleaning and sediment/soil watering related to dust control activities. As described in AMM GEN-6, on-site vehicle cleaning may occur, but only as needed to prevent the spread of sediment, pathogens, or exotic/invasive species. In addition, as detailed in AMM GEN-7, active construction areas would be watered following required dust control measures set by the BAAQMD. Water would likely be supplied by a water truck at the work sites, as necessary. The amount of water to be

used is anticipated to be very small. In addition, contractors will know and comply with all mandatory water conservation requirements and drought water waste prohibitions as applicable to this project and as required by law. Furthermore, the Proposed Project would not require the construction of any long-term water distribution or supply facilities. Thus, this impact would be **less than significant**.

c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments

The Proposed Project does not include any uses, features, or facilities that would generate wastewater or require connection to the municipal wastewater collection and treatment system. Furthermore, the Proposed Project would not increase or alter the distribution of the local population in the Project area such that the need or demand for wastewater treatment would be altered (see also Section 3.14, "Population and Housing"). A nominal amount of wastewater would be generated by construction workers using portable restrooms on-site, which would be off-hauled by the County or its contractor for disposal. This limited amount of wastewater would not substantially contribute to an exceedance of capacity at local wastewater treatment facilities in Alameda County. As such, this impact would be **less than significant**.

d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals

The Proposed Project activities would generate up to 150 cubic yards of materials needing export. For the purpose of this analysis, it was assumed that all of the materials requiring export (150 cubic yards) would require disposal and would not be able to be reused. Under that assumption, the operating solid waste disposal facility that would receive these materials would be the Altamont Landfill and Recycling Center. The remaining capacity of this facility is 65,400,000 cubic yards (Alameda County Waste Management Authority 2022). Thus, there is adequate permitted remaining capacity at this facility for the volume and type of solid waste that would be generated by the Project. Therefore, the Proposed Project would not substantially contribute to an exceedance of capacity at County landfills and impacts would be **less than significant**.

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

As described above under Section 3.19.3(d), material generated by the Proposed Project would be disposed of at the Altamont Landfill and Recycling Center. This facility, is permitted to dispose of all types of waste generated by Project construction. As discussed in Section 3.19.1, the California Integrated Waste Management Act of 1989 requires municipalities to divert at least 50 percent of all solid waste generated by the year 2000 and establishes the goal of diverting at least 75 percent of generated waste (based on per capita disposal rates) by 2020. Given the minimal amount of material requiring disposal from the Project (i.e., approximately 150 cubic yards), the Project would have a negligeable impact on Alameda County meeting the California Integrated Waste Management Act goals. Therefore, the Proposed Project would not

conflict with any federal, state, or local regulations related to solid waste. As such, this impact would be **less than significant.**

3.20 WILDFIRE

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

3.20.1 Discussion of Checklist Responses

a. Substantially impair an adopted emergency response plan or emergency evacuation plan

The Project would be subject to Alameda County Fire Department review of the site plans. This review would include verifying that the proposed site ingress and egress is adequate for police protection and emergency response. The Project would improve traffic circulation and would not impair implementation of any adopted emergency response plan or emergency evacuation plan. The project would therefore have **no impact** related to an emergency response or evacuation plan.

b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire

c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment

d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes

The project site is located in an urbanized area removed from areas typically subject to wildland fire, and it has not been identified as a very high fire hazard severity zone (Alameda County Community Development Agency 2007). There is no potential for the Project to exacerbate wildfire risks. Therefore, the Project would have **no impact** related to wildland fire.

3.21 MANDATORY FINDINGS OF SIGNIFICANCE

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

3.21.1 Discussion of Checklist Responses

a. Effects on environmental quality, fish or wildlife, and historic resources

As discussed throughout this IS/ND, less than significant impacts were identified for biological and cultural resources. With implementation of AMMs identified in Table 2-2 of Chapter 2, *Project Description*, the Proposed Project would not have the potential to substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory. Therefore, this impact would be **less than significant**.

b. Cumulative Impacts

A cumulative impact refers to the combined effect of "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). As defined by the State of California, cumulative impacts reflect "the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (CEQA Guidelines Section 15355[b]).

The following cumulative analysis evaluates the potential cumulative impacts from the Proposed Project in combination with other related past, present, and probable future projects in the area, shown in **Table 3.21-1**.

Table 3.21-1. Summary of Cumulative Projects in Alameda County

Project Name	Description
Village Green Mixed-Use Multi-Family Housing	Mixed-use multi-family project with 138 (previously 163) rental housing units
Fa YunChan Buddhist Center	Application to develop the site for worship facilities
PLN2021-00202	Construction of a four-story, 40-foot, residential building
Outdoor Project Camp	Construction of a four-story recreation facilities in Castro Valley.

Impacts Avoided

The Proposed Project would have no significant impact on the following resources and would therefore not contribute to potential cumulative impacts on these resources:

- Agriculture and Forestry Resources
- Land Use and Planning
- Mineral Resources
- Population and Housing
- Public Services
- Recreation

Cumulative Impacts

Aesthetics

Proposed Project activities would occur within County and Caltrans right-of-way. Temporary visual impacts would occur from the presence of personnel, equipment, staging, earthwork, and other Project-related activities; however, these activities would be temporary and localized and would not result in significant visual impacts. Over the long term, visual conditions of County facilities would be similar to existing conditions. Similarly, impacts related to aesthetics from the other County projects would be site specific and temporary. For these reasons, no cumulatively significant impact related to aesthetics would result, and the Proposed Project would not make a considerable contribution to such an impact.

Air Quality

Refer to the discussion in Section 3.3(b). Because the SFBAAB is in nonattainment for ozone, PM10, and PM2.5, the combined effect of the cumulative projects would result in a significant cumulative impact on air quality. However, the Proposed Project's individual emissions are substantially below the established BAAQMD thresholds for criteria air pollutants; therefore, the Proposed Project would not make a considerable contribution to the significant cumulative impact.

Biological Resources

The Proposed Project would likely occur in similar habitats to some of the projects identified in Table 3.21-1. Thus, the Proposed Project could result in similar special-status species and habitat impacts as the other cumulative projects. Like the Proposed Project, other cumulative projects would need to comply with local, State, and federal laws and regulations protecting special-status species and sensitive habitats. The very low potential exists for a significant cumulative impact.

Although the majority of the Proposed Project's impacts on biological resources would be temporary, impacts to special-status nesting birds as a result of the proposed activities could occur. Implementation of AMM BIO-1 would reduce the Proposed Project's impacts to less than significant. Therefore, given that (1) impacts of the Proposed Project would be effectively avoided/minimized, and (2) the Proposed Project includes limited habitat in the Project area, the Project would not make a considerable contribution to a significant cumulative impact on biological resources.

Cultural Resources and Tribal Cultural Resources

Many of the other cumulative projects identified in Table 3.21-1 may involve some amount of ground disturbance (although within previously disturbed areas), and thus may have the potential to uncover buried archaeological resources, some of which could be TCRs. If proper protocols are not followed, this could result in adverse effects on cultural resources and TCRs. However, similar to the Proposed Project, none of the cumulative projects would be anticipated to affect known built environment resources or substantially change a place or landscape. Given implementation of federal, state, and local regulations, as well as Project-specific AMMs, no significant cumulative effect on cultural resources and TCRs would result. In addition, with

implementation of Project-specific AMMs, the Project would not make a considerable contribution to a significant cumulative impact on cultural resources or TCRs.

Energy

Most of the other cumulative projects identified in Table 3.21-1 would involve operation of construction equipment and use of energy in the form of fossil fuels. However, similar to the Proposed Project, the energy use associated with these other projects would be temporary. None of the projects would include construction of housing, buildings, or commercial or industrial uses that could create a substantial long-term demand for energy. Therefore, no significant cumulative impact on energy would result. In addition, given the fact that the Proposed Project's energy use would be relatively minor and similar to existing conditions, the Project would not make a considerable contribution to a significant cumulative impact related to energy.

Geology, Soils, and Seismicity

Maintenance and roadway projects in general pose minimal risk with respect to geology, soils, and seismicity, as these projects would not place any new structures or people in locations that are potentially susceptible to geologic hazards. Therefore, no significant cumulative impact on geology, soils, or seismicity would result. In addition, implementation of the Project would improve the resilience of existing drainage structures and features to geologic hazards, thus improving public safety, and implementation of AMMs would prevent or minimize Project-related effects on soils (e.g., erosion) or paleontological resources. Thus, with the implementation of AMMs, the Project would not make a considerable contribution to a significant cumulative impact related to geology, soils, and seismicity.

Greenhouse Gas Emissions

GHGs are cumulative in nature and the cumulative impact from GHG production at a global scale is significant. The Proposed Project would generate GHG emissions during Project activities; however, these activities would be limited in nature and duration, and be required to comply with state and local regulations. Similar to the Proposed Project, the other projects identified in Table 3.21-1 would also generate GHG emissions; however, these would be temporary and would be required to comply with state and local regulations. For these reasons, no cumulatively significant impact related to GHGs would result, and the Project would not make a considerable contribution to such an impact.

Hazards and Hazardous Materials

Similar to the Proposed Project, other cumulative projects would be required to comply with standard federal, state, and local requirements to minimize impacts related to hazardous materials. The other cumulative projects listed in Table 3.21-1 would be expected to use hazardous materials during construction and operation of construction equipment and repair of roadways. Thus, the potential exists for a significant cumulative impact. As described in Section 3.9, Project activities would be of short duration in any one location and generally would be confined to small areas. Compliance with federal and state regulations and implementation of AMMs would ensure that maintenance workers and the public are protected from exposure of hazardous materials during Project activities. Given the above, the Project would not make a

considerable contribution to a significant cumulative impact related to hazards and hazardous materials.

Hydrology and Water Quality

Although short-term impacts to water quality could occur, the Proposed Project and other cumulative projects would implement AMMs to minimize potential impacts on hydrology and water quality such as erosion and sediment control practices. Similar to the other cumulative projects, the Proposed Project would not include any substantial areas of new impervious surface that would generate additional runoff and create potential for generation of polluted stormwater. No cumulatively significant impact related to hydrology and water quality would result. In addition, with implementation of AMMs, the Project would not make a considerable contribution to a significant cumulative impact related to hydrology and water quality.

Noise

Similar to the Proposed Project, the other cumulative projects identified in Table 3.21-1 would generate construction noise similar to or greater than the Project. Noise generated during construction activities would be temporary and of short duration at any given location and infrequent with sites spread out over a large area, thus limiting the amount of noise generated near sensitive receptors. Although the Proposed Project is exempt from the limitations listed in the County's Municipal Code, all Project work would occur during normal weekday hours. Further once work is complete at a given site, the Proposed Project would not permanently increase noise levels above the existing condition. For these reasons, no cumulatively significant impact related to noise would result, and the Proposed Project would not make a considerable contribution to such an impact.

Transportation

During Project activities, the Proposed Project would contribute some vehicle traffic to local roadways (e.g., vehicle trips to work sites, equipment deliveries, and truck disposal trips); however, the vehicle traffic and VMT from the Proposed Project would be similar to existing conditions and would not have a noticeable effect on regional and local access routes. Project activities would be conducted temporarily. Some Project activities may physically encroach into the traveled roadway, resulting in temporary one-lane closures, which could lead to traffic delays or create traffic hazards. Implementation of AMMs would require adequate warning and detour signs and flaggers to safely guide travelers during construction activities and reduce potential safety hazards. In general, traffic conditions in Alameda County are variable and congestion-related cumulative impacts would be relatively localized. For these reasons, no cumulatively significant impact related to transportation would result, and the Proposed Project would not make a considerable contribution to such an impact.

Utilities and Service Systems

The Proposed Project would not directly nor indirectly induce growth in the Project area and therefore, would not increase the cumulative demand for utilities and service systems. Other cumulative projects identified in Table 3.21-1 would include housing or similar land uses that would require permanent water, wastewater, electricity, or other utilities services, these projects also would increase cumulative demand for utilities and service systems. However, the Proposed Project does not include elements and no cumulatively significant impact related to

utilities and service systems would result. Any temporary need for water or wastewater service during construction or maintenance activities for the Proposed Project and other cumulative projects would be limited and would have no potential to substantially contribute to an exceedance in capacity or need for additional entitlements or sources. Similar to the Proposed Project, the contractor will know and comply with all mandatory water conservation requirements and drought water waste prohibitions as applicable and as required by law. Therefore, the Project would not make a considerable contribution to a significant cumulative impact to utilities and service systems.

Wildfire

As discussed under Section 3.20, no portion of the Project area is located in moderate and high fire hazard severity zones. The Project is located in a built-out environment with no potential for wildfire. Other cumulative projects listed in Table 3.21-1 would be required to implement fire safety measures during construction activities, such that these projects would not substantially exacerbate wildfire risks. Thus, no cumulatively significant impact related to wildfire would result. Therefore, the Project would not make a considerable contribution to a significant cumulative impact to wildlife.

Summary

Based on the cumulative impacts analysis provided above, and with the implementation of AMMs and mitigation measures included herein, the Proposed Project would not result in any significant cumulative environmental impacts. This impact would be l**ess than significant**.

c. Effects on Human Beings

Based on the analysis provided in the above resource sections, the Proposed Project would result in less-than-significant impacts for all resources topics with implementation of AMMs identified in Chapter 2, *Project Description*. As such, implementation of the already identified mitigation measure and AMMs would ensure that the effects on human beings would be **less than significant**.

Chapter 4
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The following presents the list of individuals who assisted in preparing and/or reviewing the IS/MND.

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Appendix A

Noise Calculations

Noise Calculations for Strobridge and Norbridge Intersection Improvements Project

Vibration Source Levels for Construction Equipment (FTA 2018)

Equipment	PPV at 25 feet	VBA
Vibratory Roller	0.21	94
Loaded Trucks	0.076	86

Vibration Calculations with Equations for Vibration-Causing Equipment (use of Vibratory Roller) for Project Site

Threshold	Distance to Threshold from Middle of Project Site (feet)	Notes
PPV=PPVref * (25/d)^1.5	36.3	Building damage threshold (sensitive buildings)
Lvd=Lvref-30log(D/25)	73.2	Annoyance (Federal)

Vibration Calculations with Equations for Vibration-Causing Equipment (use of Loaded Trucks) for Project Site

Threshold	Distance to Threshold from Middle of Project Site (feet)	Notes
PPV=PPVref * (25/d)^1.5	18.4	Building damage threshold (sensitive buildings)
Lvd=Lvref-30log(D/25)	39.6	Annoyance (Federal)

Appendix B

Evaluation of Traffic Operations Report

May 29, 2020

Mr. Rick Yeung, PE
Alameda County Public Works Agency
399 Elmhurst Street
Hayward, CA 94544

Evaluation of Traffic Operations at Strobridge Avenue-Norbridge Avenue Area

Dear Mr. Yeung;

As requested, W-Trans has prepared an evaluation of traffic operations in the area consisting of Castro Valley Boulevard, Strobridge Avenue and Norbridge Avenue in the Castro Valley area of the County of Alameda. The goal of this analysis was to analyze potential changes in roadway configurations to improve operation during the weekday commute peak period. The purpose of this letter is to document the existing conditions and compare the changes resulting from potential alternative roadway configurations.

Project Alternatives Considered

The following alternatives, which would be expected to improve peak period traffic operations in the study area, were evaluated:

Existing Condition – The No Project Alternative assumes no change to the current roadway geometry or traffic control. This alternative forms the baseline against which the project alternatives were compared.

Alternative 1 – Convert the one-way couplet of Norbridge Avenue and Strobridge Avenue to bi-directional travel. The westbound I-580 Off-Ramp would be extended to a terminus at a newly created unsignalized intersection of Strobridge Avenue/I-580 Off-Ramp with all-way stop-controls. The connector roadway between northbound Strobridge Avenue and Norbridge Avenue would be closed to traffic. This alternative would also include modifying signal phasing at Strobridge Avenue-John Drive/ Castro Valley Boulevard and Stanton Avenue/Castro Valley Boulevard to accommodate vehicular access to and from these streets.

Alternative 2 – This alternative includes a northbound vehicular connection between the I-580 Off-Ramp and Norbridge Avenue. The intersection at the I-580 Off-Ramp and Norbridge Avenue was evaluated with all-way stop-control. Otherwise, all features included with Alternative 1 are also part of Alternative 2.

Preliminary drawings of both alternatives are enclosed.

Level of Service Methodology

Level of Service (LOS) analysis was conducted using the Synchro/SimTraffic analysis software package. SimTraffic is a stochastic microsimulation tool that is capable of tracking individual vehicles across multiple roadway segments to estimate individual vehicle performance measures. SimTraffic is a useful tool when analyzing congested traffic conditions that span multiple roadway segments or intersections. SimTraffic can vary the arrival of vehicles to replicate probable real-world conditions. Since these occur randomly in the model, each run of the model produces a slightly different outcome. For this reason, the SimTraffic model was run ten times and results shown here represent the average of these runs.

LOS is defined as a quality measure describing operating conditions within a traffic stream. It is generally described in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions,

and delay. The LOS evaluation indicates the degree of congestion that occurs during peak travel periods and is the principal measure of roadway and intersection performance. Level of Service can range from "A" representing free-flow conditions, to "F" representing extremely long delays. LOS B and C signify stable conditions with acceptable delays. LOS D is typically considered acceptable during peak periods in urban areas. LOS E is approaching capacity and LOS F represents conditions at or above capacity.

Traffic Operation Standards

The County of Alameda has a minimum acceptable level of service standard of LOS D for intersections within its jurisdiction. At unsignalized intersections, each approach to the intersection is evaluated separately and assigned a service level based on the delay at the worst approach for two-way stop-controlled intersections or the average delay for all approaches at all-way stop-controlled intersections. Total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line, including the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position.

Existing Conditions

Vehicle Counts

Intersection turning movement counts were collected on Thursday, January 23, 2020 for the a.m. and p.m. peak periods while all local school were in session. Detailed count summaries are enclosed.

Drone-Based Aerial Video Survey Observations

Driver behavior within the study area, including vehicle queue lengths, lane utilization, lane choice, vehicle routing and traffic signal operations, was observed using an aerial drone equipped with a video recording device. Observations were performed during the a.m. and p.m. peak period on Thursday, January 23, 2020. As there are limitations to the continuous flight time of the drone, documentation of each peak period was divided into shorter periods lasting approximately 15 to 20 minutes each with a 5-minute break between observation segments to change batteries on the drone.

Origin and Destination Study

The video footage was reviewed to establish the vehicle origin and destination patterns of the study area. The representative 15-minute sampling was used during the a.m. peak hour and 20-minute long sampling during the p.m. peak hour was used to estimate the vehicle routing for the study area. A summary of these origins and destinations is provided Table 1.

Table 1 – Peak Hour Origin-Destination Sampling

Street Used to Exit Study Area	Street Used to Enter the Study Area							
	John Dr	**Castro Valley Blvd (West)**	**Strobridge Ave (South)**	**I-580 Off-Ramp**	**Norbridge Ave**	**Castro Valley Blvd (East)**	**Stanton Ave**	**McDonalds or Wendy's**
John Dr	0.0 (0.0)	12.7 (10.5)	5.4 (4.2)	11.5 (8.9)	25 (10.5)	6.5 (7.5)	4.3 (5.8)	0.0 (9.3)
Castro Valley Blvd (West)	25.4 (34.5)	2.6 (0.2)	12.2 (12.5)	31.1 (22.8)	50 (36.8)	78.9 (77.1)	46.6 (66.3)	43.8 (35.2)
Strobridge Ave (South)	28.2 (20.1)	6.3 (6.3)	0.0 (0.0)	1.6 (6.1)	0.0 (1.8)	9.1 (8.1)	27.6 (16.8)	15.6 (7.4)
I-580 Off-Ramp	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Norbridge Ave	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Castro Valley Blvd (East)	35.2 (38.1)	60.3 (61.2)	52.7 (49.2)	27.9 (30.6)	8.3 (17.5)	0.0 (0.0)	19.8 (10.1)	34.4 (42.6)
Stanton Ave	8.5 (5.0)	14.3 (18.9)	23 (25.8)	16.4 (27.2)	8.3 (29.8)	1.1 (1.7)	0.0 (0.0)	6.3 (3.7)
McDonalds or Wendy's	2.8 (2.2)	3.7 (2.9)	6.8 (8.3)	11.5 (4.4)	8.3 (3.5)	4.4 (5.6)	1.7 (1.0)	0.0 (1.9)

Notes: xx (xx) = AM Peak Hour (PM Peak Hour); All values are in percent

Intersection Level of Service Analysis

The Existing Conditions scenario provides an evaluation of current traffic operations based on existing traffic volumes during the a.m. and p.m. peak hours. Under this condition, the signalized intersection of Stanton Avenue/Castro Valley Boulevard operates at LOS E during the a.m. peak hour and the unsignalized intersection of Strobridge Avenue/Westbound I-580 Off-Ramp operates at LOS F during both the a.m. and p.m. peak hours. A summary of existing intersection Levels of Service is contained in Table 2, and copies of the SimTraffic output sheets are enclosed.

Table 2 – Existing Conditions Intersection Levels of Service

Intersection Control ***Approach***	**Control**	**AM Peak Hour**		**PM Peak Hour**	
		Avg Delay	**LOS**	**Avg Delay**	**LOS**
1. Strobridge Ave-John Dr/Castro Valley Blvd	Signal	34.7	C	20.8	C
2. Stanton Ave/Castro Valley Blvd	Signal	***74.5***	**E**	53.3	D
3. Strobridge Ave/WB I-580 Off-Ramp	TWSC	**100.0**	**F**	**117.4**	**F**
Westbound (I-580 Off-Ramp) Approach		***152.5***	***F***	***211.4***	***F***

Notes: Delay is in average seconds per vehicle; **Bold** = LOS E or F; TWSC = Two-Way Stop-Control; Delay for stop-controlled approaches to TWSC intersections shown in *italics*

Castro Valley Boulevard Evaluation

An evaluation of operation along Castro Valley Boulevard was conducted using SimTraffic to establish the existing conditions baseline for various performance measures. A summary of performance measures is provided in Table 3.

Table 3 – Existing Conditions Peak Hour Corridor Performance Measures

Castro Valley Blvd– Direction: Segment	AM Peak Hour		PM Peak Hour	
	Avg Travel Time	Avg Speed	Avg Travel Time	Avg Speed
Eastbound: Strobridge Ave to Lake Chabot Rd	140.8	16	109.9	16
Westbound: Lake Chabot Rd to Strobridge Ave	295.9	8	131.7	16

Notes: Travel Time is measured in seconds; speed is measured in mph

Analysis of Alternatives

Alternative 1 Conditions Results

Under Alternative 1, operation at the intersection of Stanton Avenue/Castro Valley Boulevard would improve from LOS E to D during the a.m. peak hour and the intersection of Strobridge Avenue-John Drive/Castro Valley Boulevard would degrade from LOS C to E operation during the p.m. peak hour. The unsignalized intersection of Strobridge Avenue/Westbound I-580 Off-Ramp would continue to operate at LOS F under Alternative 1. A summary of these results is contained in Table 4, and copies of the SimTraffic output sheets are enclosed.

Table 4 – Existing and Alternative 1 Intersection Level of Service Comparison

Intersection Control *Approach*	Control under Alt 1	Existing				Alternative 1			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Avg Delay	LOS	Avg Delay	LOS	Avg Delay	LOS	Avg Delay	LOS
1. Strobridge Ave-John Dr/Castro Valley Blvd	Signal	34.7	C	20.8	C	37.1	D	**69.4**	**E**
2. Stanton Ave/Castro Valley Blvd	Signal	**74.5**	**E**	53.3	D	53.4	D	38.9	D
3. Strobridge Ave/WB I-580 Off-Ramp	AWSC	**100.0**	**F**	**117.4**	**F**	**50.7**	**F**	**149.4**	**F**
WB (I-580 Off Ramp) Approach		***152.5***	***F***	***211.4***	***F***	*N/A*		*N/A*	

Notes: Delay is in average seconds per vehicle; **Bold** = LOS E or F; Delay for stop-controlled approaches to TWSC intersections shown in *italics*

The Alternative 1 Condition is anticipated to decrease the average a.m. peak hour travel times and increase the speeds along both directions of Castro Valley Boulevard. However, during the p.m. peak hour both directions would experience an increase in average travel times and decrease in average speeds. A comparison of the existing and alternative 1 condition performance measures is provided in Table 5.

Table 5 – Existing and Alternative 1 Peak Hour Corridor Performance Measures

Castro Valley Blvd – Direction: Segment	Existing				Alternative 1			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Avg Travel Time	Avg Speed	Avg Travel Time	Avg Speed	Avg Travel Time	Avg Speed	Avg Travel Time	Avg Speed
Eastbound: Strobridge Ave to Lake Chabot Rd	140.8	16	109.9	16	127.4	17	198.4	9
Westbound: Lake Chabot Rd to Strobridge Ave	295.9	8	131.7	16	205.9	10	154.5	13

Notes: Travel Time is measured in seconds; speed is measured in mph

Alternative 2 Conditions Results

Under Alternative 2, the intersection of Stanton Avenue/Castro Valley Boulevard would be expected to continue operating at LOS E during the a.m. peak hour. The unsignalized intersection of Strobridge Avenue/Westbound I-580 Off-Ramp and Strobridge Avenue-John Drive/Castro Valley Boulevard would degrade from LOS C to E operation during the p.m. peak hour. The level of service at the unsignalized intersection of Strobridge Avenue/Westbound I-580 Off-Ramp would improve from LOS F to LOS A under Alternative 2. A summary of these results is contained in Table 6, and copies of the SimTraffic output sheets are enclosed.

Table 6 – Existing and Alternative 2 Intersection Level of Service Comparison

Intersection Control *Approach*	Control under Alt 1	Existing				Alternative 2			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Avg Delay	LOS	Avg Delay	LOS	Avg Delay	LOS	Avg Delay	LOS
1. Strobridge Ave-John Dr/Castro Valley Blvd	Signal	34.7	C	20.8	C	34.1	C	42.6	D
2. Stanton Ave/Castro Valley Blvd	Signal	**74.5**	**E**	53.3	D	**56.2**	**E**	39.5	D
3. Strobridge Ave/WB I-580 Off-Ramp	AWSC	***100.0***	***F***	***117.4***	***F***	*8.4*	*A*	*8.7*	*A*
Westbound (I-580 Off-Ramp) Approach		**152.5**	**F**	**211.4**	**F**	N/A		N/A	
4. I-580 Off-Ramp/Norbridge Ave	AWSC	*N/A*		*N/A*		*5.4*	*A*	*8.2*	*A*

Notes: Delay is in average seconds per vehicle; Bold = LOS E or F; AWSC = All-Way Stop-Control; Delay for stop-controlled approaches to TWSC intersections shown in italics

The Alternative 2 Condition is anticipated to decrease the average a.m. peak hour travel times and increase the speeds along both directions of Castro Valley Boulevard. During the p.m. peak hour, both directions would experience an increase in average travel times and decrease in average speeds. A comparison of the Existing and Alternative 2 Conditions performance measures is provided in Table 7, and copies of the SimTraffic output sheets are enclosed.

Table 7 – Existing and Alternative 2 Peak Hour Corridor Performance Measures

Castro Valley Blvd– Direction: Segment	Existing				Alternative 2			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Avg Travel Time	Avg Speed	Avg Travel Time	Avg Speed	Avg Travel Time	Avg Speed	Avg Travel Time	Avg Speed
Eastbound: Strobridge Ave to Lake Chabot Rd	140.8	16	109.9	16	125.2	18	154.6	14
Westbound: Lake Chabot Rd to Strobridge Ave	295.9	8	131.7	16	214.9	10	150.7	14

Notes: Travel Time is measured in seconds; speed is measured in mph

Network Measures of Effectiveness

A comparison of select network performance measures for each alternative evaluated is contained in Table 8, and copies of the SimTraffic outputs are enclosed.

Table 8 – Comparison of Peak Hour Network Measures of Effectiveness

Scenario	Period	Avg Vehicles Served		Avg Total Distance Traveled (mi)	Avg Total Vehicle Delay (hr)	Avg Total No. Vehicle Stops
		No. of Vehicles Entered	No. of Vehicles Exited			
Existing Condition	AM	3,983	3,766	2,661	284	7,231
	PM	4,505	4,370	2,773	158	7,976
Alternative 1 Condition	AM	4,299	4,182	2,917	135	8,687
	PM	4,550	4,366	2,674	221	9,295
Alternative 1 minus Existing Condition	**AM**	**316**	**416**	**256**	**-149**	**1,456**
	PM	**45**	**-4**	**-99**	**63**	**1,319**
Alternative 2 Condition	AM	4,358	4,281	2,959	120	8,914
	PM	4,639	4,583	3,162	114	8,982
Alternative 2 minus Existing Condition	**AM**	**375**	**515**	**298**	**-164**	**1,683**
	PM	**134**	**213**	**389**	**-44**	**1,006**

The network performance measures demonstrate that traffic conditions during the a.m. peak hour for Alternative 1 are less congested than the existing condition. Under this alternative, the study area has a higher number of vehicles served and 149 fewer hours of total delay than for the existing condition. The increase in total number of vehicles stops and distance traveled are associated with the increase in total vehicle throughput. The same measures under the p.m. peak hour suggest that Alternative 1 is more congested than for the existing condition. The average total vehicle delay increases by 63 hours while serving roughly the same number vehicles as under existing conditions.

The network performance under Alternative 2 suggest less congested conditions when compared with the existing condition for both the a.m. and p.m. peak hours. During the a.m. peak hour the total hours of delay are reduced by 164 hours while both the number of entering and existing vehicles increases. For the p.m. peak hour,

the number of vehicles served increases while the total hours of delay are also reduced by 44 hours. These results indicate that the Alternative 2 configuration can serve a higher number of vehicles with lower levels of congested conditions for both the a.m. and p.m. peak hours.

Vehicle Queue Lengths

The vehicle queue lengths at the intersection of Strobridge Avenue-John Drive/Castro Valley Boulevard generally remains unchanged under either Alternative 1 or 2 when compared with the Existing Condition. Under either Alternative 1 or 2, the queue length at the southbound approach is anticipated to be approximately 67 to 167 feet longer than the Existing Condition. The queue lengths at the northbound or southbound approaches to the Stanton Avenue/Castro Valley Boulevard intersection would be shorter under either Alternative 1 or 2 by 67 to 336 feet. Under Alternative 2, the vehicle queue length at the westbound I-580 Off-Ramp is anticipated to be 320 to 1,326 feet shorter than the existing condition. A summary of queue lengths at select intersections and movements along Castro Valley Boulevard is provided in Table 9, and copies of the SimTraffic output sheets are enclosed.

Table 9 – Comparison of 95th Percentile Queue Lengths

Intersection Movement	Peak Hour	Existing	Alt 1	Difference (Alt 1 minus Existing)	Alt 2	Difference (Alt 2 minus Existing)
Strobridge Ave-John Dr/Castro Valley Blvd						
NBT-LT	AM	N/A	317	N/A	300	N/A
	PM	N/A	499	N/A	256	N/A
NBRT	AM	N/A	315	N/A	221	N/A
	PM	N/A	373	N/A	249	N/A
SBT-LT	AM	247	243	-4	234	-13
	PM	225	334	109	292	67
SBRT	AM	66	112	46	122	56
	PM	64	231	167	185	121
EBLT	AM	150	148	-2	146	-4
	PM	169	389	220	217	48
WBLT	AM	274	231	-43	225	-49
	PM	248	207	-41	215	-33
WBT-RT	AM	281	255	-26	252	-29
	PM	246	253	7	242	-4
Stanton Ave/Castro Valley Blvd						
NBT-LT	AM	437	145	-292	215	-222
	PM	411	342	-69	309	-102
NBRT	AM	364	40	-324	131	-233
	PM	417	81	-336	210	-207
SBT-LT	AM	879	751	-128	675	-204
	PM	937	612	-325	798	-139
SBRT	AM	373	374	1	374	1
	PM	395	364	-31	375	-20
EBLT	AM	125	204	79	137	12
	PM	206	239	33	224	18
Strobridge Ave/WB I-580 Off-Ramp						
WB	AM	1,230	997	-233	30	-1,200
	PM	1,366	1635	269	40	-1,326

Notes: All values are in feet

Discussion of Analysis Results

The redistribution of traffic from I-580 onto Castro Valley Boulevard under either Alternative 1 or 2 would generally improve traffic operations at the intersection of Stanton Avenue/Castro Valley Boulevard while also degrading operations at Strobridge Avenue-John Drive/Castro Valley Boulevard.

Alternative 1 Results

According to the network performance measures, Alternative 1 would serve approximately 300 to 400 more vehicles and would have 149 fewer hours of total delay when compared with existing condition for the a.m. peak hour. However, during the p.m. peak hour, the operating conditions would worsen with 63 more hours of total delay compared with existing conditions.

Under Alternative 1, the service level at Stanton Avenue/Castro Valley Boulevard would improve from LOS E to D during the a.m. peak hour and at Strobridge Avenue-John Drive/Castro Valley Boulevard would degrade from LOS C to E operation during the p.m. peak hour.

Alternative 1 is expected to decrease the average a.m. peak hour travel times and increase average vehicle speeds along both directions of Castro Valley Boulevard. For the p.m. peak hour, congestion would increase, and each direction would experience an increase in average travel times and decrease in average speeds.

Under Alternative 1, the northbound and southbound approaches at the Stanton Avenue/Castro Valley Boulevard intersection would experience a reduction in queue length of approximately 300 feet at each approach. The queue length at the northbound approach to the Strobridge Avenue intersection with Castro Valley Boulevard may exceed the available storage length for most conditions evaluated. When this occurs, the queue spills back onto other roads including the I-580 Off-Ramp and Strobridge Avenue south of the I-580 interchange.

Alternative 2 Results

Alternative 2 would operate with less congestion than the existing condition as evidenced by the decrease in total vehicle delay of 164 hours during the a.m. peak hour and 44 hours during the p.m. peak hour. Alternative 2 would also be capable of serving a greater number of vehicles during both a.m. and p.m. peak hours than what is served under the existing condition.

Under Alternative 2, the intersection of Stanton Avenue/Castro Valley Boulevard would continue to operate at LOS E during the a.m. peak hour while the unsignalized intersection of Strobridge Avenue/Westbound I-580 Off-Ramp would improve from LOS F to A during both a.m. and p.m. peak hours. The service level would degrade from LOS C to D during the p.m. peak hour at the intersection of John Drive/Castro Valley Boulevard.

Similar to the previous alternative, Alternative 2 is also expected to decrease the average travel times and increase the speeds along both directions of Castro Valley Boulevard during the a.m. peak hour, but during the p.m. peak hour, each direction would experience an increase in average travel times and decrease in average speeds.

There would be adequate vehicle stacking storage at the northbound approach of the Strobridge Avenue/Castro Valley Boulevard intersection to accommodate the 300-foot-long queue. The vehicle queue at the westbound I-580 Off-Ramp terminus for Alternative 2 would also be more than 1,000 feet shorter than what was calculated for the existing conditions. The northbound and southbound approaches at the Stanton Avenue/Castro Valley Boulevard intersection would experience a reduction in queue length of approximately 300 feet at each approach.

Recommendations

Although Alternative 1 exhibited some operational improvements over the existing condition, Alternative 2 performed with better overall results. Most notably by demonstrating the ability to serve a greater number of

vehicles while reducing the total vehicle delay and improving the intersection Levels of Service and queuing at the westbound I-580 Off-Ramp terminus intersection. It is recommended that Alternative 2 be considered for further project development.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,

Kenneth Jeong, PE
Traffic Engineer

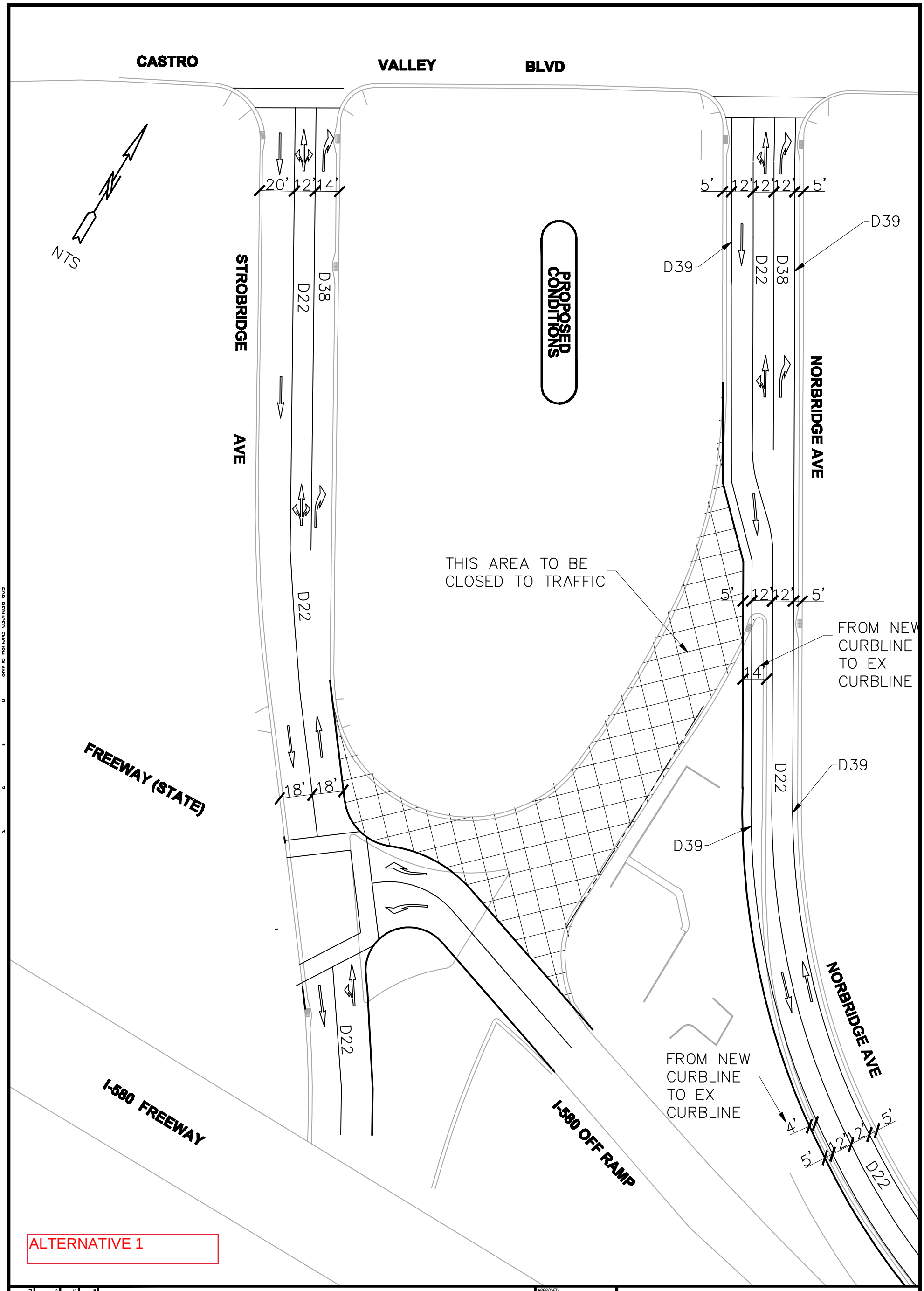
Mark Spencer, PE
Senior Principal

MES/kbj/ALX901-24.L1

Enclosures: Concept Drawings of Alternative 1 and 2
Traffic Count Sheets
SimTraffic Outputs

	REVIEWED BY:	DATE:		REVIEWED BY:	DATE:
CONSTRUCTION			SURVEY		
MAINTENANCE			TRAFFIC		
REAL ESTATE			ENVIRONMENTAL		

N:\TRAFFIC\INDIVIDUAL'S PROJECT\RY\CVB-NORBRIDGE-STROBRIDGE TRAFFIC OPTIONS\CVB-NORBRIDGE-STROBRIDGE LAYOUT 2019 07.dwg 9-04-19 12:58:11 PM ricky



ALTERNATIVE 1

FILE NO. U-XXX | SHEET NO. # OF ## | SPECIFICATION NO. XXXX | WORK ORDER NO. RXXXXX

COUNTY OF ALAMEDA ☆ PUBLIC WORKS AGENCY

TRAFFIC CIRCULATION
NORBRIDGE AVE / STROBRIDGE AVE
AT CASTRO VALLEY BLVD
-

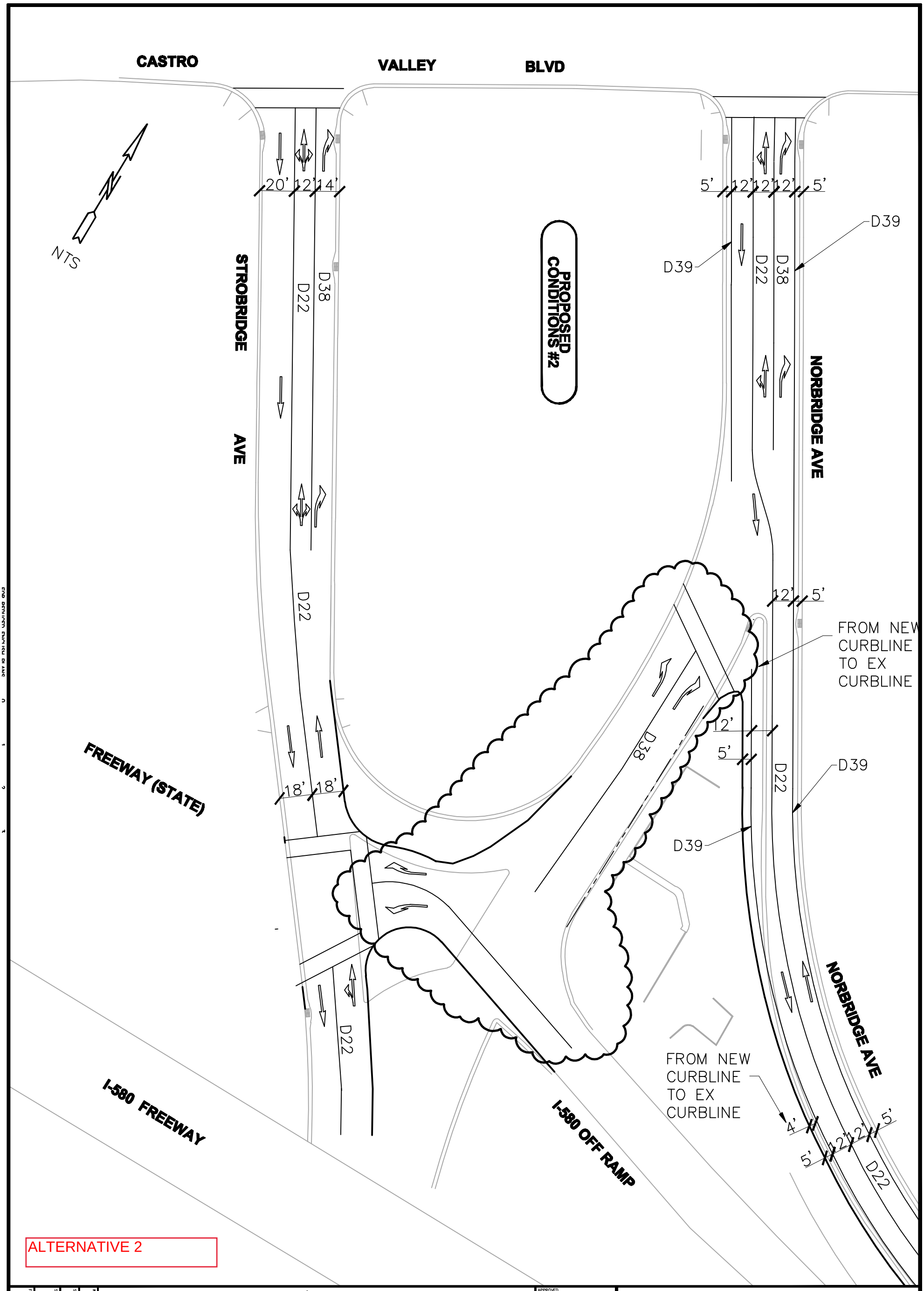
DRAWN: XXX	APPROVAL RECOMMENDED: X	APPROVED
DESIGNED: XXX	APPROVAL RECOMMENDED: X	
CHECKED: XXX	DATE: ADV DATE	SCALE: AS SHOWN

REVISIONS				
NO.	DESCRIPTION	BY	DATE	APPV'D
5				
4				
3				
2				
1				

FOR BIDDER ENGINEER PLANS 0 1 2 3

	REVIEWED BY:	DATE:		REVIEWED BY:	DATE:
CONSTRUCTION			SURVEY		
MAINTENANCE			TRAFFIC		
REAL ESTATE			ENVIRONMENTAL		

N:\TRAFFIC\INDIVIDUAL'S PROJECT\RY\CVB-NORBRIDGE-STROBRIDGE TRAFFIC OPTIONS\CVB-NORBRIDGE-STROBRIDGE LAYOUT 2 2019 12.dwg 12-05-19 01:40:13 PM ricky



ALTERNATIVE 2

FOR BIDDER ENGINEERING PLANS 0 1 2 3

FILE NO. U-XXX	SHEET NO. # OF ##	SPECIFICATION NO. XXXX	WORK ORDER NO. RXXXXX	

COUNTY OF ALAMEDA ☆ PUBLIC WORKS AGENCY

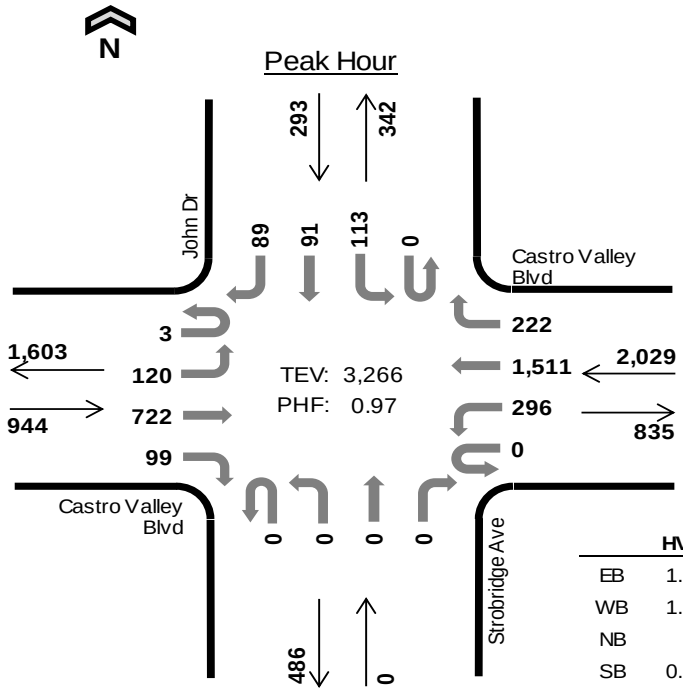
TRAFFIC CIRCULATION
NORBRIDGE AVE / STROBRIDGE AVE
AT CASTRO VALLEY BLVD

DRAWN XXX	APPROVAL RECOMMENDED X	APPROVED	
DESIGNED XXX	APPROVAL RECOMMENDED X		
CHECKED XXX	DATE ADV DATE	SCALE AS SHOWN	

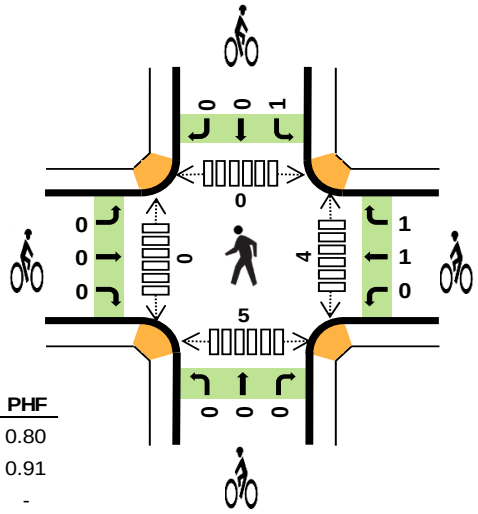
REVISIONS

NO.	DESCRIPTION	BY	DATE	APPV'D
5				
4				
3				
2				
1				

Strobridge Ave
Castro Valley Blvd



Date: 01-23-2020
Count Period: 7:00 AM to 9:30 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	1.8%	0.80
WB	1.0%	0.91
NB	-	-
SB	0.7%	0.85
TOTAL	1.2%	0.97

Two-and-a-Half-Hour Count Summaries

Interval Start		Castro Valley Blvd Eastbound				Castro Valley Blvd Westbound				Strobridge Ave Northbound				John Dr Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM		1	30	235	28	0	74	340	43	0	0	0	0	0	42	20	24	837	0
8:00 AM		1	25	169	19	0	79	374	56	0	0	0	0	0	29	21	19	792	0
8:15 AM		1	29	172	23	0	83	420	57	0	0	0	0	0	20	24	16	845	0
8:30 AM		0	36	146	29	0	60	377	66	0	0	0	0	0	22	26	30	792	3,266
Peak Hour	All	3	120	722	99	0	296	1,511	222	0	0	0	0	0	113	91	89	3,266	0
	HV	0	5	11	1	0	4	13	3	0	0	0	0	0	0	0	2	39	0
	HV%	0%	4%	2%	1%	-	1%	1%	1%	-	-	-	-	-	0%	0%	2%	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:45 AM	**4**	**4**	**0**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	***1***
8:00 AM	**5**	**5**	**0**	**0**	***10***	**0**	**1**	**0**	**1**	***2***	**2**	**0**	**0**	**1**	***3***
8:15 AM	**3**	**7**	**0**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	***2***
8:30 AM	**5**	**4**	**0**	**2**	***11***	**0**	**1**	**0**	**0**	***1***	**1**	**0**	**0**	**2**	***3***
Peak Hour	**17**	**20**	**0**	**2**	***39***	**0**	**2**	**0**	**1**	***3***	**4**	**0**	**0**	**5**	***9***

Two-and-a-Half-Hour Count Summaries

Interval Start		Castro Valley Blvd Eastbound				Castro Valley Blvd Westbound				Strobridge Ave Northbound				John Dr 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		0	7	85	13	0	55	325	27	0	0	0	0	0	14	17	13	556	0
7:15 AM		0	19	107	20	0	61	291	44	0	0	0	0	0	18	15	29	604	0
7:30 AM		1	18	169	25	0	84	365	33	0	0	0	0	0	29	28	25	777	0
7:45 AM		**1**	**30**	**235**	**28**	**0**	**74**	**340**	**43**	**0**	**0**	**0**	**0**	**0**	**42**	**20**	**24**	**837**	2,774
8:00 AM		**1**	**25**	**169**	**19**	**0**	**79**	**374**	**56**	**0**	**0**	**0**	**0**	**0**	**29**	**21**	**19**	**792**	3,010
8:15 AM		**1**	**29**	**172**	**23**	**0**	**83**	**420**	**57**	**0**	**0**	**0**	**0**	**0**	**20**	**24**	**16**	**845**	3,251
8:30 AM		**0**	**36**	**146**	**29**	**0**	**60**	**377**	**66**	**0**	**0**	**0**	**0**	**0**	**22**	**26**	**30**	**792**	**3,266**
8:45 AM		2	22	164	21	0	51	367	54	0	0	0	0	0	33	23	30	767	3,196
9:00 AM		0	19	161	18	0	35	294	36	0	0	0	0	0	18	21	25	627	3,031
9:15 AM		1	12	135	14	0	43	299	28	0	0	0	0	0	13	8	14	567	2,753
Count Total		7	217	1,543	210	0	625	3,452	444	0	0	0	0	0	238	203	225	7,164	0
Peak Hour	**All**	**3**	**120**	**722**	**99**	**0**	**296**	**1,511**	**222**	**0**	**0**	**0**	**0**	**0**	**113**	**91**	**89**	**3,266**	**0**
	HV	**0**	**5**	**11**	**1**	**0**	**4**	**13**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**39**	**0**
	HV%	**0%**	**4%**	**2%**	**1%**	**-**	**1%**	**1%**	**1%**	**-**	**-**	**-**	**-**	**-**	**0%**	**0%**	**2%**	**1%**	**0**

Note: Two-and-a-half-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	2	9	0	1	*12*	1	0	0	0	*1*	2	0	0	0	*2*
7:15 AM	3	10	0	1	*14*	0	1	0	0	*1*	2	0	0	2	*4*
7:30 AM	7	5	0	2	*14*	0	1	0	0	*1*	0	0	0	1	*1*
7:45 AM	**4**	**4**	**0**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	*1*
8:00 AM	**5**	**5**	**0**	**0**	***10***	**0**	**1**	**0**	**1**	***2***	**2**	**0**	**0**	**1**	*3*
8:15 AM	**3**	**7**	**0**	**0**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**2**	*2*
8:30 AM	**5**	**4**	**0**	**2**	***11***	**0**	**1**	**0**	**0**	***1***	**1**	**0**	**0**	**2**	***3***
8:45 AM	7	7	0	2	*16*	0	0	0	0	*0*	1	1	0	1	*3*
9:00 AM	9	8	0	1	*18*	0	0	0	1	*1*	4	0	0	2	*6*
9:15 AM	8	7	0	0	*15*	0	0	0	0	*0*	5	0	1	2	*8*
Count Total	53	66	0	9	*128*	1	4	0	2	*7*	18	1	1	13	*33*
Peak Hour	**17**	**20**	**0**	**2**	***39***	**0**	**2**	**0**	**1**	***3***	**4**	**0**	**0**	**5**	***9***

Two-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Castro Valley Blvd Eastbound				Castro Valley Blvd Westbound				Strobridge Ave Northbound				John Dr 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	0	0	2	0	0	1	4	4	0	0	0	0	0	0	0	1	12	0
7:15 AM	0	2	1	0	0	1	5	4	0	0	0	0	0	0	0	1	14	0
7:30 AM	0	0	7	0	0	1	3	1	0	0	0	0	0	1	1	0	14	0
7:45 AM	**0**	**1**	**3**	**0**	**0**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	48
8:00 AM	**0**	**1**	**4**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	46
8:15 AM	**0**	**1**	**1**	**1**	**0**	**0**	**5**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	42
8:30 AM	**0**	**2**	**3**	**0**	**0**	**2**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**11**	**39**
8:45 AM	0	0	7	0	0	0	7	0	0	0	0	0	0	1	1	0	16	47
9:00 AM	0	0	8	1	0	1	6	1	0	0	0	0	0	0	0	1	18	55
9:15 AM	0	1	7	0	0	0	7	0	0	0	0	0	0	0	0	0	15	60
Count Total	0	8	43	2	0	8	45	13	0	0	0	0	0	2	2	5	128	0
Peak Hour	**0**	**5**	**11**	**1**	**0**	**4**	**13**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**39**	**0**

Two-and-a-Half-Hour Count Summaries - Bikes

Interval Start	Castro Valley Blvd			Castro Valley Blvd			Strobridge Ave			John Dr			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	1	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	1	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**	3
8:00 AM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	4
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
8:30 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
9:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	2
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	1	0	0	3	1	0	0	0	1	1	0	7	0
Peak Hour	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**3**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

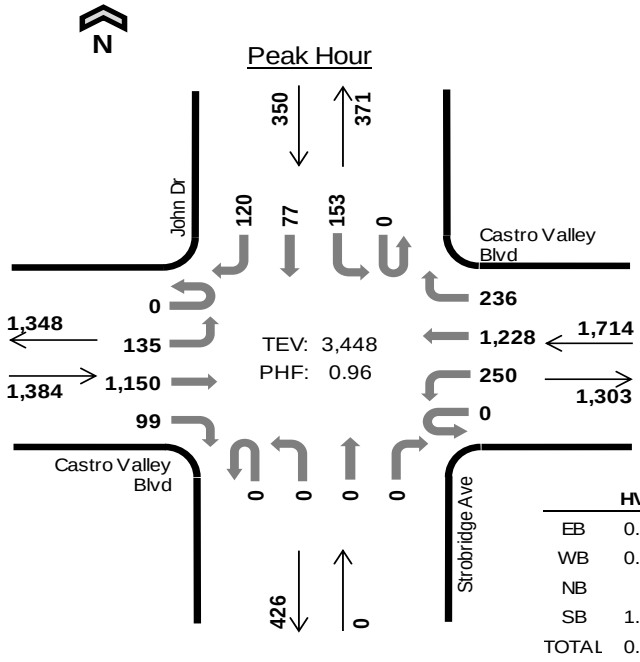
Two-Hour Count Summaries - RToR

Interval Start	Castro Valley Blvd			Castro Valley Blvd			Strobridge Ave			John Dr			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	-	-	3	-	-	6	-	-	0	-	-	11	20	0
7:15 AM	-	-	4	-	-	10	-	-	0	-	-	17	31	0
7:30 AM	-	-	2	-	-	12	-	-	0	-	-	12	26	0
7:45 AM	**-**	**-**	**3**	**-**	**-**	**12**	**-**	**-**	**0**	**-**	**-**	**20**	**35**	112
8:00 AM	**-**	**-**	**4**	**-**	**-**	**17**	**-**	**-**	**0**	**-**	**-**	**12**	**33**	125
8:15 AM	**-**	**-**	**2**	**-**	**-**	**10**	**-**	**-**	**0**	**-**	**-**	**8**	**20**	114
8:30 AM	**-**	**-**	**9**	**-**	**-**	**12**	**-**	**-**	**0**	**-**	**-**	**15**	**36**	**124**
8:45 AM	-	-	5	-	-	19	-	-	0	-	-	11	35	124
9:00 AM	-	-	4	-	-	4	-	-	0	-	-	14	22	113
9:15 AM	-	-	3	-	-	6	-	-	0	-	-	11	20	113
Count Total	-	-	39	-	-	108	-	-	0	-	-	131	278	
Peak Hour	**-**	**-**	**18**	**-**	**-**	**51**	**-**	**-**	**0**	**-**	**-**	**55**	**124**	

Two-Hour Count Summaries - Initial Queue

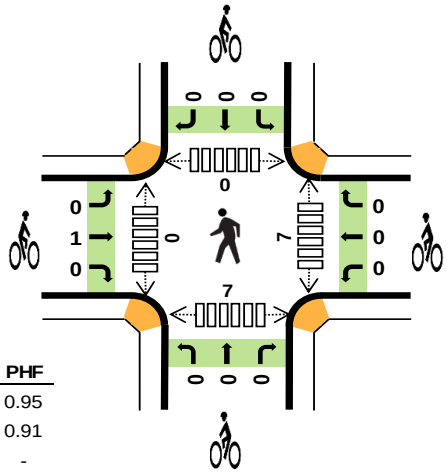
Interval Start	Castro Valley Blvd			Castro Valley Blvd			Strobridge Ave			John Dr			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	-	-	0	-	-	0	-	-	0	-	-	0	0	
Peak Hour	**-**	**-**	**0**	**-**	**-**	**0**	**-**	**-**	**0**	**-**	**-**	**0**	**0**	

Strobridge Ave
Castro Valley Blvd



	HV %:	PHF
EB	0.3%	0.95
WB	0.4%	0.91
NB	-	-
SB	1.1%	0.89
TOTAL	0.4%	0.96

Date: 01-23-2020
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



Two-Hour Count Summaries

Interval Start		Castro Valley Blvd Eastbound				Castro Valley Blvd Westbound				Strobridge Ave Northbound				John Dr 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	40	241	26	1	55	334	42	0	0	0	0	0	33	15	19	806	0
4:15 PM		0	37	304	27	0	54	323	46	0	0	0	0	0	12	10	21	834	0
4:30 PM		0	34	247	11	0	58	300	57	0	0	0	0	0	36	17	19	779	0
4:45 PM		0	38	305	29	0	50	306	58	0	0	0	0	0	31	13	23	853	3,272
5:00 PM		**0**	**35**	**281**	**16**	**0**	**59**	**339**	**50**	**0**	**0**	**0**	**0**	**0**	**36**	**19**	**26**	**861**	3,327
5:15 PM		**0**	**33**	**268**	**33**	**0**	**68**	**342**	**59**	**0**	**0**	**0**	**0**	**0**	**38**	**23**	**34**	**898**	3,391
5:30 PM		**0**	**43**	**296**	**26**	**0**	**55**	**239**	**60**	**0**	**0**	**0**	**0**	**0**	**48**	**19**	**31**	**817**	3,429
5:45 PM		**0**	**24**	**305**	**24**	**0**	**68**	**308**	**67**	**0**	**0**	**0**	**0**	**0**	**31**	**16**	**29**	**872**	**3,448**
Count Total		0	284	2,247	192	1	467	2,491	439	0	0	0	0	0	265	132	202	6,720	0
Peak Hour	**All**	**0**	**135**	**1,150**	**99**	**0**	**250**	**1,228**	**236**	**0**	**0**	**0**	**0**	**0**	**153**	**77**	**120**	**3,448**	**0**
	HV	**0**	**2**	**2**	**0**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**14**	**0**
	HV%	**-**	**1%**	**0%**	**0%**	**-**	**0%**	**0%**	**0%**	**-**	**-**	**-**	**-**	**-**	**3%**	**0%**	**0%**	**0%**	**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	2	9	0	3	*14*	0	1	0	0	*1*	1	0	0	1	*2*
4:15 PM	1	6	0	1	*8*	0	1	0	0	*1*	0	0	0	0	*0*
4:30 PM	1	5	0	1	*7*	0	1	0	0	*1*	1	0	0	3	*4*
4:45 PM	0	1	0	0	*1*	0	1	0	0	*1*	2	0	0	2	*4*
5:00 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**1**	*3*
5:15 PM	**1**	**1**	**0**	**2**	***4***	**0**	**0**	**0**	**0**	***0***	**4**	**0**	**0**	**5**	*9*
5:30 PM	**2**	**1**	**0**	**1**	***4***	**1**	**0**	**0**	**0**	***1***	**1**	**0**	**0**	**1**	*2*
5:45 PM	**0**	**3**	**0**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
Count Total	8	27	0	9	*44*	1	4	0	0	*5*	11	0	0	13	*24*
Peak Hour	**4**	**6**	**0**	**4**	***14***	**1**	**0**	**0**	**0**	***1***	**7**	**0**	**0**	**7**	***14***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Castro Valley Blvd				Castro Valley Blvd				Strobridge Ave				John Dr				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	1	1	0	0	0	7	2	0	0	0	0	0	2	1	0	14	0
4:15 PM	0	0	1	0	0	1	4	1	0	0	0	0	0	0	1	0	8	0
4:30 PM	0	0	1	0	0	1	3	1	0	0	0	0	0	1	0	0	7	0
4:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	30
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	18
5:15 PM	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**4**	14
5:30 PM	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**4**	11
5:45 PM	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**4**	**14**
Count Total	0	3	5	0	0	3	20	4	0	0	0	0	0	7	2	0	44	0
Peak Hour	**0**	**2**	**2**	**0**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**14**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Castro Valley Blvd			Castro Valley Blvd			Strobridge Ave			John Dr			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	1	0	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	0
4:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	4
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
5:30 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	2
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Count Total	0	1	0	0	1	3	0	0	0	0	0	0	5	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

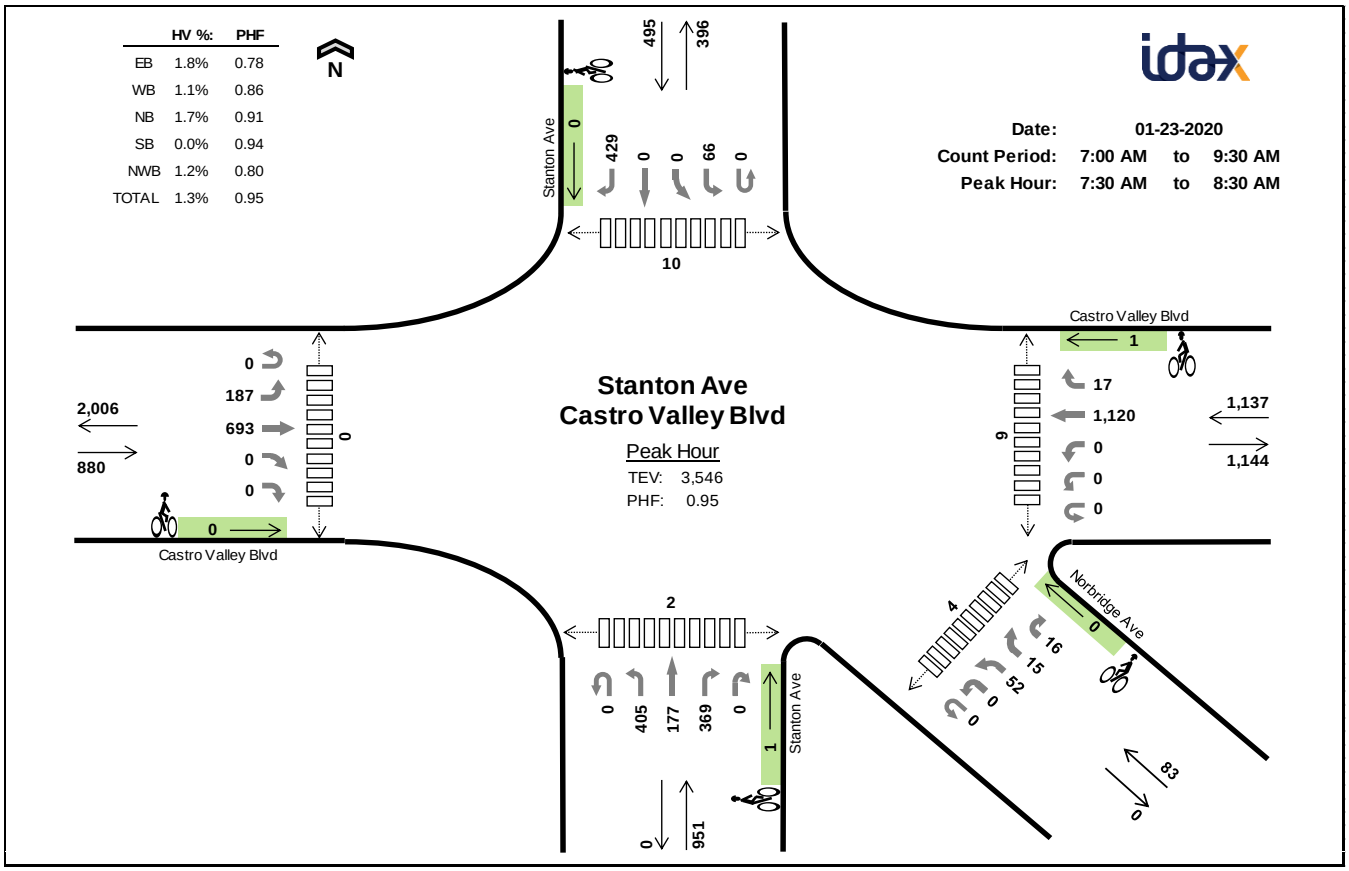
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Two-Hour Count Summaries - RToR

Interval Start	Castro Valley Blvd			Castro Valley Blvd			Strobridge Ave			John Dr			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	-	-	2	-	-	13	-	-	0	-	-	6	21	0
4:15 PM	-	-	1	-	-	10	-	-	0	-	-	14	25	0
4:30 PM	-	-	1	-	-	19	-	-	0	-	-	9	29	0
4:45 PM	-	-	1	-	-	17	-	-	0	-	-	9	27	102
5:00 PM	**-**	**-**	**2**	**-**	**-**	**15**	**-**	**-**	**0**	**-**	**-**	**13**	**30**	111
5:15 PM	**-**	**-**	**4**	**-**	**-**	**21**	**-**	**-**	**0**	**-**	**-**	**15**	**40**	126
5:30 PM	**-**	**-**	**4**	**-**	**-**	**15**	**-**	**-**	**0**	**-**	**-**	**14**	**33**	130
5:45 PM	**-**	**-**	**1**	**-**	**-**	**20**	**-**	**-**	**0**	**-**	**-**	**9**	**30**	**133**
Count Total	-	-	16	-	-	130	-	-	0	-	-	89	235	
Peak Hour	**-**	**-**	**11**	**-**	**-**	**71**	**-**	**-**	**0**	**-**	**-**	**51**	**133**	

Two-Hour Count Summaries - Initial Queue

Interval Start	Castro Valley Blvd			Castro Valley Blvd			Strobridge Ave			John Dr			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**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	-	-	0	-	-	0	-	-	0	-	-	0	0	
Peak Hour	**-**	**-**	**0**	**-**	**-**	**0**	**-**	**-**	**0**	**-**	**-**	**0**	**0**	



Two-and-a-Half-Hour Count Summaries

Interval Start		Castro Valley Blvd Eastbound					Castro Valley Blvd Westbound					Stanton Ave Northbound					Stanton Ave Southbound					Norbridge Ave Northwestbound					15-min Total	Rolling One Hour
		UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
7:00 AM		0	23	68	0	0	0	0	0	239	3	0	78	28	46	0	0	5	0	0	88	0	0	4	1	2	585	0
7:15 AM		0	21	95	0	0	0	0	0	216	2	0	78	41	43	0	0	21	0	0	93	0	0	11	2	1	624	0
7:30 AM		**0**	**47**	**158**	**0**	**0**	**0**	**0**	**0**	**253**	**1**	**0**	**106**	**35**	**89**	**0**	**0**	**11**	**0**	**0**	**110**	**0**	**0**	**7**	**3**	**5**	**825**	0
7:45 AM		**0**	**55**	**226**	**0**	**0**	**0**	**0**	**0**	**245**	**9**	**0**	**83**	**53**	**124**	**0**	**0**	**15**	**0**	**0**	**101**	**0**	**0**	**19**	**3**	**3**	**936**	2,970
8:00 AM		**0**	**39**	**161**	**0**	**0**	**0**	**0**	**0**	**296**	**3**	**0**	**102**	**42**	**76**	**0**	**0**	**21**	**0**	**0**	**105**	**0**	**0**	**12**	**3**	**2**	**862**	3,247
8:15 AM		**0**	**46**	**148**	**0**	**0**	**0**	**0**	**0**	**326**	**4**	**0**	**114**	**47**	**80**	**0**	**0**	**19**	**0**	**0**	**113**	**0**	**0**	**14**	**6**	**6**	**923**	**3,546**
8:30 AM		0	27	137	0	0	0	0	0	267	14	0	120	43	77	0	0	12	0	0	100	0	0	17	3	2	819	3,540
8:45 AM		0	40	155	0	0	0	0	0	231	8	0	141	34	92	0	0	17	0	0	89	0	0	6	0	4	817	3,421
9:00 AM		0	24	144	0	0	0	0	0	202	8	0	72	25	60	0	0	20	0	0	77	0	0	7	2	3	644	3,203
9:15 AM		0	46	111	0	0	0	0	0	198	7	0	93	33	50	0	0	12	0	0	71	0	0	15	1	1	638	2,918
Count Total		0	368	1,403	0	0	0	0	0	2,473	59	0	987	381	737	0	0	153	0	0	947	0	0	112	24	29	7,673	0
Peak Hour	**All**	**0**	**187**	**693**	**0**	**0**	**0**	**0**	**0**	**1,120**	**17**	**0**	**405**	**177**	**369**	**0**	**0**	**66**	**0**	**0**	**429**	**0**	**0**	**52**	**15**	**16**	**3,546**	**0**
	HV	**0**	**5**	**11**	**0**	**0**	**0**	**0**	**0**	**12**	**0**	**0**	**10**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**45**	**0**
	HV%	-	**3%**	**2%**	-	-	-	-	-	**1%**	**0%**	-	**2%**	**0%**	**2%**	-	-	**0%**	-	-	**0%**	-	-	**0%**	**7%**	**0%**	**1%**	**0**

Note: Two-and-a-half-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	NWB	Total	EB	WB	NB	SB	NWB	Total	East	West	North	South	Southeast	Total
7:00 AM	2	4	5	0	0	*11*	1	0	0	0	0	*1*	1	0	2	0	0	*3*
7:15 AM	1	5	5	2	0	*13*	0	1	0	0	0	*1*	2	0	2	0	0	*4*
7:30 AM	**8**	**3**	**2**	**0**	**1**	***14***	**0**	**1**	**0**	**0**	**0**	***1***	**7**	**0**	**5**	**0**	**2**	***14***
7:45 AM	**3**	**2**	**6**	**0**	**0**	***11***	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**1**	***1***
8:00 AM	**4**	**3**	**4**	**0**	**0**	***11***	**0**	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**3**	**1**	**1**	***6***
8:15 AM	**1**	**4**	**4**	**0**	**0**	***9***	**0**	**0**	**1**	**0**	**0**	***1***	**1**	**0**	**2**	**1**	**0**	***4***
8:30 AM	3	2	0	1	1	*7*	0	0	0	0	0	*0*	1	0	3	0	6	*10*
8:45 AM	8	2	5	3	0	*18*	0	0	0	0	0	*0*	1	0	3	0	3	*7*
9:00 AM	8	3	2	5	0	*18*	0	0	0	0	0	*0*	1	0	3	1	2	*7*
9:15 AM	7	4	5	1	2	*19*	0	0	0	0	0	*0*	0	0	1	2	1	*4*
Count Total	45	32	38	12	4	*131*	1	2	1	0	0	*4*	15	0	24	5	16	*60*
Peak Hr	**16**	**12**	**16**	**0**	**1**	***45***	**0**	**1**	**1**	**0**	**0**	***2***	**9**	**0**	**10**	**2**	**4**	*25*

Two-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start		Castro Valley Blvd Eastbound					Castro Valley Blvd Westbound					Stanton Ave Northbound					Stanton Ave Southbound					Norbridge Ave Northwestbound					15-min Total	Rolling One Hour
		UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
7:00 AM		0	1	1	0	0	0	0	0	3	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
7:15 AM		0	1	0	0	0	0	0	0	5	0	0	3	1	1	0	0	0	0	0	2	0	0	0	0	0	13	0
7:30 AM		**0**	**2**	**6**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**14**	0
7:45 AM		**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	49
8:00 AM		**0**	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	49
8:15 AM		**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**45**
8:30 AM		0	2	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	7	38
8:45 AM		0	2	6	0	0	0	0	0	2	0	0	2	3	0	0	0	0	0	0	3	0	0	0	0	0	18	45
9:00 AM		0	0	8	0	0	0	0	0	2	1	0	2	0	0	0	0	1	0	0	4	0	0	0	0	0	18	52
9:15 AM		0	0	7	0	0	0	0	0	4	0	0	3	0	2	0	0	1	0	0	0	0	0	2	0	0	19	62
Count Total		0	11	34	0	0	0	0	0	30	2	0	25	4	9	0	0	2	0	0	10	0	0	3	1	0	131	0
Peak Hour		**0**	**5**	**11**	**0**	**0**	**0**	**0**	**0**	**12**	**0**	**0**	**10**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	45	**0**

Two-and-a-Half-Hour Count Summaries - Bikes

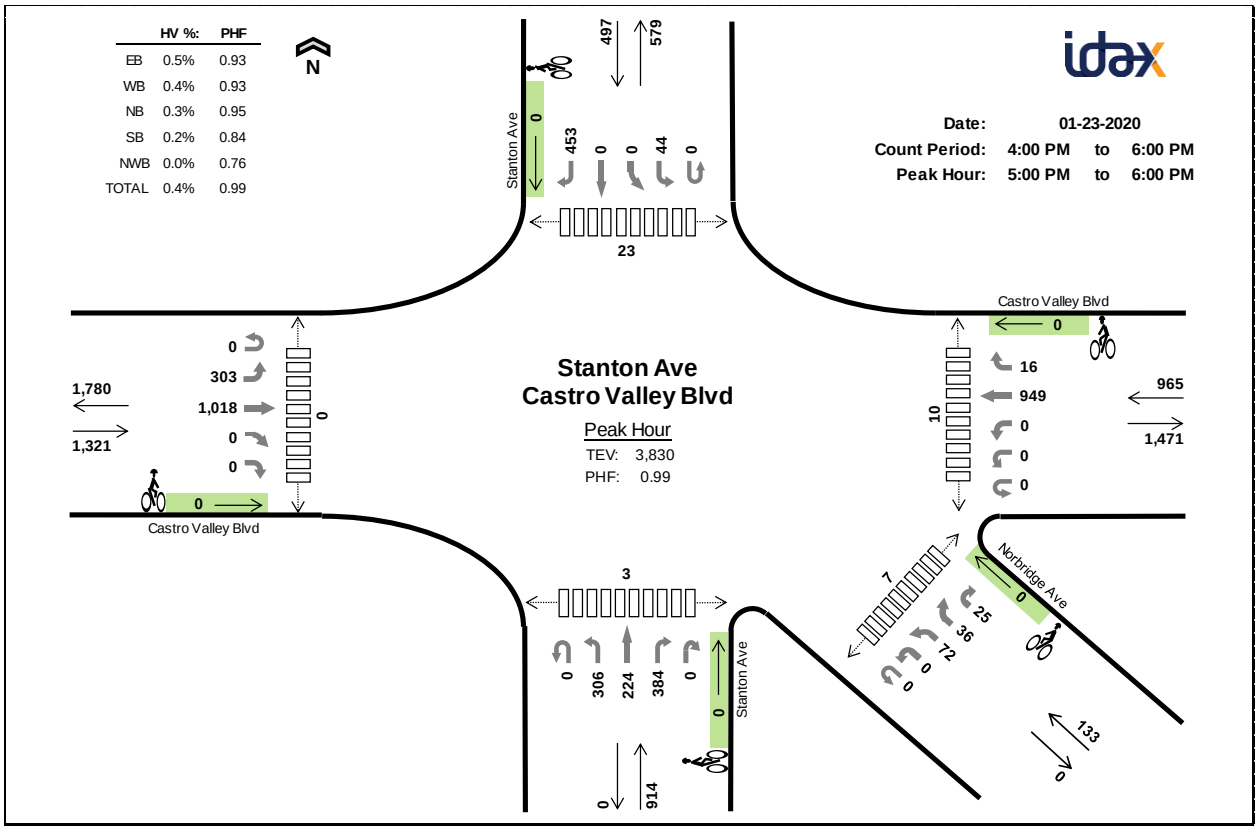
Interval Start	Castro Valley Blvd Eastbound					Castro Valley Blvd Westbound					Stanton Ave Northbound					Stanton Ave Southbound					Norbridge Ave Northwestbound					15-min Total	Rolling One Hour
	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
7:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**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**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	1	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2	**0**

Two-and-a-Half-Hour Count Summaries - RToR

Interval Start	Castro Valley Blvd Eastbound					Castro Valley Blvd Westbound					Stanton Ave Northbound					Stanton Ave Southbound					Norbridge Ave Northwestbound					15-min Total	Rolling One Hour
	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
7:00 AM	-	-	-	-	3	-	-	-	-	8	-	-	-	-	-	-	-	-	-	11	-	-	-	-	-	20	0
7:15 AM	-	-	-	-	4	-	-	-	-	10	-	-	-	-	-	-	-	-	-	17	-	-	-	-	-	31	0
7:30 AM	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**12**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12**	**-**	**-**	**-**	**-**	**-**	**26**	0
7:45 AM	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**12**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**20**	**-**	**-**	**-**	**-**	**-**	**35**	112
8:00 AM	**-**	**-**	**-**	**-**	**4**	**-**	**-**	**-**	**-**	**17**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12**	**-**	**-**	**-**	**-**	**-**	**33**	125
8:15 AM	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**10**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**8**	**-**	**-**	**-**	**-**	**-**	**20**	**114**
8:30 AM	-	-	-	-	9	-	-	-	-	12	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	36	124
8:45 AM	-	-	-	-	5	-	-	-	-	19	-	-	-	-	-	-	-	-	-	11	-	-	-	-	-	35	124
9:00 AM	-	-	-	-	4	-	-	-	-	4	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-	22	113
9:15 AM	-	-	-	-	3	-	-	-	-	6	-	-	-	-	-	-	-	-	-	11	-	-	-	-	-	20	113
Count Total	-	-	-	-	39	-	-	-	-	108	-	-	-	-	-	-	-	-	-	131	-	-	-	-	-	278	
Peak Hour	**-**	**-**	**-**	**-**	**11**	**-**	**-**	**-**	**-**	**51**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**52**	**-**	**-**	**-**	**-**	**-**	**114**	

Two-and-a-Half-Hour Count Summaries - Initial Queue

Interval Start	Castro Valley Blvd Eastbound					Castro Valley Blvd Westbound					Stanton Ave Northbound					Stanton Ave Southbound					Norbridge Ave Northwestbound					15-min Total	Rolling One Hour
	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
7:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:15 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:30 AM	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	-
7:45 AM	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	-
8:00 AM	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	-
8:15 AM	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
8:30 AM	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
8:45 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9:15 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Count Total	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
Peak Hour	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	1	-



Two-Hour Count Summaries

Interval Start	Castro Valley Blvd Eastbound					Castro Valley Blvd Westbound					Stanton Ave Northbound					Stanton Ave Southbound					Norbridge Ave Northwestbound					15-min Total	Rolling One Hour
	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
4:00 PM	0	62	216	0	0	0	0	0	238	4	0	80	51	84	0	0	23	0	0	101	0	0	21	2	8	890	0
4:15 PM	0	75	246	0	0	0	0	0	241	7	0	78	53	95	0	0	19	0	0	95	0	0	19	6	8	942	0
4:30 PM	0	58	226	0	0	0	0	0	220	6	0	78	52	97	0	0	18	0	0	93	0	0	20	4	6	878	0
4:45 PM	1	79	262	0	0	0	0	0	230	7	0	80	68	76	0	0	10	0	0	93	0	0	17	10	8	941	3,651
5:00 PM	**0**	**65**	**260**	**0**	**0**	**0**	**0**	**0**	**214**	**3**	**0**	**79**	**54**	**100**	**0**	**0**	**19**	**0**	**0**	**129**	**0**	**0**	**23**	**7**	**4**	**957**	3,718
5:15 PM	**0**	**68**	**234**	**0**	**0**	**0**	**0**	**0**	**254**	**3**	**0**	**71**	**61**	**80**	**0**	**0**	**13**	**0**	**0**	**123**	**0**	**0**	**19**	**15**	**10**	**951**	3,727
5:30 PM	**0**	**92**	**248**	**0**	**0**	**0**	**0**	**0**	**226**	**5**	**0**	**84**	**57**	**100**	**0**	**0**	**3**	**0**	**0**	**113**	**0**	**0**	**15**	**6**	**6**	**955**	3,804
5:45 PM	**0**	**78**	**276**	**0**	**0**	**0**	**0**	**0**	**255**	**5**	**0**	**72**	**52**	**104**	**0**	**0**	**9**	**0**	**0**	**88**	**0**	**0**	**15**	**8**	**5**	**967**	**3,830**
Count Total	1	577	1,968	0	0	0	0	0	1,878	40	0	622	448	736	0	0	114	0	0	835	0	0	149	58	55	7,481	0
Peak Hour All	**0**	**303**	**1,018**	**0**	**0**	**0**	**0**	**0**	**949**	**16**	**0**	**306**	**224**	**384**	**0**	**0**	**44**	**0**	**0**	**453**	**0**	**0**	**72**	**36**	**25**	**3,830**	**0**
Peak Hour HV	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**0**
Peak Hour HV%	-	**0%**	**0%**	-	-	-	-	-	**0%**	**0%**		**1%**	**0%**	**0%**	-	-	**2%**	-	-	**0%**	-	-	**0%**	**0%**	**0%**	**0%**	**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	NWB	Total	EB	WB	NB	SB	NWB	Total	East	West	North	South	Southeast	Total
4:00 PM	3	5	2	2	1	*13*	0	0	0	0	0	*0*	2	0	0	0	3	5
4:15 PM	1	2	3	2	0	*8*	0	0	0	1	0	*1*	1	0	0	0	3	*4*
4:30 PM	2	3	1	1	0	*7*	0	1	0	0	0	*1*	1	0	5	1	2	*9*
4:45 PM	0	1	1	0	0	*2*	0	0	0	0	0	*0*	0	0	0	0	3	*3*
5:00 PM	**1**	**1**	**0**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**7**	**0**	**2**	***12***
5:15 PM	**2**	**1**	**0**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**6**	**1**	**3**	***13***
5:30 PM	**2**	**0**	**1**	**1**	**0**	***4***	**0**	**0**	**0**	**0**	**0**	***0***	**4**	**0**	**8**	**2**	**2**	***16***
5:45 PM	**1**	**2**	**2**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**0**	**0**	***2***
Count Total	12	15	10	6	1	*44*	0	1	0	1	0	*2*	14	0	28	4	18	*64*
Peak Hr	**6**	**4**	**3**	**1**	**0**	***14***	**0**	**0**	**0**	**0**	**0**	***0***	**10**	**0**	**23**	**3**	**7**	*43*

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Castro Valley Blvd Eastbound					Castro Valley Blvd Westbound					Stanton Ave Northbound					Stanton Ave Southbound					Norbridge Ave Northwestbound					15-min Total	Rolling One Hour
	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
4:00 PM	0	0	3	0	0	0	0	0	5	0	0	2	0	0	0	0	0	0	0	2	0	0	1	0	0	13	0
4:15 PM	0	1	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0	0	0	2	0	0	0	0	0	8	0
4:30 PM	0	0	2	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	7	0
4:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	30
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	19
5:15 PM	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	14
5:30 PM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	11
5:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**14**
Count Total	0	2	10	0	0	0	0	0	15	0	0	7	2	1	0	0	1	0	0	5	0	0	1	0	0	44	0
Peak Hour	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	14	**0**

Two-Hour Count Summaries - Bikes

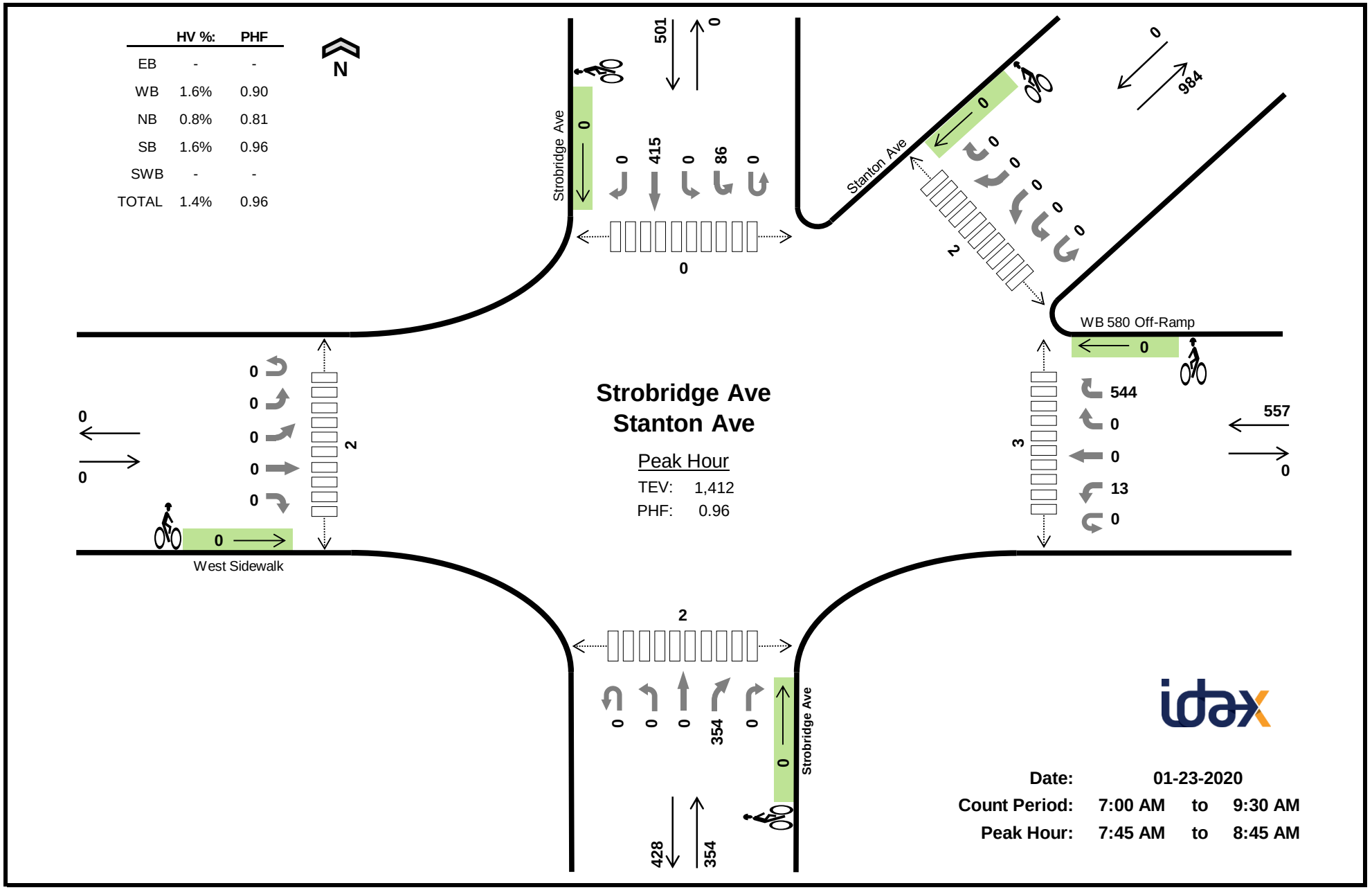
Interval Start	Castro Valley Blvd Eastbound					Castro Valley Blvd Westbound					Stanton Ave Northbound					Stanton Ave Southbound					Norbridge Ave Northwestbound					15-min Total	Rolling One Hour
	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
4:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	**0**

Two-Hour Count Summaries - RToR

Interval Start	Castro Valley Blvd Eastbound					Castro Valley Blvd Westbound					Stanton Ave Northbound					Stanton Ave Southbound					Norbridge Ave Northwestbound					15-min Total	Rolling One Hour
	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
4:00 PM	-	-	-	-	2	-	-	-	-	13	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	21	0
4:15 PM	-	-	-	-	1	-	-	-	-	10	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-	25	0
4:30 PM	-	-	-	-	1	-	-	-	-	19	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	29	0
4:45 PM	-	-	-	-	1	-	-	-	-	17	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	27	0
5:00 PM	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**15**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**13**	**-**	**-**	**-**	**-**	**-**	**30**	0
5:15 PM	**-**	**-**	**-**	**-**	**4**	**-**	**-**	**-**	**-**	**21**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**15**	**-**	**-**	**-**	**-**	**-**	**40**	0
5:30 PM	**-**	**-**	**-**	**-**	**4**	**-**	**-**	**-**	**-**	**15**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**14**	**-**	**-**	**-**	**-**	**-**	**33**	0
5:45 PM	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**20**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**9**	**-**	**-**	**-**	**-**	**-**	**30**	**0**
Count Total	-	-	-	-	16	-	-	-	-	130	-	-	-	-	-	-	-	-	-	89	-	-	-	-	-	235	0
Peak Hour	**-**	**-**	**-**	**-**	**11**	**-**	**-**	**-**	**-**	**71**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**51**	**-**	**-**	**-**	**-**	**-**	**133**	**0**

Two-Hour Count Summaries - Initial Queue

Interval Start	Castro Valley Blvd Eastbound					Castro Valley Blvd Westbound					Stanton Ave Northbound					Stanton Ave Southbound					Norbridge Ave Northwestbound					15-min Total	Rolling One Hour
	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	BL	BR	HR		
4:00 PM	-	-	-	-	-	-	-	-	5	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	5	-
4:15 PM	-	-	-	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	0	-
4:30 PM	-	-	-	-	-	-	-	-	0	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-
4:45 PM	-	-	-	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	0	-
5:00 PM	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**8**	**-**	**-**	**-**	**-**	**0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**8**	-
5:15 PM	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0**	**-**	**-**	**-**	**-**	**0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0**	-
5:30 PM	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**6**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**7**	-
5:45 PM	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0**	**-**	**-**	**-**	**-**	**0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0**	**-**
Count Total	-	-	-	-	-	-	-	-	19	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	21	-
Peak Hour	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**14**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	15	**-**


HV %: PHF
EB - -
WB 1.6% 0.90
NB 0.8% 0.81
SB 1.6% 0.96
SWB - -
TOTAL 1.4% 0.96
N
Strobridge Ave
Stanton Ave
WB 580 Off-Ramp
West Sidewalk
Strobridge Ave
Stanton Ave
Peak Hour
TEV: 1,412
PHF: 0.96
Date: 01-23-2020
Count Period: 7:00 AM to 9:30 AM
Peak Hour: 7:45 AM to 8:45 AM

Two-and-a-Half-Hour Count Summaries

Interval Start		West Sidewalk Eastbound					WB 580 Off-Ramp Westbound					Strobridge Ave Northbound					Strobridge Ave Southbound					Stanton Ave Southwestbound					15-min Total	Rolling One Hour
		UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	HL	BL	BR	HR		
7:00 AM		0	0	0	0	0	0	2	0	0	82	0	0	0	53	0	0	11	0	71	0	0	0	0	0	0	219	0
7:15 AM		0	0	0	0	0	0	1	0	0	84	0	0	0	63	0	0	22	0	87	0	0	0	0	0	0	257	0
7:30 AM		0	0	0	0	0	0	2	0	0	117	0	0	0	88	0	0	27	0	110	0	0	0	0	0	0	344	0
7:45 AM		**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**135**	**0**	**0**	**0**	**109**	**0**	**0**	**19**	**0**	**102**	**0**	**0**	**0**	**0**	**0**	**0**	**367**	1,187
8:00 AM		**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**119**	**0**	**0**	**0**	**74**	**0**	**0**	**19**	**0**	**102**	**0**	**0**	**0**	**0**	**0**	**0**	**317**	1,285
8:15 AM		**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**140**	**0**	**0**	**0**	**89**	**0**	**0**	**25**	**0**	**105**	**0**	**0**	**0**	**0**	**0**	**0**	**362**	1,390
8:30 AM		**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**150**	**0**	**0**	**0**	**82**	**0**	**0**	**23**	**0**	**106**	**0**	**0**	**0**	**0**	**0**	**0**	**366**	**1,412**
8:45 AM		0	0	0	0	0	0	3	0	0	160	0	0	0	74	0	0	22	0	76	0	0	0	0	0	0	335	1,380
9:00 AM		0	0	0	0	0	0	4	0	0	104	0	0	0	48	0	0	13	0	65	0	0	0	0	0	0	234	1,297
9:15 AM		0	0	0	0	0	0	4	0	0	105	0	0	0	55	0	0	18	0	60	0	0	0	0	0	0	242	1,177
Count Total		0	0	0	0	0	0	29	0	0	1,196	0	0	0	735	0	0	199	0	884	0	0	0	0	0	0	3,043	0
Peak Hour	**All**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**0**	**0**	**544**	**0**	**0**	**0**	**354**	**0**	**0**	**86**	**0**	**415**	**0**	**0**	**0**	**0**	**0**	**0**	**1,412**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**8**	**0**	**0**	**0**	**3**	**0**	**0**	**3**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**20**	**0**
	HV%	**-**	**-**	**-**	**-**	**-**	**-**	**8%**	**-**	**-**	**1%**	**-**	**-**	**-**	**1%**	**-**	**-**	**3%**	**-**	**1%**	**-**	**-**	**-**	**-**	**-**	**-**	**1%**	**0**

Note: Two-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

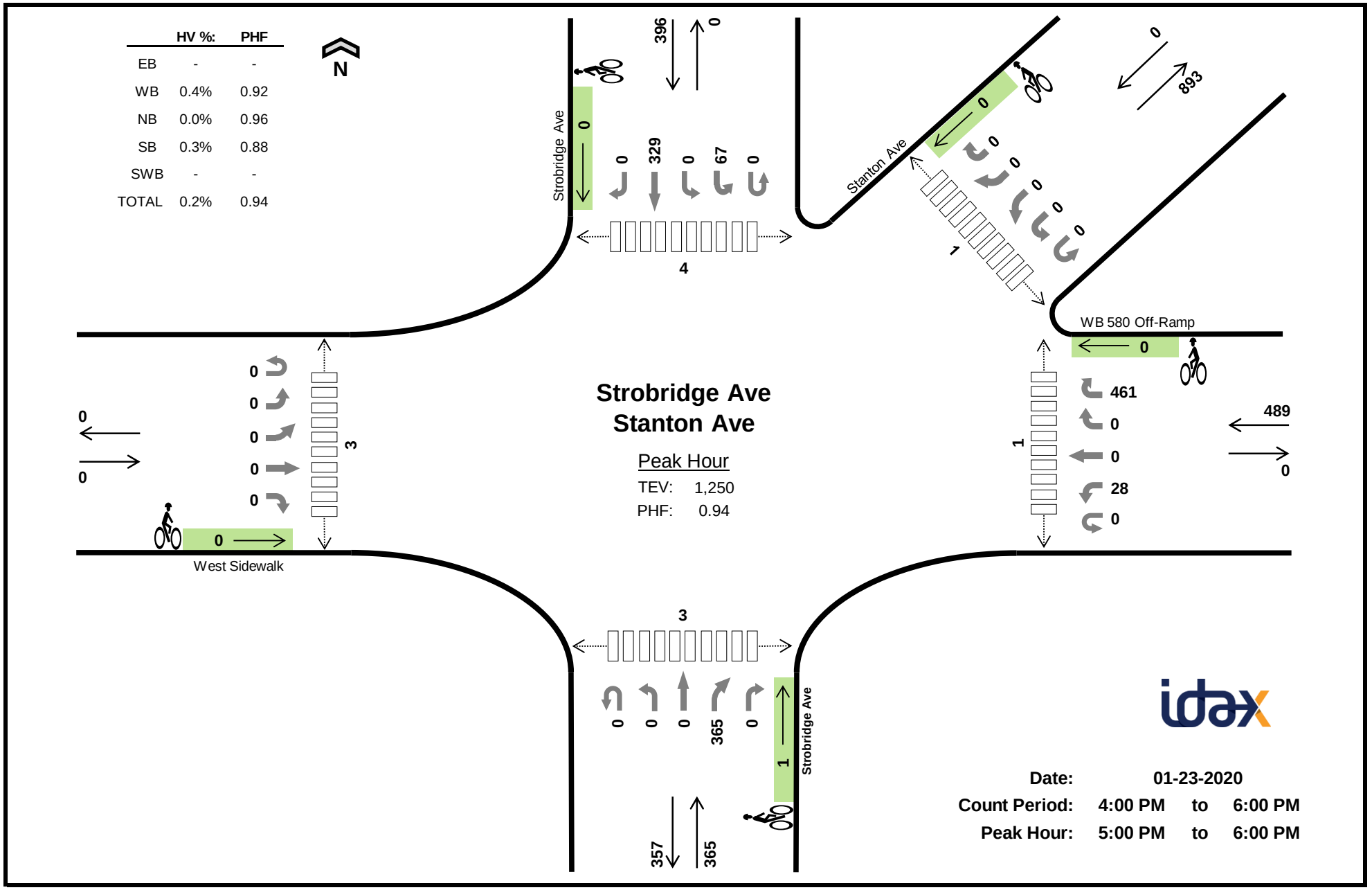
Interval Start	Heavy Vehicle Totals						Bicycles						Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	SWB	Total	EB	WB	NB	SB	SWB	Total	East	West	North	South	Northeast	Total
7:00 AM	0	6	0	0	0	*6*	0	0	0	0	0	*0*	0	1	0	0	0	*1*
7:15 AM	0	2	0	3	0	*5*	0	0	0	0	0	*0*	0	2	2	0	0	*4*
7:30 AM	0	3	0	2	0	*5*	0	0	0	0	0	*0*	0	1	1	0	0	*2*
7:45 AM	**0**	**4**	**1**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**1**	**0**	***2***
8:00 AM	**0**	**3**	**0**	**2**	**0**	***5***	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	**1**	***2***
8:15 AM	**0**	**2**	**1**	**3**	**0**	***6***	**0**	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**0**	**1**	**1**	***4***
8:30 AM	**0**	**0**	**1**	**3**	**0**	***4***	**0**	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	**0**	***1***
8:45 AM	0	3	0	1	0	*4*	0	0	0	0	0	*0*	0	1	1	0	0	*2*
9:00 AM	0	3	1	3	0	*7*	0	0	0	1	0	*1*	0	0	0	0	0	*0*
9:15 AM	0	4	1	2	0	*7*	0	0	0	0	0	*0*	0	1	1	0	0	*2*
Count Total	0	30	5	19	0	*54*	0	0	0	1	0	*1*	3	8	5	2	2	*20*
Peak Hr	**0**	**9**	**3**	**8**	**0**	***20***	**0**	**0**	**0**	**0**	**0**	***0***	**3**	**2**	**0**	**2**	**2**	*9*

Two-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	West Sidewalk					WB 580 Off-Ramp					Strobridge Ave					Strobridge Ave					Stanton Ave					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Southwestbound						
	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	HL	BL	BR	HR		
7:00 AM	0	0	0	0	0	0	1	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
7:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	5	0
7:30 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	5	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	21
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	20
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	21
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**20**
8:45 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	4	19
9:00 AM	0	0	0	0	0	0	1	0	0	2	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	7	21
9:15 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	7	22
Count Total	0	0	0	0	0	0	3	0	0	27	0	0	0	5	0	0	6	0	13	0	0	0	0	0	0	54	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**8**	**0**	**0**	**0**	**3**	**0**	**0**	**3**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	20	**0**

Two-and-a-Half-Hour Count Summaries - Bikes

Interval Start	West Sidewalk					WB 580 Off-Ramp					Strobridge Ave					Strobridge Ave					Stanton Ave					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Southwestbound						
	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	HL	BL	BR	HR		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	**0**


HV %: PHF
EB - -
WB 0.4% 0.92
NB 0.0% 0.96
SB 0.3% 0.88
SWB - -
TOTAL 0.2% 0.94
N
Strobridge Ave
Stanton Ave
WB 580 Off-Ramp
West Sidewalk
Strobridge Ave
Strobridge Ave
Stanton Ave
Peak Hour
TEV: 1,250
PHF: 0.94
396
329
67
893
461
489
365
357
Date: 01-23-2020
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM

Two-Hour Count Summaries

Interval Start		West Sidewalk Eastbound					WB 580 Off-Ramp Westbound					Strobridge Ave Northbound					Strobridge Ave Southbound					Stanton Ave Southwestbound					15-min Total	Rolling One Hour
		UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	HL	BL	BR	HR		
4:00 PM		0	0	0	0	0	0	7	0	0	108	0	0	0	84	0	0	10	0	71	0	0	0	0	0	0	280	0
4:15 PM		0	0	0	0	0	0	3	0	0	114	0	0	0	74	0	0	17	0	74	0	0	0	0	0	0	282	0
4:30 PM		0	0	0	0	0	0	4	0	0	123	0	0	0	93	0	0	11	0	74	0	0	0	0	0	0	305	0
4:45 PM		0	0	0	0	0	0	9	0	0	131	0	0	0	82	0	0	17	0	70	0	0	0	0	0	0	309	1,176
5:00 PM		**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**109**	**0**	**0**	**0**	**83**	**0**	**0**	**17**	**0**	**70**	**0**	**0**	**0**	**0**	**0**	**0**	**285**	1,181
5:15 PM		**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**116**	**0**	**0**	**0**	**93**	**0**	**0**	**18**	**0**	**95**	**0**	**0**	**0**	**0**	**0**	**0**	**331**	1,230
5:30 PM		**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**126**	**0**	**0**	**0**	**95**	**0**	**0**	**11**	**0**	**84**	**0**	**0**	**0**	**0**	**0**	**0**	**323**	1,248
5:45 PM		**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**110**	**0**	**0**	**0**	**94**	**0**	**0**	**21**	**0**	**80**	**0**	**0**	**0**	**0**	**0**	**0**	**311**	**1,250**
Count Total		0	0	0	0	0	0	51	0	0	937	0	0	0	698	0	0	122	0	618	0	0	0	0	0	0	2,426	0
Peak Hour	**All**	**0**	**0**	**0**	**0**	**0**	**0**	**28**	**0**	**0**	**461**	**0**	**0**	**0**	**365**	**0**	**0**	**67**	**0**	**329**	**0**	**0**	**0**	**0**	**0**	**0**	**1,250**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**
	HV%	**-**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**-**	**0%**	**-**	**-**	**-**	**0%**	**-**	**-**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**-**	**-**	**0%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	SWB	Total	Bicycles EB	WB	NB	SB	SWB	Total	Pedestrians (Crossing Leg) East	West	North	South	Northeast	Total
4:00 PM	0	1	0	1	0	*2*	0	0	0	0	0	*0*	0	1	0	0	0	*1*
4:15 PM	0	2	1	2	0	*5*	0	0	0	0	0	*0*	0	0	0	0	0	*0*
4:30 PM	0	0	0	1	0	*1*	0	0	0	0	0	*0*	0	2	2	0	0	*4*
4:45 PM	0	1	0	0	0	*1*	0	0	0	0	0	*0*	0	1	1	0	0	*2*
5:00 PM	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**2**	**1**	**0**	***5***
5:15 PM	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**	***0***
5:30 PM	**0**	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**1**	**0**	**0**	***1***	**1**	**1**	**2**	**2**	**1**	***7***
5:45 PM	**0**	**1**	**0**	**1**	**0**	***2***	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**	***0***
Count Total	0	6	1	5	0	*12*	0	0	1	0	0	*1*	1	7	7	3	1	*19*
Peak Hr	**0**	**2**	**0**	**1**	**0**	***3***	**0**	**0**	**1**	**0**	**0**	***1***	**1**	**3**	**4**	**3**	**1**	*12*

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	West Sidewalk					WB 580 Off-Ramp					Strobridge Ave					Strobridge Ave					Stanton Ave					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Southwestbound						
	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	HL	BL	BR	HR		
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	5	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	7
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	2
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**3**
Count Total	0	0	0	0	0	0	0	0	0	6	0	0	0	1	0	0	0	0	5	0	0	0	0	0	0	12	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	3	**0**

Two-Hour Count Summaries - Bikes

Interval Start	West Sidewalk					WB 580 Off-Ramp					Strobridge Ave					Strobridge Ave					Stanton Ave					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Southwestbound						
	UT	LT	BL	TH	RT	UT	LT	TH	RT	HR	UT	LT	TH	BR	RT	UT	HL	LT	TH	RT	UT	HL	BL	BR	HR		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	1
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1	**0**

7:50-8:05am OD Matrix									
		Enter							
		1	2	3	4	5	6	7	8
Exit	1	0	24	4	14	3	18	5	0
	2	18	5	9	38	6	217	54	14
	3	20	12	0	2	0	25	32	5
	4	0	0	0	0	0	0	0	0
	5	0	0	0	0	0	0	0	0
	6	25	114	39	34	1	0	23	11
	7	6	27	17	20	1	3	0	2
	8	2	7	5	14	1	12	2	0

5:09-5:30pm OD Matrix									
		Enter							
		1	2	3	4	5	6	7	8
Exit	1	0	50	5	16	6	27	12	5
	2	48	1	15	41	21	276	138	19
	3	28	30	0	11	1	29	35	4
	4	0	0	0	0	0	0	0	0
	5	0	0	0	0	0	0	0	0
	6	53	292	59	55	10	0	21	23
	7	7	90	31	49	17	6	0	2
	8	3	14	10	8	2	20	2	1

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4345	2729	4329	4228	4303	4349	4310
Vehs Exited	4238	2044	4240	4159	4224	4245	4243
Starting Vehs	156	159	169	157	174	169	159
Ending Vehs	263	844	258	226	253	273	226
Denied Entry Before	1	2	0	0	1	2	0
Denied Entry After	31	1611	3	1	79	35	1
Travel Distance (mi)	2963	1538	2989	2917	2944	2996	2967
Travel Time (hr)	223.4	901.1	214.7	195.7	258.5	233.1	213.4
Total Delay (hr)	115.0	846.1	105.2	88.8	150.9	123.4	104.7
Total Stops	8203	4187	8056	7558	8234	8019	7935
Fuel Used (gal)	127.7	243.9	126.1	120.2	135.3	130.6	126.0

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4290	4374	2575	3983
Vehs Exited	4156	4185	1925	3766
Starting Vehs	158	170	190	164
Ending Vehs	292	359	840	381
Denied Entry Before	1	2	1	1
Denied Entry After	104	34	1805	370
Travel Distance (mi)	2909	2949	1434	2661
Travel Time (hr)	308.7	262.6	995.9	380.7
Total Delay (hr)	202.0	154.5	944.8	283.5
Total Stops	8312	8146	3688	7231
Fuel Used (gal)	146.1	135.8	262.5	155.4

1: Strobridge Ave./John Dr & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.1	0.6	0.1	0.0	0.0	0.0	4.2	4.4	3.3	12.7
Denied Del/Veh (s)	4.3	2.9	3.2	0.0	0.0	0.0	139.4	172.8	127.3	15.2
Total Delay (hr)	2.1	8.3	5.0	5.2	3.9	0.7	2.1	1.1	0.2	28.5
Total Del/Veh (s)	60.5	40.8	164.1	73.6	10.8	13.7	80.3	50.1	7.0	34.7
Travel Time (hr)	3.7	17.3	6.3	6.0	6.9	1.3	6.5	5.6	3.7	57.3
Vehicles Entered	121	722	107	253	1298	183	95	78	81	2938
Vehicles Exited	117	701	95	249	1295	183	92	76	81	2889
Hourly Exit Rate	117	701	95	249	1295	183	92	76	81	2889
Input Volume	123	745	99	296	1511	222	113	91	89	3289
% of Volume	95	94	96	84	86	82	81	84	91	88
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	3	12	2	0	0	0	13	13	12	55

2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.6	0.0	0.0	0.0	0.0	2.1	15.1	17.8
Denied Del/Veh (s)	0.0	0.0	2.1	0.0	0.0	0.0	0.0	102.2	124.4	20.2
Total Delay (hr)	3.2	2.2	33.8	0.4	7.3	3.4	2.2	1.8	11.4	65.7
Total Del/Veh (s)	65.7	12.6	111.5	82.2	74.0	80.6	26.3	97.8	104.7	74.5
Travel Time (hr)	3.6	3.4	41.5	0.5	8.3	3.8	3.2	4.3	29.0	97.7
Vehicles Entered	175	619	1062	17	348	150	297	66	385	3119
Vehicles Exited	173	622	1045	16	342	146	295	64	372	3075
Hourly Exit Rate	173	622	1045	16	342	146	295	64	372	3075
Input Volume	187	672	1166	17	457	192	385	66	429	3571
% of Volume	93	93	90	94	75	76	77	97	87	86
Denied Entry Before	0	0	0	0	0	0	0	0	1	1
Denied Entry After	0	0	2	0	0	0	0	8	53	63

3: Strobridge Ave. & I-580 WB off ramp Performance by movement

Movement	WBL	WBR	NBT	All
Denied Delay (hr)	0.9	40.1	0.0	41.0
Denied Del/Veh (s)	253.9	265.1	0.0	181.0
Total Delay (hr)	0.2	18.4	0.9	19.5
Total Del/Veh (s)	72.2	152.5	13.0	100.0
Travel Time (hr)	1.2	61.5	1.3	64.0
Vehicles Entered	10	429	258	697
Vehicles Exited	9	400	257	666
Hourly Exit Rate	9	400	257	666
Input Volume	13	544	321	878
% of Volume	69	74	80	76
Denied Entry Before	0	0	0	0
Denied Entry After	3	115	0	118

Arterial Level of Service: EB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Strobridge Ave.	1	40.8	84.9	0.4	16
Norbridge Ave.	2	11.2	17.8	0.1	10
Lake Chabot Rd.	99	15.8	38.1	0.2	19
Total		67.8	140.8	0.6	16

Arterial Level of Service: WB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Lake Chabot Rd.	99	74.4	147.3	0.3	10
Stanton Ave.	2	111.0	136.0	0.2	5
John Dr	1	5.4	12.7	0.1	15
Total		190.8	295.9	0.6	8

Intersection: 1: Strobridge Ave./John Dr & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	LT	R
Maximum Queue (ft)	170	500	553	538	252	251	244	252	224	77
Average Queue (ft)	81	134	226	222	197	134	134	158	128	31
95th Queue (ft)	150	677	766	793	274	245	254	281	247	66
Link Distance (ft)		1844	1844	1844	227	227	227	227	290	290
Upstream Blk Time (%)		2	1	1	21	2	1	2	12	
Queuing Penalty (veh)		0	0	0	108	11	4	9	0	
Storage Bay Dist (ft)	330									
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	T	T	T	TR	L	LT	R	L	R
Maximum Queue (ft)	142	143	170	151	706	717	724	258	332	333	670	323
Average Queue (ft)	70	70	82	62	380	414	425	180	242	173	298	232
95th Queue (ft)	125	123	154	123	790	806	812	325	437	364	879	373
Link Distance (ft)	227	227	227	227	945	945	945	236	236	236	902	
Upstream Blk Time (%)			1	0	8	9	9	6	33	13	18	
Queuing Penalty (veh)			1	0	29	33	36	21	115	45	0	
Storage Bay Dist (ft)												300
Storage Blk Time (%)											0	29
Queuing Penalty (veh)											1	19

Intersection: 3: Strobridge Ave. & I-580 WB off ramp

Movement	WB	WB	NB	NB
Directions Served	L	R	T	T
Maximum Queue (ft)	860	313	68	59
Average Queue (ft)	438	211	23	22
95th Queue (ft)	1230	397	65	57
Link Distance (ft)	1049		48	48
Upstream Blk Time (%)	31		24	20
Queuing Penalty (veh)	0		38	31
Storage Bay Dist (ft)		300		
Storage Blk Time (%)	0	44		
Queuing Penalty (veh)	1	6		

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4536	4562	4609	4399	4450	4554	4620
Vehs Exited	4455	4444	4503	4338	4325	4395	4506
Starting Vehs	164	144	159	133	150	148	176
Ending Vehs	245	262	265	194	275	307	290
Denied Entry Before	2	0	1	2	0	1	0
Denied Entry After	13	83	0	1	104	76	50
Travel Distance (mi)	2834	2814	2860	2742	2749	2797	2830
Travel Time (hr)	223.1	281.0	232.7	204.4	297.9	278.0	261.0
Total Delay (hr)	118.5	177.5	127.9	103.7	197.1	175.5	157.1
Total Stops	8237	8377	8165	7827	7599	7920	8047
Fuel Used (gal)	125.7	139.0	127.5	119.0	139.8	136.3	133.7

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4464	4281	4584	4505
Vehs Exited	4385	3878	4472	4370
Starting Vehs	183	166	165	151
Ending Vehs	262	569	277	290
Denied Entry Before	2	2	1	1
Denied Entry After	2	312	17	66
Travel Distance (mi)	2757	2502	2846	2773
Travel Time (hr)	237.0	343.1	236.0	259.4
Total Delay (hr)	135.5	252.2	131.7	157.7
Total Stops	8112	7309	8157	7976
Fuel Used (gal)	127.2	144.5	128.8	132.1

1: Strobridge Ave./John Dr & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	2.1	0.3	0.2	0.0	0.0	0.0	1.7	2.2	1.0	0.3
Total Del/Veh (s)	45.2	21.7	15.6	48.6	11.9	13.4	36.4	38.0	5.7	20.8
Vehicles Entered	137	1142	99	234	1226	221	149	79	115	3402
Vehicles Exited	139	1128	97	237	1220	219	148	79	114	3381
Hourly Exit Rate	139	1128	97	237	1220	219	148	79	114	3381
Input Volume	135	1159	99	250	1264	236	153	77	120	3493
% of Volume	103	97	98	95	97	93	97	103	95	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	1	1	1	3

2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.2	0.0	3.9	5.8	0.8
Total Del/Veh (s)	78.8	14.4	40.1	42.1	89.5	100.0	45.6	91.1	98.6	53.3
Vehicles Entered	302	976	920	18	332	224	362	40	455	3629
Vehicles Exited	301	976	904	18	333	225	359	40	444	3600
Hourly Exit Rate	301	976	904	18	333	225	359	40	444	3600
Input Volume	303	1010	919	16	378	261	409	44	453	3793
% of Volume	99	97	98	112	88	86	88	91	98	95
Denied Entry Before	0	0	0	0	0	0	0	0	1	1
Denied Entry After	0	0	0	0	0	0	0	1	2	3

3: Strobridge Ave. & I-580 WB off ramp Performance by movement

Movement	WBL	WBR	NBT	All
Denied Del/Veh (s)	112.5	119.2	0.0	68.7
Total Del/Veh (s)	124.0	211.4	7.4	117.4
Vehicles Entered	24	412	357	793
Vehicles Exited	23	376	355	754
Hourly Exit Rate	23	376	355	754
Input Volume	28	465	380	873
% of Volume	82	81	93	86
Denied Entry Before	0	0	0	0
Denied Entry After	3	50	0	53

Arterial Level of Service: EB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Strobridge Ave.	1	21.7	48.1	0.2	17
Norbridge Ave.	2	13.1	19.7	0.1	9
Lake Chabot Rd.	99	18.5	42.1	0.2	17
Total		53.3	109.9	0.5	16

Arterial Level of Service: WB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Lake Chabot Rd.	99	20.4	58.1	0.3	20
Stanton Ave.	2	38.5	61.5	0.2	12
John Dr	1	5.0	12.2	0.1	15
Total		63.9	131.7	0.6	16

Intersection: 1: Strobridge Ave./John Dr & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	LT	R
Maximum Queue (ft)	216	294	359	324	245	224	229	251	263	83
Average Queue (ft)	93	108	217	181	163	114	135	168	129	36
95th Queue (ft)	169	223	320	280	248	189	223	246	225	64
Link Distance (ft)		1143	1143	1143	227	227	227	227	289	289
Upstream Blk Time (%)					4	1	0	1	2	
Queuing Penalty (veh)					18	2	1	4	0	
Storage Bay Dist (ft)	330									
Storage Blk Time (%)		0								
Queuing Penalty (veh)		0								

Intersection: 2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	T	T	T	TR	L	LT	R	L	R
Maximum Queue (ft)	222	227	225	210	384	425	446	278	335	351	864	325
Average Queue (ft)	130	129	125	110	142	194	217	212	309	268	363	264
95th Queue (ft)	206	204	209	192	315	350	371	304	411	417	937	395
Link Distance (ft)	227	227	227	227	947	947	947	236	236	236	978	
Upstream Blk Time (%)	2	2	0	0			0	7	58	31	5	
Queuing Penalty (veh)	6	8	2	0			0	24	202	109	0	
Storage Bay Dist (ft)												300
Storage Blk Time (%)											0	38
Queuing Penalty (veh)											1	17

Intersection: 3: Strobridge Ave. & I-580 WB off ramp

Movement	WB	WB	NB	NB
Directions Served	L	R	T	T
Maximum Queue (ft)	1069	325	77	75
Average Queue (ft)	650	270	35	26
95th Queue (ft)	1366	424	76	64
Link Distance (ft)	1052		46	46
Upstream Blk Time (%)	36		21	9
Queuing Penalty (veh)	0		40	17
Storage Bay Dist (ft)		300		
Storage Blk Time (%)	1	67		
Queuing Penalty (veh)	5	19		

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4204	4329	4293	4323	4219	4388	4397
Vehs Exited	4135	4264	4134	4226	4143	4253	4310
Starting Vehs	159	172	158	153	173	173	186
Ending Vehs	228	237	317	250	249	308	273
Denied Entry Before	0	1	1	0	2	2	2
Denied Entry After	2	0	8	0	1	3	2
Travel Distance (mi)	2862	2962	2920	2948	2891	2957	2975
Travel Time (hr)	215.5	235.7	248.9	233.6	209.6	222.2	234.7
Total Delay (hr)	111.5	128.4	143.2	126.6	104.7	114.7	126.7
Total Stops	8621	8613	9004	8782	8200	8628	8925
Fuel Used (gal)	123.4	130.8	132.5	130.3	122.3	127.3	131.1

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4290	4315	4240	4299
Vehs Exited	4157	4156	4059	4182
Starting Vehs	163	179	165	163
Ending Vehs	296	338	346	285
Denied Entry Before	3	0	1	1
Denied Entry After	15	33	93	15
Travel Distance (mi)	2910	2913	2828	2917
Travel Time (hr)	252.9	267.0	286.6	240.7
Total Delay (hr)	147.1	161.2	184.2	134.8
Total Stops	8602	8944	8557	8687
Fuel Used (gal)	132.9	136.9	138.5	130.6

1: Strobridge Ave./John Dr & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.2
Total Del/Veh (s)	46.9	34.6	21.4	65.0	36.2	31.1	34.3	35.2	29.5	53.3	52.7	36.6
Vehicles Entered	125	733	92	202	1254	118	234	87	503	112	93	87
Vehicles Exited	125	740	93	199	1258	119	231	86	499	111	92	86
Hourly Exit Rate	125	740	93	199	1258	119	231	86	499	111	92	86
Input Volume	123	745	99	210	1296	123	242	93	530	113	91	89
% of Volume	102	99	94	95	97	97	95	92	94	98	101	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: Strobridge Ave./John Dr & Castro Valley Blvd. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	37.1
Vehicles Entered	3640
Vehicles Exited	3639
Hourly Exit Rate	3639
Input Volume	3754
% of Volume	97
Denied Entry Before	0
Denied Entry After	0

2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.2	0.1	2.5	17.9	11.9	17.9	2.8
Total Del/Veh (s)	55.4	10.0	8.2	79.6	76.3	70.0	62.4	12.2	65.0	61.9	78.2	53.4
Vehicles Entered	344	978	28	1163	17	66	8	8	44	31	408	3095
Vehicles Exited	339	981	28	1143	16	65	8	8	44	30	392	3054
Hourly Exit Rate	339	981	28	1143	16	65	8	8	44	30	392	3054
Input Volume	355	1006	28	1166	17	67	8	8	46	30	419	3150
% of Volume	95	98	100	98	94	97	100	100	96	100	94	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	1	1
Denied Entry After	0	0	0	0	0	0	0	0	0	0	6	6

3: Strobridge Ave. & 580 Off-Ramp Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Del/Veh (s)	8.4	8.2	0.0	0.0	3.6
Total Del/Veh (s)	37.3	97.6	17.2	13.4	50.7
Vehicles Entered	12	536	317	384	1249
Vehicles Exited	12	507	316	385	1220
Hourly Exit Rate	12	507	316	385	1220
Input Volume	13	544	321	400	1278
% of Volume	92	93	98	96	95
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	9	0	0	9

23: Strobridge Ave. & Gary Dr./I-580 EB on ramp Performance by movement

Movement	EBL	NBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.1
Total Del/Veh (s)	4.3	2.7	0.7	3.1
Vehicles Entered	50	53	13	116
Vehicles Exited	50	53	13	116
Hourly Exit Rate	50	53	13	116
Input Volume	50	57	13	120
% of Volume	100	93	100	97
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

24: I-580 EB off ramp & Strobridge Ave. Performance by movement

Movement	EBL	NBT	SBL	SBT	All
Denied Del/Veh (s)	0.2	0.0	0.0	0.0	0.1
Total Del/Veh (s)	10.1	3.9	11.9	6.2	10.1
Vehicles Entered	216	104	383	13	716
Vehicles Exited	215	104	381	13	713
Hourly Exit Rate	215	104	381	13	713
Input Volume	214	108	400	13	735
% of Volume	100	96	95	100	97
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Arterial Level of Service: EB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Strobridge Ave.	1	34.6	76.5	0.4	17
Norbridge Ave.	2	7.2	13.5	0.1	14
Lake Chabot Rd.	99	14.6	37.4	0.2	19
Total		56.3	127.4	0.6	17

Arterial Level of Service: WB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Lake Chabot Rd.	99	28.3	66.1	0.3	18
Stanton Ave.	2	77.5	99.6	0.2	7
John Dr	1	33.2	40.2	0.1	5
Total		138.9	205.9	0.6	10

Queuing and Blocking Report
Alternative 1 AM Peak Hour
04/23/2020

Intersection: 1: Strobridge Ave./John Dr & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	175	217	267	258	222	242	244	246	354	306	283	133
Average Queue (ft)	83	99	168	149	146	167	195	213	189	222	140	60
95th Queue (ft)	148	182	246	232	231	245	242	255	317	315	243	112
Link Distance (ft)		1844	1844	1844	199	199	199	199	388		290	290
Upstream Blk Time (%)					7	7	7	20	2		1	
Queuing Penalty (veh)					29	28	29	82	15		0	
Storage Bay Dist (ft)	330									300		
Storage Blk Time (%)									0	4		
Queuing Penalty (veh)									3	12		

Intersection: 2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	TR	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	198	221	209	219	588	611	609	170	60	674	325
Average Queue (ft)	115	132	118	111	312	350	365	71	7	239	231
95th Queue (ft)	183	204	216	213	591	611	621	145	40	751	374
Link Distance (ft)	199	199	199	199	950	950	950	755		904	
Upstream Blk Time (%)	1	3	1	1						9	
Queuing Penalty (veh)	4	9	5	3						0	
Storage Bay Dist (ft)									250		300
Storage Blk Time (%)								0		0	23
Queuing Penalty (veh)								0		1	17

Intersection: 3: Strobridge Ave. & 580 Off-Ramp

Movement	WB	WB	NB	NB	SB
Directions Served	L	R	T	T	T
Maximum Queue (ft)	835	325	154	119	170
Average Queue (ft)	345	255	70	41	107
95th Queue (ft)	997	407	130	93	159
Link Distance (ft)	1207		379	379	388
Upstream Blk Time (%)	4				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)		300			
Storage Blk Time (%)	0	45			
Queuing Penalty (veh)	1	6			

SimTraffic Simulation Summary
Alternative 1 PM Peak Hour
04/23/2020

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4415	4645	4636	4431	4570	4429	4636
Vehs Exited	4217	4480	4482	4264	4360	4305	4387
Starting Vehs	168	159	168	162	148	165	197
Ending Vehs	366	324	322	329	358	289	446
Denied Entry Before	0	0	1	2	2	0	1
Denied Entry After	153	113	46	185	51	158	137
Travel Distance (mi)	2571	2746	2745	2618	2693	2600	2713
Travel Time (hr)	312.9	297.8	270.8	358.8	286.1	345.8	347.1
Total Delay (hr)	219.5	198.2	171.1	263.6	188.2	251.5	248.5
Total Stops	8729	8897	9497	8775	9810	8813	9743
Fuel Used (gal)	140.2	141.4	135.5	151.7	137.7	148.6	152.8

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4674	4472	4593	4550
Vehs Exited	4494	4279	4395	4366
Starting Vehs	166	176	172	165
Ending Vehs	346	369	370	348
Denied Entry Before	1	0	0	0
Denied Entry After	22	156	125	113
Travel Distance (mi)	2747	2596	2706	2674
Travel Time (hr)	266.7	360.0	334.5	318.0
Total Delay (hr)	166.7	265.7	236.3	220.9
Total Stops	9691	9188	9785	9295
Fuel Used (gal)	134.6	152.4	149.2	144.4

1: Strobridge Ave./John Dr & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.7	2.3	2.7	0.0	0.0	0.0	0.0	0.0	0.0	25.4	25.2	23.9
Total Del/Veh (s)	63.9	111.1	102.2	58.4	33.2	29.5	38.4	39.3	71.6	90.2	89.2	49.2
Vehicles Entered	136	1152	96	184	1109	122	132	92	454	155	72	118
Vehicles Exited	135	1100	89	183	1100	121	133	92	455	151	71	117
Hourly Exit Rate	135	1100	89	183	1100	121	133	92	455	151	71	117
Input Volume	135	1159	99	181	1128	121	174	115	556	153	77	120
% of Volume	100	95	90	101	98	100	76	80	82	99	92	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	3	0	0	0	0	0	0	0	1	0	0

1: Strobridge Ave./John Dr & Castro Valley Blvd. Performance by movement

Movement	All
Denied Del/Veh (s)	3.1
Total Del/Veh (s)	69.4
Vehicles Entered	3822
Vehicles Exited	3747
Hourly Exit Rate	3747
Input Volume	4018
% of Volume	93
Denied Entry Before	0
Denied Entry After	4

2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	2.2	5.5	5.5	1.7	2.9	4.5	0.8
Total Del/Veh (s)	69.6	15.1	13.8	39.5	39.0	91.0	92.3	32.2	46.6	52.3	53.5	38.9
Vehicles Entered	487	1200	20	935	16	70	44	26	26	32	445	3301
Vehicles Exited	493	1199	20	921	16	72	45	26	25	31	440	3288
Hourly Exit Rate	493	1199	20	921	16	72	45	26	25	31	440	3288
Input Volume	529	1321	20	937	16	68	41	24	24	30	443	3453
% of Volume	93	91	100	98	100	106	110	108	104	103	99	95
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	1	1

3: Strobridge Ave. & 580 Off-Ramp Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Del/Veh (s)	186.7	221.2	0.0	0.0	88.9
Total Del/Veh (s)	194.6	332.0	92.0	13.8	149.4
Vehicles Entered	22	361	376	343	1102
Vehicles Exited	20	316	362	343	1041
Hourly Exit Rate	20	316	362	343	1041
Input Volume	28	465	380	357	1230
% of Volume	71	68	95	96	85
Denied Entry Before	0	0	0	0	0
Denied Entry After	8	100	0	0	108

23: Strobridge Ave. & Gary Dr./I-580 EB on ramp Performance by movement

Movement	EBL	NBT	SBR	All
Denied Del/Veh (s)	0.9	0.1	0.0	0.5
Total Del/Veh (s)	31.1	22.1	1.2	22.1
Vehicles Entered	76	41	33	150
Vehicles Exited	74	41	33	148
Hourly Exit Rate	74	41	33	148
Input Volume	75	40	35	150
% of Volume	99	102	94	99
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

24: I-580 EB off ramp & Strobridge Ave. Performance by movement

Movement	EBL	NBT	SBL	SBT	All
Denied Del/Veh (s)	0.2	0.0	0.0	0.0	0.1
Total Del/Veh (s)	63.2	8.5	15.3	7.4	31.4
Vehicles Entered	273	115	330	33	751
Vehicles Exited	261	115	329	33	738
Hourly Exit Rate	261	115	329	33	738
Input Volume	265	115	350	35	765
% of Volume	98	100	94	94	96
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Arterial Level of Service: EB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Strobridge Ave.	1	111.1	138.5	0.2	6
Norbridge Ave.	2	14.1	20.4	0.1	9
Lake Chabot Rd.	99	16.2	39.5	0.2	18
Total		141.4	198.4	0.5	9

Arterial Level of Service: WB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Lake Chabot Rd.	99	20.9	58.6	0.3	20
Stanton Ave.	2	38.0	60.8	0.2	12
John Dr	1	28.3	35.2	0.1	5
Total		87.2	154.5	0.6	13

Intersection: 1: Strobridge Ave./John Dr & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	408	814	820	763	215	225	218	240	408	325	307	272
Average Queue (ft)	156	465	519	467	128	134	178	198	302	296	196	104
95th Queue (ft)	389	939	930	868	207	205	235	253	499	373	334	231
Link Distance (ft)		1115	1115	1115	199	199	199	199	387		289	289
Upstream Blk Time (%)		3	4	3	3	3	3	12	18		18	2
Queuing Penalty (veh)		0	0	0	10	9	11	44	154		0	0
Storage Bay Dist (ft)	330									300		
Storage Blk Time (%)		18							1	36		
Queuing Penalty (veh)		24							3	103		

Intersection: 2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	TR	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	227	231	210	221	324	343	375	263	93	721	325
Average Queue (ft)	178	191	151	159	139	188	212	122	21	188	218
95th Queue (ft)	239	245	229	248	286	310	339	342	81	612	364
Link Distance (ft)	199	199	199	199	953	953	953	755		970	
Upstream Blk Time (%)	14	22	1	5				2		2	
Queuing Penalty (veh)	67	103	7	21				0		0	
Storage Bay Dist (ft)									250		300
Storage Blk Time (%)								4	0	0	16
Queuing Penalty (veh)								1	0	1	9

Intersection: 3: Strobridge Ave. & 580 Off-Ramp

Movement	WB	WB	NB	NB	SB
Directions Served	L	R	T	T	T
Maximum Queue (ft)	1243	325	388	377	177
Average Queue (ft)	825	293	224	171	104
95th Queue (ft)	1635	415	443	408	158
Link Distance (ft)	1207		379	379	387
Upstream Blk Time (%)	49		17	2	
Queuing Penalty (veh)	0		31	4	
Storage Bay Dist (ft)		300			
Storage Blk Time (%)	1	77			
Queuing Penalty (veh)	2	22			

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4369	4412	4381	4317	4354	4442	4358
Vehs Exited	4339	4250	4287	4223	4262	4331	4283
Starting Vehs	174	162	171	151	156	178	174
Ending Vehs	204	324	265	245	248	289	249
Denied Entry Before	1	1	1	1	1	1	2
Denied Entry After	2	3	4	0	1	37	1
Travel Distance (mi)	2986	2961	2973	2933	2970	2986	2947
Travel Time (hr)	210.2	234.9	226.1	210.5	219.6	258.5	226.9
Total Delay (hr)	102.0	127.5	118.6	104.4	112.0	149.8	120.2
Total Stops	8391	9050	9259	8627	8673	9282	9095
Fuel Used (gal)	126.2	130.8	129.6	125.2	127.7	137.5	129.5

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4394	4239	4336	4358
Vehs Exited	4357	4225	4256	4281
Starting Vehs	189	181	164	166
Ending Vehs	226	195	244	246
Denied Entry Before	1	1	2	1
Denied Entry After	1	2	1	3
Travel Distance (mi)	2988	2907	2940	2959
Travel Time (hr)	245.6	193.5	243.9	227.0
Total Delay (hr)	137.2	88.1	137.5	119.7
Total Stops	9320	8198	9236	8914
Fuel Used (gal)	134.2	120.0	132.6	129.3

1: Strobridge Ave./John Dr & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.2
Total Del/Veh (s)	46.7	32.1	21.0	61.4	29.5	26.3	38.0	40.0	22.4	49.7	51.2	38.4
Vehicles Entered	118	742	101	204	1279	128	245	93	240	118	94	93
Vehicles Exited	118	750	101	204	1283	129	242	94	238	117	93	93
Hourly Exit Rate	118	750	101	204	1283	129	242	94	238	117	93	93
Input Volume	123	745	99	210	1286	123	242	93	252	113	91	89
% of Volume	96	101	102	97	100	105	100	101	94	104	102	104
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: Strobridge Ave./John Dr & Castro Valley Blvd. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	34.1
Vehicles Entered	3455
Vehicles Exited	3462
Hourly Exit Rate	3462
Input Volume	3466
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.9	0.4	0.0	0.0	0.0	10.5	8.1	12.5	2.2
Total Del/Veh (s)	55.3	10.2	7.2	91.7	100.4	52.0	49.8	11.3	60.5	58.1	70.3	56.2
Vehicles Entered	234	844	28	1184	17	61	107	188	43	32	417	3155
Vehicles Exited	229	847	28	1168	17	59	105	187	42	30	406	3118
Hourly Exit Rate	229	847	28	1168	17	59	105	187	42	30	406	3118
Input Volume	240	843	28	1166	17	57	111	183	46	30	419	3140
% of Volume	95	100	100	100	100	104	95	102	91	100	97	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	1	1
Denied Entry After	0	0	0	0	0	0	0	0	0	0	3	3

3: Strobridge Ave. & 580 Off-Ramp Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.1	4.4	8.5	11.1	8.4
Vehicles Entered	13	261	317	397	988
Vehicles Exited	13	261	317	399	990
Hourly Exit Rate	13	261	317	399	990
Input Volume	13	266	321	400	1000
% of Volume	100	98	99	100	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: 580 Off-Ramp & Norbridge Ave. Performance by movement

Movement	NBT	SBT	NEL	NER	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	7.2	7.3	4.5	2.4	5.4
Vehicles Entered	85	59	269	12	425
Vehicles Exited	86	59	270	12	427
Hourly Exit Rate	86	59	270	12	427
Input Volume	83	59	268	10	420
% of Volume	104	100	101	120	102
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

23: Strobridge Ave. & Gary Dr./I-580 EB on ramp Performance by movement

Movement	EBL	NBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.1
Total Del/Veh (s)	4.2	3.3	0.7	3.4
Vehicles Entered	50	59	14	123
Vehicles Exited	50	59	14	123
Hourly Exit Rate	50	59	14	123
Input Volume	50	57	13	120
% of Volume	100	104	108	102
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

Arterial Level of Service: EB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Strobridge Ave.	1	32.1	74.0	0.4	18
Norbridge Ave.	2	6.6	12.9	0.1	14
Lake Chabot Rd.	99	15.8	38.3	0.2	19
Total		54.5	125.2	0.6	18

Arterial Level of Service: WB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Lake Chabot Rd.	99	30.8	68.5	0.3	17
Stanton Ave.	2	89.5	113.0	0.2	6
John Dr	1	26.4	33.4	0.1	6
Total		146.7	214.9	0.6	10

Intersection: 1: Strobridge Ave./John Dr & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	176	224	296	276	227	232	232	232	347	297	258	138
Average Queue (ft)	77	77	171	152	143	143	178	194	189	117	142	66
95th Queue (ft)	146	160	261	244	225	222	241	252	300	221	234	122
Link Distance (ft)		1844	1844	1844	197	197	197	197	385		290	290
Upstream Blk Time (%)					7	4	4	10	0		0	
Queuing Penalty (veh)					30	14	14	40	1		0	
Storage Bay Dist (ft)	330									300		
Storage Blk Time (%)									1	0		
Queuing Penalty (veh)									2	0		

Intersection: 2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	TR	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	162	171	183	189	665	686	694	264	218	655	325
Average Queue (ft)	79	90	105	91	360	400	412	120	61	217	228
95th Queue (ft)	137	148	171	160	702	724	725	215	131	675	374
Link Distance (ft)	197	197	197	197	950	950	950	297		904	
Upstream Blk Time (%)	0	0	0	0	0	0	0	1		5	
Queuing Penalty (veh)	1	1	0	1	1	1	1	2		0	
Storage Bay Dist (ft)									250		300	
Storage Blk Time (%)								1	0	0	22	
Queuing Penalty (veh)								2	0	1	16	

Intersection: 3: Strobridge Ave. & 580 Off-Ramp

Movement	WB	WB	NB	NB	SB
Directions Served	L	R	T	T	T
Maximum Queue (ft)	29	95	89	72	161
Average Queue (ft)	9	45	49	36	92
95th Queue (ft)	30	77	75	62	140
Link Distance (ft)	35	35	396	396	385
Upstream Blk Time (%)	1	10			
Queuing Penalty (veh)	1	14			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4608	4674	4676	4542	4513	4701	4793
Vehs Exited	4582	4586	4635	4500	4485	4582	4716
Starting Vehs	175	205	164	171	181	180	180
Ending Vehs	201	293	205	213	209	299	257
Denied Entry Before	1	1	0	2	0	1	1
Denied Entry After	1	0	1	0	3	10	1
Travel Distance (mi)	3145	3181	3212	3114	3086	3168	3266
Travel Time (hr)	217.6	242.3	215.9	227.1	215.2	258.5	265.5
Total Delay (hr)	104.3	127.7	100.1	115.1	104.0	144.5	147.9
Total Stops	8797	9317	8772	8700	8339	9582	9932
Fuel Used (gal)	132.2	138.7	132.9	133.2	130.0	142.9	146.7

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4644	4627	4615	4639
Vehs Exited	4555	4605	4561	4583
Starting Vehs	168	195	203	177
Ending Vehs	257	217	257	238
Denied Entry Before	2	0	2	0
Denied Entry After	1	0	1	1
Travel Distance (mi)	3137	3155	3154	3162
Travel Time (hr)	215.0	210.2	214.5	228.2
Total Delay (hr)	101.7	96.3	100.9	114.2
Total Stops	8846	8821	8728	8982
Fuel Used (gal)	131.1	130.5	131.2	134.9

1: Strobridge Ave./John Dr & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	2.2	2.6	2.6
Total Del/Veh (s)	47.2	55.2	50.2	60.0	27.0	22.9	34.6	36.6	30.6	67.0	66.3	43.2
Vehicles Entered	128	1151	101	182	1105	124	171	95	283	152	77	119
Vehicles Exited	131	1132	100	182	1097	123	172	96	288	150	76	118
Hourly Exit Rate	131	1132	100	182	1097	123	172	96	288	150	76	118
Input Volume	135	1142	99	181	1118	121	167	100	279	153	77	120
% of Volume	97	99	101	101	98	102	103	96	103	98	99	98
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: Strobridge Ave./John Dr & Castro Valley Blvd. Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	42.6
Vehicles Entered	3688
Vehicles Exited	3665
Hourly Exit Rate	3665
Input Volume	3692
% of Volume	99
Denied Entry Before	0
Denied Entry After	0

2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.7	5.1	0.7
Total Del/Veh (s)	65.1	14.3	12.1	40.3	41.2	59.0	59.0	18.8	65.6	79.2	76.1	39.5
Vehicles Entered	384	1167	19	937	17	59	172	180	24	31	447	3437
Vehicles Exited	388	1171	19	931	16	60	174	179	23	30	439	3430
Hourly Exit Rate	388	1171	19	931	16	60	174	179	23	30	439	3430
Input Volume	390	1164	20	937	16	58	181	180	24	30	443	3443
% of Volume	99	101	95	99	100	103	96	99	96	100	99	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	1	1

3: Strobridge Ave. & 580 Off-Ramp Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.5	4.6	9.2	10.3	8.7
Vehicles Entered	29	172	376	357	934
Vehicles Exited	29	172	377	355	933
Hourly Exit Rate	29	172	377	355	933
Input Volume	28	166	380	357	931
% of Volume	104	104	99	99	100
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: 580 Off-Ramp & Norbridge Ave/Norbridge Ave. Performance by movement

Movement	NBT	SBT	NEL	NER	All
Denied Del/Veh (s)	0.2	0.0	0.0	0.0	0.0
Total Del/Veh (s)	10.0	9.2	7.4	2.5	8.2
Vehicles Entered	131	51	280	12	474
Vehicles Exited	130	50	279	12	471
Hourly Exit Rate	130	50	279	12	471
Input Volume	133	51	285	10	479
% of Volume	98	98	98	120	98
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

23: Strobridge Ave. & Gary Dr./I-580 EB on ramp Performance by movement

Movement	EBL	NBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.1
Total Del/Veh (s)	5.0	4.0	1.1	3.8
Vehicles Entered	74	40	37	151
Vehicles Exited	74	40	37	151
Hourly Exit Rate	74	40	37	151
Input Volume	75	40	35	150
% of Volume	99	100	106	101
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

Arterial Level of Service: EB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Strobridge Ave.	1	55.2	97.2	0.4	13
Norbridge Ave.	2	11.2	17.5	0.1	11
Lake Chabot Rd.	99	16.7	39.9	0.2	18
Total		83.1	154.6	0.6	14

Arterial Level of Service: WB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Lake Chabot Rd.	99	21.2	58.7	0.3	20
Stanton Ave.	2	39.3	62.1	0.2	12
John Dr	1	23.0	29.9	0.1	6
Total		83.4	150.7	0.6	14

Intersection: 1: Strobridge Ave./John Dr & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	306	541	552	518	220	213	211	229	300	271	289	208
Average Queue (ft)	96	240	321	304	128	113	156	174	150	143	175	92
95th Queue (ft)	217	487	515	485	215	190	229	242	256	249	292	185
Link Distance (ft)		1844	1844	1844	197	197	197	197	385		290	290
Upstream Blk Time (%)					5	2	2	5	1		5	0
Queuing Penalty (veh)					16	6	5	17	3		0	0
Storage Bay Dist (ft)	330									300		
Storage Blk Time (%)		4							0	1		
Queuing Penalty (veh)		6							0	3		

Intersection: 2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	TR	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	222	222	203	210	321	354	385	338	242	639	324
Average Queue (ft)	142	150	145	151	141	191	217	176	89	259	227
95th Queue (ft)	216	224	219	229	289	319	342	309	210	798	375
Link Distance (ft)	197	197	197	197	950	950	950	297		904	
Upstream Blk Time (%)	6	8	1	2				5		5	
Queuing Penalty (veh)	23	30	4	9				19		0	
Storage Bay Dist (ft)									250		300
Storage Blk Time (%)								7	0	0	27
Queuing Penalty (veh)								12	0	1	15

Intersection: 3: Strobridge Ave. & 580 Off-Ramp

Movement	WB	WB	NB	NB	SB
Directions Served	L	R	T	T	T
Maximum Queue (ft)	40	79	98	76	157
Average Queue (ft)	17	34	55	39	82
95th Queue (ft)	40	64	89	67	131
Link Distance (ft)	35	35	396	396	385
Upstream Blk Time (%)	1	6			
Queuing Penalty (veh)	1	6			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: 580 Off-Ramp & Norbridge Ave/Norbridge Ave.

Movement	NB	SB	NE	NE
Directions Served	T	T	L	R
Maximum Queue (ft)	99	72	116	46
Average Queue (ft)	43	28	41	9
95th Queue (ft)	82	59	95	36
Link Distance (ft)	489	297	133	133
Upstream Blk Time (%)			2	0
Queuing Penalty (veh)			3	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 23: Strobridge Ave. & Gary Dr./I-580 EB on ramp

Movement	EB	NB	SB
Directions Served	LT	TR	R
Maximum Queue (ft)	51	42	31
Average Queue (ft)	20	8	6
95th Queue (ft)	41	31	25
Link Distance (ft)	350	506	8
Upstream Blk Time (%)			1
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 24: I-580 EB off ramp & Strobridge Ave.

Movement	EB	NB	SB	SB
Directions Served	L	T	L	T
Maximum Queue (ft)	141	44	162	42
Average Queue (ft)	66	24	81	10
95th Queue (ft)	109	41	137	34
Link Distance (ft)	1268	8		396
Upstream Blk Time (%)		11		
Queuing Penalty (veh)		12		
Storage Bay Dist (ft)			300	
Storage Blk Time (%)				
Queuing Penalty (veh)				

September 23, 2021

Mr. Rick Yeung, PE
Alameda County Public Works Agency
399 Elmhurst Street
Hayward, CA 94544

Supplemental Analysis of the Strobridge Avenue-Norbridge Avenue Area

Dear Mr. Yeung;

As requested, W-Trans has prepared an evaluation of traffic operations in the area consisting of Castro Valley Boulevard, Strobridge Avenue and Norbridge Avenue in the Castro Valley area of the County of Alameda. The purpose of this letter is to provide an analysis of the potential effects on operation of modifying the preferred alternative for improvements and an initial evaluation of required changes to existing traffic signal hardware to implement a proposed reconfiguration of traffic flow patterns within the study area. This report supplements the previously completed "Evaluation of Traffic Operations at Strobridge Avenue-Norbridge Avenue Area" by W-Trans dated May 29, 2020.

Background

Project stakeholders have identified Alternative 2, with the addition of a westbound left-turn lane at Stanton Avenue/Castro Valley Boulevard, as the preferred option for continued evaluation. This study expands upon the previous work by addressing the change in traffic operations with the additional westbound left-turn lane. A detailed description of Alternative 2 is provided in the May 29, 2020 document and a conceptual drawing illustrating the reconfigured roadways is enclosed. The study area includes the following four intersections.

1. Strobridge Avenue-John Drive/Castro Valley Boulevard
2. Stanton Avenue/Castro Valley Boulevard
3. Strobridge Avenue/I-580 West Off-Ramp
4. I-580 Off-Ramp/Norbridge Avenue

Comparison of Intersection Analysis Results

With the addition of the westbound left-turn lane to the other improvements included in Alternative 2, operation at the intersection of Stanton Avenue/Castro Valley Boulevard would be expected to improve from LOS E to D during the morning peak hour and from LOS D to C during the p.m. peak hour. Operation at the intersection of Strobridge Avenue-John Drive/Castro Valley Boulevard would degrade from LOS C to D during the a.m. peak hour. The remaining two unsignalized study intersections would experience no further change in LOS. It is noted that the County is considering whether to restrict right turn movements from the I-580 Off-ramp onto Norbridge Avenue at study intersection #4 since this maneuver may not be feasible considering the alignment of the adjoining streets. It is anticipated that restricting right turn movements would nominally change these analysis results since a relatively small number of these right turns was assumed to occur during the a.m. and p.m. peak hours. A summary of the results is contained in Table 1, and copies of the SimTraffic output sheets are enclosed.

Table 1 –Comparison of Alternative 2 Intersection Levels of Service

Intersection Control	Control under Alt 2	Alternative 2				Alt. 2 w/ WBLTL at Stanton Ave/Castro Valley Blvd			
		AM Pk Hour		PM Pk Hour		AM Pk Hour		PM Pk Hour	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Strobridge Ave-John Dr/Castro Valley Blvd	Signal	34.1	C	42.6	D	37.0	D	39.8	D
2. Stanton Ave/Castro Valley Blvd	Signal	**56.2**	**E**	39.5	D	38.0	D	33.3	C
3. Strobridge Ave/ I-580 W Off-Ramp	AWSC	8.4	A	8.7	A	9.9	A	8.1	A
4. I-580 W Off-Ramp/Norbridge Ave	AWSC	5.4	A	8.2	A	6.2	A	6.0	A

Notes: Delay is in average seconds per vehicle; Bold = LOS E or F; AWSC = All-Way Stop-Control; **Bold** text indicates unacceptable operation

Comparison of Corridor Travel Time Results

Alternative 2 with the additional westbound left-turn lane is anticipated to increase the average travel times in the eastbound direction on Castro Valley Boulevard during both peak hours. In the westbound direction, however, the average travel time would decrease during the a.m. peak hour and increase during the p.m. peak hour. A comparison of Alternative 2 Conditions with and without the westbound left-turn lane at the Stanton Avenue/Castro Valley Boulevard intersection is provided in Table 2, and copies of the SimTraffic output sheets are enclosed.

Table 2 – Existing and Alternative 2 Peak Hour Corridor Performance Measures

Castro Valley Blvd – Direction: Segment	Alternative 2				Alternative 2 w/ WBLTL at Stanton Ave/Castro Valley Blvd			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Avg Travel Time	Avg Speed	Avg Travel Time	Avg Speed	Avg Travel Time	Avg Speed	Avg Travel Time	Avg Speed
Eastbound: Strobridge Ave to Lake Chabot Rd	125.2	18	154.6	14	140.7	16	157.0	14
Westbound: Lake Chabot Rd to Strobridge Ave	214.9	10	150.7	14	161.3	13	152.9	14

Notes: Travel Time is measured in seconds; speed is measured in mph

Stanton Avenue/Castro Valley Boulevard Westbound Left-Turn Lane Queue Analysis

For the Alternative 2 scenarios, the projected average (50th percentile) and 95th percentile queue lengths were evaluated for the westbound left-turn lane at the intersection of Stanton Avenue/Castro Valley Boulevard. These queue lengths were estimated using a Poisson probability distribution method which can be summarized by these three steps:

1. The Poisson probability distribution was used to estimate the average (50th) and 95th percentile number of queued vehicles per signal cycle length for the left-turn movements;
2. The number of left-turning vehicles in the queue was determined assuming 25 feet per vehicle; and
3. The resulting queue length was compared to the anticipated available storage capacity of 100 feet.

A sensitivity analysis was conducted to determine the maximum number of peak-hour left-turn movements that can be accommodated without exceeding the available storage capacity. According to the Poisson Distribution methodology, up to 67 peak-hour turning movements can be accommodated within the 100-foot-long left-turn lane. It is noted that even if there are more than 67 peak hour vehicles, the resulting queue spillover from the left-turn lane would extend into the upstream two-way-left-turn lane and would not obstruct the westbound travel lanes. Copies of the queue worksheets are enclosed.

Signal Warrant Analysis

A traffic signal warrant analysis was conducted to determine the potential need for a traffic signal at each unsignalized study intersection. Chapter 4C of the *California Manual on Uniform Traffic Control Devices* (CA-MUTCD) provides guidance on when a traffic signal should be considered. For the purposes of this study, only Warrant 3 (Peak Hour) was considered.

Warrant 3 is satisfied when an engineering study finds that finds that the criteria in either of the following two categories are met:

A. If all three of the following conditions exist for the same one hour (any four consecutive 15-minute periods) of an average day:

    1. The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: four vehicle-hours for a one-lane approach; or five vehicle-hours for a two-lane approach, and
    2. The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes, and
    3. The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

B. The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 for the existing combination of approach lanes.

The peak hour warrant would not be satisfied at the all-way stop-controlled intersections of Strobridge Avenue/ I-580 West Off-Ramp or I-580 Off-ramp/Norbridge Avenue under the scenarios analyzed in this study. It should be noted that the satisfaction of a peak hour traffic signal warrant or warrants does not require the installation of a traffic control signal, as other factors (warrants) should also be considered. Warrant 3 worksheets are enclosed.

Traffic Signal Modification Needs

The two existing traffic signals in the project area are operated and maintained by the Alameda County Public Works Agency and would need to be modified to implement the Alternative 2 project. Currently the traffic signal at Strobridge Avenue-John Drive/Castro Valley Boulevard includes protected left-turn phasing on Castro Valley Boulevard and a single phase for the southbound John Drive approach. The proposed updates would require modifying the traffic signal to add a phase for the northbound approach.

The traffic signal at Stanton Avenue/Castro Valley Boulevard has phases that serve westbound through and right-turn movements simultaneous with the eastbound through movement; the eastbound left turn; northbound left-turn, through, and right-turn movements; and southbound left-turn, through, and right-turn movements separate from the northbound movements. The proposed updates to the traffic signal would require modifying the traffic signal heads to add the westbound left-turn and southbound through movements, including a new phase for the protected left turn.

Concept drawings of needed traffic signal modifications at both intersections are enclosed. The aerial photograph shows existing signal equipment that would remain in place as well as any new or modified equipment.

It is noted that the traffic signal controller cabinets are both older, though well maintained. The cabinet at the Stanton Avenue/Castro Valley Boulevard intersection appears to be showing more signs of age on the electrical terminals and may be ready for replacement. The cabinet at the Strobridge Avenue-John Drive/Castro Valley Boulevard intersection appears in better condition, but the proposed modifications there are more extensive. As such, it is recommended that controllers and cabinets at both locations be replaced.

The estimated costs at the two signalized intersections to implement Alternative 2 with a westbound left-turn lane at the intersection of Stanton Avenue/Castro Valley Boulevard are as follows:

- Strobridge Avenue-John Drive/Castro Valley Boulevard
    - Construction cost = $180,000
    - Administration (10%) = $18,000
    - Design and Inspection (20%) = $36,000
    - Subtotal = $234,000
- Stanton Avenue/Castro Valley Boulevard
    - Construction cost = $185,000
    - Administration (10%) = $18,500
    - Design and Inspection (20%) = $37,000
    - Subtotal = $240,500
- Total cost = $474,500

The two unsignalized intersections did not meet signal warrant criteria and therefore no cost is included for improvements at those intersections.

Conclusions

- All four study intersections would operate at acceptable Levels of Service during the a.m. and p.m. peak hours under the Alternative 2 condition with a westbound left-turn lane at the intersection of Stanton Avenue/Castro Valley Boulevard added to the option.

- Travel times and average speeds along Castro Valley Boulevard are expected to generally worsen with the introduction of a westbound left-turn lane and protected left-turn phasing at the intersection of Stanton Avenue/Castro Valley Boulevard.

- Up to 67 peak hour turning movements can be accommodated within the assumed 100-foot-long left-turn lane at the intersection of Stanton Avenue/Castro Valley Boulevard.

- Neither of the unsignalized intersections of Strobridge Avenue/I-580 West Off-Ramp or I-580 Off-ramp/Norbridge Avenue would satisfy the peak hour traffic signal volume warrant.

- The initial cost for traffic signal modifications at the two signalized intersections is estimated to be $474,500.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,

Kenneth Jeong, PE
Traffic Engineer

Steve Fitzsimons, PE, TE
Principal

Mark Spencer, PE
Senior Principal

REGISTERED PROFESSIONAL ENGINEER
MARK E. SPENCER
TR001737
TRAFFIC
STATE OF CALIFORNIA

MES/smf/kbj/ALX901-27.L1

Enclosures: Alternative 2 Concept Drawing
SimTraffic Simulation Output Summaries
Poisson Queue Worksheet
Warrant 3 Worksheet
Figure 1 Concept Sketch of Stanton Avenue Intersection
Figure 2 Concept Sketch of John Drive Intersection

	REVIEWED BY:	DATE:		REVIEWED BY:	DATE:
CONSTRUCTION			SURVEY		
MAINTENANCE			TRAFFIC		
REAL ESTATE			ENVIRONMENTAL		

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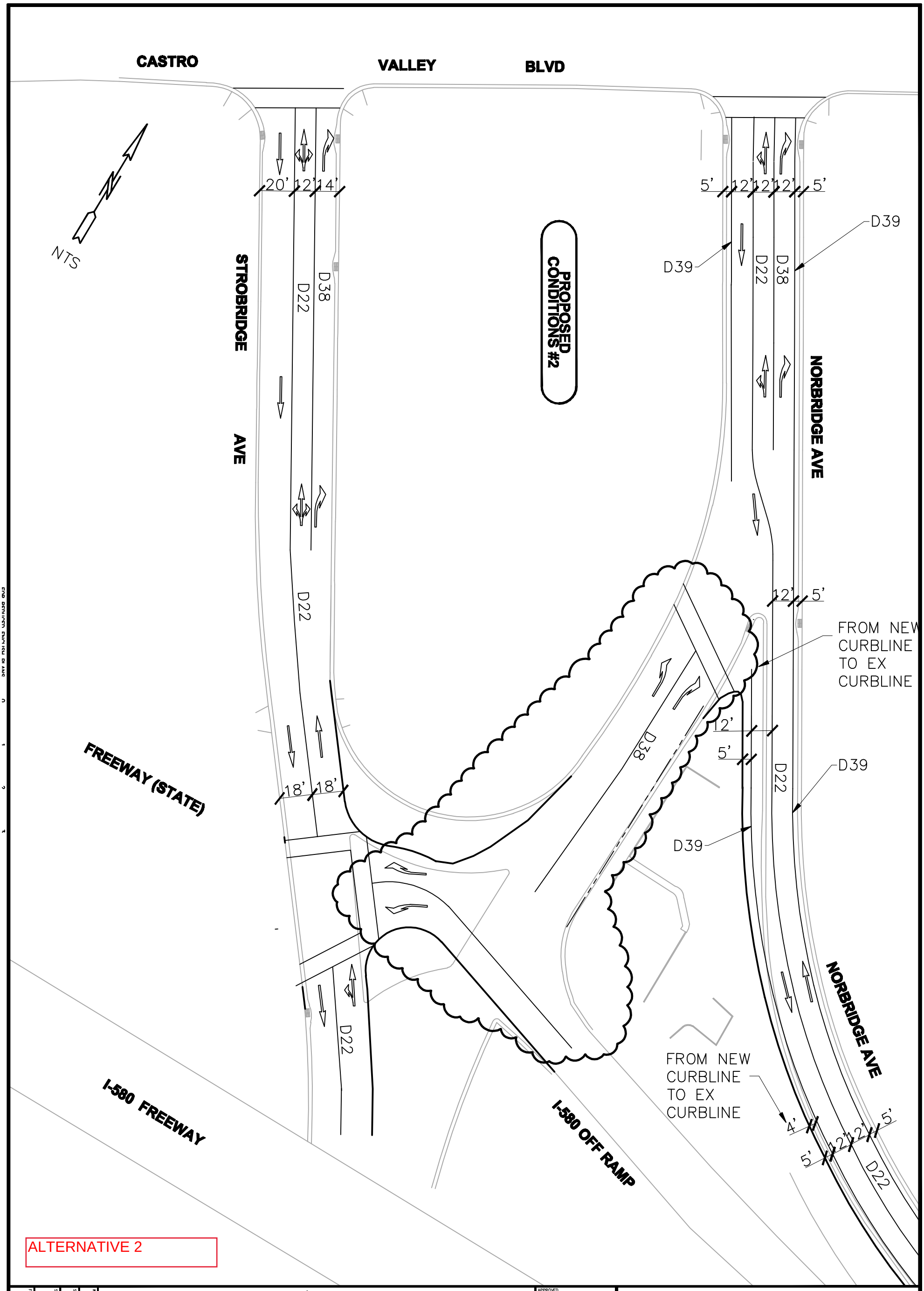


ALTERNATIVE 2

FOR BIDDER ENGINEERING PLANS 0 1 2 3

FILE NO. U-XXX	SHEET NO. # OF ##	SPECIFICATION NO. XXXX	WORK ORDER NO. RXXXXX	

COUNTY OF ALAMEDA ☆ PUBLIC WORKS AGENCY

TRAFFIC CIRCULATION
NORBRIDGE AVE / STROBRIDGE AVE
AT CASTRO VALLEY BLVD

DRAWN XXX	APPROVAL RECOMMENDED X	APPROVED	
DESIGNED XXX	APPROVAL RECOMMENDED X		
CHECKED XXX	DATE ADV DATE	SCALE AS SHOWN	

REVISIONS

NO.	DESCRIPTION	BY	DATE	APPV'D
5				
4				
3				
2				
1				

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:57	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4349	4469	4432	4326	4391	4391	4483
Vehs Exited	4335	4421	4418	4278	4354	4373	4457
Starting Vehs	169	169	180	156	186	172	181
Ending Vehs	183	217	194	204	223	190	207
Travel Distance (mi)	2981	3041	3036	2943	2996	2968	3051
Travel Time (hr)	209.5	232.5	208.4	187.1	209.3	193.1	202.1
Total Delay (hr)	101.2	122.4	98.5	80.6	100.6	85.5	91.8
Total Stops	8572	8713	8641	7987	8616	8132	8500
Fuel Used (gal)	126.1	132.5	127.1	119.6	125.3	121.9	126.1

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4423	4465	4395	4413
Vehs Exited	4314	4404	4352	4372
Starting Vehs	184	157	169	172
Ending Vehs	293	218	212	205
Travel Distance (mi)	2981	3035	2979	3001
Travel Time (hr)	293.4	211.3	201.5	214.8
Total Delay (hr)	185.6	101.1	93.7	106.1
Total Stops	9740	8653	8400	8596
Fuel Used (gal)	144.8	127.8	124.0	127.5

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4349	4469	4432	4326	4391	4391	4483
Vehs Exited	4335	4421	4418	4278	4354	4373	4457
Starting Vehs	169	169	180	156	186	172	181
Ending Vehs	183	217	194	204	223	190	207
Travel Distance (mi)	2981	3041	3036	2943	2996	2968	3051
Travel Time (hr)	209.5	232.5	208.4	187.1	209.3	193.1	202.1
Total Delay (hr)	101.2	122.4	98.5	80.6	100.6	85.5	91.8
Total Stops	8572	8713	8641	7987	8616	8132	8500
Fuel Used (gal)	126.1	132.5	127.1	119.6	125.3	121.9	126.1

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4423	4465	4395	4413
Vehs Exited	4314	4404	4352	4372
Starting Vehs	184	157	169	172
Ending Vehs	293	218	212	205
Travel Distance (mi)	2981	3035	2979	3001
Travel Time (hr)	293.4	211.3	201.5	214.8
Total Delay (hr)	185.6	101.1	93.7	106.1
Total Stops	9740	8653	8400	8596
Fuel Used (gal)	144.8	127.8	124.0	127.5

1: Strobridge Ave./John Dr & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6	0.3
Total Del/Veh (s)	49.4	41.5	28.0	62.1	28.9	29.3	37.7	39.6	28.5	53.4	54.9	39.0
Vehicles Entered	124	740	92	211	1301	118	233	94	250	114	91	93
Vehicles Exited	123	745	94	208	1304	118	231	93	248	113	91	92
Hourly Exit Rate	123	745	94	208	1304	118	231	93	248	113	91	92
Input Volume	123	745	99	210	1286	123	242	93	252	113	91	89
% of Volume	100	100	95	99	101	96	95	100	98	100	100	103

1: Strobridge Ave./John Dr & Castro Valley Blvd. Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	37.0
Vehicles Entered	3461
Vehicles Exited	3460
Hourly Exit Rate	3460
Input Volume	3466
% of Volume	100

2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	3.8	2.9	5.7
Total Del/Veh (s)	54.0	17.2	13.0	58.0	40.7	39.7	41.9	42.9	15.0	54.2	51.6	67.3
Vehicles Entered	241	839	28	50	1179	17	62	117	190	47	30	418
Vehicles Exited	238	843	28	50	1187	17	62	117	189	46	29	407
Hourly Exit Rate	238	843	28	50	1187	17	62	117	189	46	29	407
Input Volume	240	843	28	50	1167	17	57	111	183	46	30	419
% of Volume	99	100	100	100	102	100	109	105	103	100	97	97

2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd. Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	38.0
Vehicles Entered	3218
Vehicles Exited	3213
Hourly Exit Rate	3213
Input Volume	3191
% of Volume	101

3: Strobridge Ave. & 580 Off-Ramp Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.8	6.2	11.5	11.1	9.9
Vehicles Entered	11	259	318	393	981
Vehicles Exited	11	258	319	392	980
Hourly Exit Rate	11	258	319	392	980
Input Volume	13	266	321	400	1000
% of Volume	85	97	99	98	98

4: 580 Off-Ramp & Norbridge Ave. Performance by movement

Movement	NBT	SBT	NEL	NER	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	7.5	7.9	5.3	2.6	6.2
Vehicles Entered	89	107	280	10	486
Vehicles Exited	89	107	281	10	487
Hourly Exit Rate	89	107	281	10	487
Input Volume	83	108	268	10	469
% of Volume	107	99	105	100	104

23: Strobridge Ave. & Gary Dr./I-580 EB on ramp Performance by movement

Movement	EBL	NBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.1
Total Del/Veh (s)	4.4	2.9	0.6	3.3
Vehicles Entered	49	52	14	115
Vehicles Exited	49	52	14	115
Hourly Exit Rate	49	52	14	115
Input Volume	50	57	13	120
% of Volume	98	91	108	96

24: I-580 EB off ramp & Strobridge Ave. Performance by movement

Movement	EBL	NBT	SBL	SBT	All
Denied Del/Veh (s)	0.2	0.0	0.0	0.0	0.1
Total Del/Veh (s)	9.8	3.7	12.4	5.5	10.3
Vehicles Entered	218	103	389	14	724
Vehicles Exited	217	103	386	14	720
Hourly Exit Rate	217	103	386	14	720
Input Volume	214	108	400	13	735
% of Volume	101	95	96	108	98

99: Lake Chabot Rd. & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.6	0.1	0.1	1.5	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.3
Total Del/Veh (s)	63.8	16.1	16.2	74.9	29.0	25.6	65.3	51.5	23.4	59.4	50.6	14.4
Vehicles Entered	484	620	15	18	692	190	29	7	22	159	3	499
Vehicles Exited	478	618	15	18	691	189	29	7	22	160	3	500
Hourly Exit Rate	478	618	15	18	691	189	29	7	22	160	3	500
Input Volume	487	613	14	19	700	182	30	7	21	164	3	480
% of Volume	98	101	107	95	99	104	97	100	105	98	100	104

99: Lake Chabot Rd. & Castro Valley Blvd. Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	31.8
Vehicles Entered	2738
Vehicles Exited	2730
Hourly Exit Rate	2730
Input Volume	2720
% of Volume	100

103: I-580 EB on ramp Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.6	0.6
Vehicles Entered	391	391
Vehicles Exited	390	390
Hourly Exit Rate	390	390
Input Volume	404	404
% of Volume	97	97

104: 580 Off-Ramp & I-580 WB off ramp Performance by movement

Movement	WBL	WBR	All
Denied Del/Veh (s)	0.9	2.8	1.8
Total Del/Veh (s)	7.5	3.6	5.5
Vehicles Entered	270	289	559
Vehicles Exited	270	290	560
Hourly Exit Rate	270	290	560
Input Volume	279	278	557
% of Volume	97	104	101

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	82.4
Vehicles Entered	4413
Vehicles Exited	4372
Hourly Exit Rate	4372
Input Volume	16977
% of Volume	26

Arterial Level of Service: EB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Strobridge Ave.	1	41.5	83.6	0.4	16
Norbridge Ave.	2	10.6	16.8	0.1	11
Lake Chabot Rd.	99	17.9	40.3	0.2	18
Total		69.9	140.7	0.6	16

Arterial Level of Service: WB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Lake Chabot Rd.	99	29.0	66.7	0.3	17
Stanton Ave.	2	39.9	62.4	0.2	12
John Dr	1	25.2	32.2	0.1	6
Total		94.2	161.3	0.6	13

Intersection: 1: Strobridge Ave./John Dr & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	189	278	342	316	212	207	220	232	329	301	249	159
Average Queue (ft)	89	109	194	174	142	130	179	199	188	126	140	66
95th Queue (ft)	203	320	379	352	217	199	232	246	307	244	239	134
Link Distance (ft)		1844	1844	1844	197	197	197	197	385		290	290
Upstream Blk Time (%)					6	1	2	11	1		1	0
Queuing Penalty (veh)					25	2	8	46	8		0	0
Storage Bay Dist (ft)	330									300		
Storage Blk Time (%)	0	2							1	2		
Queuing Penalty (veh)	0	3							1	7		

Intersection: 2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	TR	L	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	143	160	207	204	144	348	362	360	252	186	586	316
Average Queue (ft)	78	90	126	118	56	189	213	219	117	66	200	222
95th Queue (ft)	127	142	202	196	140	314	339	342	208	146	635	370
Link Distance (ft)	197	197	197	197		950	950	950	297		904	
Upstream Blk Time (%)	0	0	3	2					1		3	
Queuing Penalty (veh)	0	0	7	6					3		0	
Storage Bay Dist (ft)					120					250		300
Storage Blk Time (%)					0	27			1	1	0	22
Queuing Penalty (veh)					0	14			1	2	1	17

Intersection: 3: Strobridge Ave. & 580 Off-Ramp

Movement	WB	WB	NB	NB	SB
Directions Served	L	R	T	T	T
Maximum Queue (ft)	29	102	124	88	160
Average Queue (ft)	8	49	54	40	92
95th Queue (ft)	28	88	107	79	138
Link Distance (ft)	35	35	396	396	385
Upstream Blk Time (%)	1	14			
Queuing Penalty (veh)	1	19			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: 580 Off-Ramp & Norbridge Ave.

Movement	NB	SB	NE	NE
Directions Served	T	T	L	R
Maximum Queue (ft)	67	75	95	28
Average Queue (ft)	35	42	37	7
95th Queue (ft)	56	68	74	26
Link Distance (ft)	489	297	133	133
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			1	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 23: Strobridge Ave. & Gary Dr./I-580 EB on ramp

Movement	EB	NB	SB
Directions Served	LT	TR	R
Maximum Queue (ft)	46	39	22
Average Queue (ft)	16	8	2
95th Queue (ft)	37	31	12
Link Distance (ft)	350	448	8
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 24: I-580 EB off ramp & Strobridge Ave.

Movement	EB	NB	SB	SB
Directions Served	L	T	L	T
Maximum Queue (ft)	138	40	174	28
Average Queue (ft)	58	23	89	3
95th Queue (ft)	102	41	145	16
Link Distance (ft)	1271	8		396
Upstream Blk Time (%)		8		
Queuing Penalty (veh)		8		
Storage Bay Dist (ft)			300	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 99: Lake Chabot Rd. & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	L	T	TR	L	T	TR	L	LTR	L	LT	R
Maximum Queue (ft)	295	333	593	428	175	418	426	68	88	204	182	311
Average Queue (ft)	173	203	188	147	30	191	202	26	23	93	49	131
95th Queue (ft)	285	331	552	383	103	371	382	59	68	193	157	251
Link Distance (ft)			950	950		1656	1656	1008	1008	1099	1099	1099
Upstream Blk Time (%)			2	1								
Queuing Penalty (veh)			11	3								
Storage Bay Dist (ft)	260	260			100							
Storage Blk Time (%)	4	11				30						
Queuing Penalty (veh)	10	31				6						

Intersection: 103: I-580 EB on ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 104: 580 Off-Ramp & I-580 WB off ramp

Movement	WB	WB
Directions Served	L	R
Maximum Queue (ft)	109	32
Average Queue (ft)	20	8
95th Queue (ft)	229	89
Link Distance (ft)	1045	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		300
Storage Blk Time (%)	2	0
Queuing Penalty (veh)	5	0

Network Summary

Network wide Queuing Penalty: 244

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:57	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4756	4768	4761	4610	4660	4714	4581
Vehs Exited	4664	4760	4706	4546	4621	4669	4579
Starting Vehs	190	196	179	177	159	179	185
Ending Vehs	282	204	234	241	198	224	187
Denied Entry Before	0	0	0	2	1	0	1
Denied Entry After	2	1	2	3	1	1	0
Travel Distance (mi)	3261	3247	3227	3151	3174	3233	3124
Travel Time (hr)	230.4	213.9	222.9	212.7	215.3	225.0	213.9
Total Delay (hr)	113.0	97.0	106.6	99.0	100.9	108.5	101.4
Total Stops	9445	8941	9407	8861	8869	9342	8704
Fuel Used (gal)	137.8	133.5	135.7	131.1	131.7	136.1	130.5

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4761	4641	4759	4698
Vehs Exited	4727	4586	4740	4661
Starting Vehs	197	180	188	179
Ending Vehs	231	235	207	220
Denied Entry Before	1	1	2	0
Denied Entry After	0	1	2	0
Travel Distance (mi)	3246	3144	3272	3208
Travel Time (hr)	237.3	215.5	236.9	222.4
Total Delay (hr)	120.3	102.3	119.0	106.8
Total Stops	9672	8932	9754	9195
Fuel Used (gal)	139.5	131.6	139.6	134.7

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4756	4768	4761	4610	4660	4714	4581
Vehs Exited	4664	4760	4706	4546	4621	4669	4579
Starting Vehs	190	196	179	177	159	179	185
Ending Vehs	282	204	234	241	198	224	187
Denied Entry Before	0	0	0	2	1	0	1
Denied Entry After	2	1	2	3	1	1	0
Travel Distance (mi)	3261	3247	3227	3151	3174	3233	3124
Travel Time (hr)	230.4	213.9	222.9	212.7	215.3	225.0	213.9
Total Delay (hr)	113.0	97.0	106.6	99.0	100.9	108.5	101.4
Total Stops	9445	8941	9407	8861	8869	9342	8704
Fuel Used (gal)	137.8	133.5	135.7	131.1	131.7	136.1	130.5

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4761	4641	4759	4698
Vehs Exited	4727	4586	4740	4661
Starting Vehs	197	180	188	179
Ending Vehs	231	235	207	220
Denied Entry Before	1	1	2	0
Denied Entry After	0	1	2	0
Travel Distance (mi)	3246	3144	3272	3208
Travel Time (hr)	237.3	215.5	236.9	222.4
Total Delay (hr)	120.3	102.3	119.0	106.8
Total Stops	9672	8932	9754	9195
Fuel Used (gal)	139.5	131.6	139.6	134.7

1: Strobridge Ave./John Dr & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.9	0.6
Total Del/Veh (s)	47.4	50.1	44.1	59.6	25.2	19.8	37.2	36.2	30.9	61.0	62.1	42.5
Vehicles Entered	127	1143	94	180	1135	123	165	100	280	156	75	120
Vehicles Exited	126	1146	93	178	1140	123	164	100	277	153	74	120
Hourly Exit Rate	126	1146	93	178	1140	123	164	100	277	153	74	120
Input Volume	135	1142	99	181	1118	121	167	100	279	153	77	120
% of Volume	93	100	94	98	102	102	98	100	99	100	96	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

1: Strobridge Ave./John Dr & Castro Valley Blvd. Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	39.8
Vehicles Entered	3698
Vehicles Exited	3694
Hourly Exit Rate	3694
Input Volume	3692
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	1.2	1.1	3.5
Total Del/Veh (s)	54.9	19.2	18.1	52.9	42.1	45.5	41.9	41.4	16.4	37.1	39.0	31.9
Vehicles Entered	391	1168	18	48	944	16	57	181	178	21	34	448
Vehicles Exited	385	1169	18	47	956	16	56	178	176	21	33	443
Hourly Exit Rate	385	1169	18	47	956	16	56	178	176	21	33	443
Input Volume	390	1164	20	50	939	16	58	181	180	24	30	443
% of Volume	99	100	90	94	102	100	97	98	98	88	110	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd. Performance by movement

Movement	All
Denied Del/Veh (s)	0.5
Total Del/Veh (s)	33.3
Vehicles Entered	3504
Vehicles Exited	3498
Hourly Exit Rate	3498
Input Volume	3495
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

3: Strobridge Ave. & 580 Off-Ramp Performance by movement

Movement	WBL	WBR	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.4	3.7	8.4	10.2	8.1
Vehicles Entered	27	165	379	345	916
Vehicles Exited	27	166	379	346	918
Hourly Exit Rate	27	166	379	346	918
Input Volume	28	166	380	357	931
% of Volume	96	100	100	97	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

4: 580 Off-Ramp & Norbridge Ave/Norbridge Ave. Performance by movement

Movement	NBT	SBT	NEL	NER	All
Denied Del/Veh (s)	0.2	0.0	0.0	0.0	0.0
Total Del/Veh (s)	7.3	8.1	4.8	2.7	6.0
Vehicles Entered	134	98	281	11	524
Vehicles Exited	135	99	281	11	526
Hourly Exit Rate	135	99	281	11	526
Input Volume	133	100	285	10	528
% of Volume	102	99	99	110	100
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

23: Strobridge Ave. & Gary Dr./I-580 EB on ramp Performance by movement

Movement	EBL	NBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.1
Total Del/Veh (s)	4.8	3.4	1.1	3.6
Vehicles Entered	69	36	34	139
Vehicles Exited	69	37	34	140
Hourly Exit Rate	69	37	34	140
Input Volume	75	40	35	150
% of Volume	92	92	97	93
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

24: I-580 EB off ramp & Strobridge Ave. Performance by movement

Movement	EBL	NBT	SBL	SBT	All
Denied Del/Veh (s)	0.2	0.0	0.0	0.0	0.1
Total Del/Veh (s)	10.4	4.5	12.6	7.4	10.4
Vehicles Entered	273	106	338	34	751
Vehicles Exited	273	106	336	34	749
Hourly Exit Rate	273	106	336	34	749
Input Volume	265	115	350	35	765
% of Volume	103	92	96	97	98
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

99: Lake Chabot Rd. & Castro Valley Blvd. Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.1	0.1	1.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2
Total Del/Veh (s)	56.9	19.4	16.6	69.4	23.7	21.9	88.1	92.5	41.1	48.0	36.5	8.2
Vehicles Entered	443	950	28	14	605	165	31	3	11	219	4	353
Vehicles Exited	435	945	27	14	604	165	32	3	11	220	4	352
Hourly Exit Rate	435	945	27	14	604	165	32	3	11	220	4	352
Input Volume	442	954	28	16	600	154	30	4	11	212	4	355
% of Volume	98	99	96	88	101	107	107	75	100	104	100	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

99: Lake Chabot Rd. & Castro Valley Blvd. Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	28.4
Vehicles Entered	2826
Vehicles Exited	2812
Hourly Exit Rate	2812
Input Volume	2810
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

103: I-580 EB on ramp Performance by movement

Movement	EBT	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	0.6	0.6
Vehicles Entered	340	340
Vehicles Exited	339	339
Hourly Exit Rate	339	339
Input Volume	353	353
% of Volume	96	96
Denied Entry Before	0	0
Denied Entry After	0	0

104: 580 Off-Ramp & I-580 WB off ramp Performance by movement

Movement	WBL	WBR	All
Denied Del/Veh (s)	0.8	2.9	2.0
Total Del/Veh (s)	1.1	1.3	1.2
Vehicles Entered	193	290	483
Vehicles Exited	192	291	483
Hourly Exit Rate	192	291	483
Input Volume	194	295	489
% of Volume	99	99	99
Denied Entry Before	0	0	0
Denied Entry After	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.8
Total Del/Veh (s)	78.0
Vehicles Entered	4698
Vehicles Exited	4661
Hourly Exit Rate	4661
Input Volume	17868
% of Volume	26
Denied Entry Before	0
Denied Entry After	0

Arterial Level of Service: EB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Strobridge Ave.	1	50.1	92.1	0.4	14
Norbridge Ave.	2	15.0	21.2	0.1	9
Lake Chabot Rd.	99	20.5	43.7	0.2	16
Total		85.6	157.0	0.6	14

Arterial Level of Service: WB Castro Valley Blvd.

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Lake Chabot Rd.	99	23.7	61.5	0.3	19
Stanton Ave.	2	41.1	64.0	0.2	11
John Dr	1	20.3	27.4	0.1	7
Total		85.1	152.9	0.6	14

Intersection: 1: Strobridge Ave./John Dr & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	292	522	516	471	208	204	212	234	294	283	279	203
Average Queue (ft)	95	213	308	286	120	105	154	173	147	140	168	85
95th Queue (ft)	223	442	495	457	194	182	228	243	245	241	279	156
Link Distance (ft)		1844	1844	1844	197	197	197	197	385		290	290
Upstream Blk Time (%)					2	1	1	4	0		3	0
Queuing Penalty (veh)					8	3	3	14	1		0	0
Storage Bay Dist (ft)	330									300		
Storage Blk Time (%)	0	3							0	0		
Queuing Penalty (veh)	0	5							0	1		

Intersection: 2: Norbridge Ave./Stanton Ave. & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	T	TR	L	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	206	207	212	221	137	313	342	355	302	236	347	318
Average Queue (ft)	129	137	165	169	37	148	195	216	148	73	69	183
95th Queue (ft)	189	203	226	235	93	298	314	332	250	159	260	310
Link Distance (ft)	197	197	197	197		950	950	950	297		904	
Upstream Blk Time (%)	1	2	4	6					0			
Queuing Penalty (veh)	3	6	16	22					2			
Storage Bay Dist (ft)					120					250		300
Storage Blk Time (%)					0	10			1	0	0	4
Queuing Penalty (veh)					0	5			2	0	0	2

Intersection: 3: Strobridge Ave. & 580 Off-Ramp

Movement	WB	WB	NB	NB	SB
Directions Served	L	R	T	T	T
Maximum Queue (ft)	45	83	89	68	148
Average Queue (ft)	17	34	54	37	80
95th Queue (ft)	40	63	79	60	124
Link Distance (ft)	35	35	396	396	385
Upstream Blk Time (%)	1	5			
Queuing Penalty (veh)	1	4			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: 580 Off-Ramp & Norbridge Ave/Norbridge Ave.

Movement	NB	SB	NE	NE
Directions Served	T	T	L	R
Maximum Queue (ft)	72	82	82	30
Average Queue (ft)	39	42	36	7
95th Queue (ft)	61	70	67	27
Link Distance (ft)	489	297	133	133
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 23: Strobridge Ave. & Gary Dr./I-580 EB on ramp

Movement	EB	NB	SB
Directions Served	LT	TR	R
Maximum Queue (ft)	48	43	28
Average Queue (ft)	19	7	5
95th Queue (ft)	38	30	23
Link Distance (ft)	350	506	8
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 24: I-580 EB off ramp & Strobridge Ave.

Movement	EB	EB	NB	SB	SB
Directions Served	L	TR	T	L	T
Maximum Queue (ft)	142	11	33	148	44
Average Queue (ft)	70	0	23	81	10
95th Queue (ft)	115	8	40	132	35
Link Distance (ft)	1268	1268	8		396
Upstream Blk Time (%)			10		
Queuing Penalty (veh)			12		
Storage Bay Dist (ft)				300	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 99: Lake Chabot Rd. & Castro Valley Blvd.

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	L	T	TR	L	T	TR	L	LTR	L	LT	R
Maximum Queue (ft)	299	341	623	552	138	326	337	80	86	223	199	149
Average Queue (ft)	157	189	225	212	20	151	174	23	29	106	66	80
95th Queue (ft)	276	319	484	423	77	279	298	62	70	180	152	127
Link Distance (ft)			950	950		1656	1656	1008	1008	1099	1099	1099
Upstream Blk Time (%)			0	0								
Queuing Penalty (veh)			1	0								
Storage Bay Dist (ft)	260	260			100							
Storage Blk Time (%)	2	8	1		0	21						
Queuing Penalty (veh)	11	37	5		0	3						

Intersection: 103: I-580 EB on ramp

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 104: 580 Off-Ramp & I-580 WB off ramp

Movement	WB
Directions Served	L
Maximum Queue (ft)	3
Average Queue (ft)	0
95th Queue (ft)	3
Link Distance (ft)	1045
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 171

Poisson Probability Distribution for Queue Lengths at Signalized Intersections

Project Name:	ALX901-27
Peak Period:	AM and PM Peak Hours
Scenario:	Existing + Alt 2
Date of Count:	January 23, 2020

	Major Street	Minor Street
Street Name:	Castro Valley Blvd	Stanton Ave
Approach:	East-West	North-South
Movement:	WBLT	

Input Data			Output		
Cycle Length	105	sec	λ	0.0186111	veh/ln/sec
Volume	67	veh/ln/hr	λ*T	1.9541667	veh/ln/cycle
Desired Probability Level (DPL)	0.95	decimal	**Vehicles at DPL**	**4**	**vehicles**
# feet	25	per car	Distance @25 feet/car	100	feet
# feet	20	per car	Distance @20 feet/car	80	feet

Vehicles at DPL' Calculation Formula

$$P(x) = \frac{(\lambda * T)^{x} * e^{-\lambda}}{x!}$$

Poisson Probability Distribution for Queue Lengths at Signalized Intersections

Project Name:	ALX901-27
Peak Period:	AM and PM Peak Hours
Scenario:	Existing + Alt 2
Date of Count:	January 23, 2020

	Major Street	Minor Street
Street Name:	Castro Valley Blvd	Stanton Ave
Approach:	East-West	North-South
Movement:	WBLT	

Input Data			Output		
Cycle Length	105	sec	λ	0.0188889	veh/ln/sec
Volume	68	veh/ln/hr	λ*T	1.9833333	veh/ln/cycle
Desired Probability Level (DPL)	0.95	decimal	**Vehicles at DPL**	**5**	**vehicles**
# feet	25	per car	Distance @25 feet/car	125	feet
# feet	20	per car	Distance @20 feet/car	100	feet

Vehicles at DPL' Calculation Formula

$$P(x) = \frac{(\lambda * T)^{x} * e^{-\lambda}}{x!}$$

Warrant 3: Peak-Hour Volumes and Delay

580 Off-ramp & Norbridge Ave
Alameda County

Project Name: Strobridge-CV Blvd Study

Intersection: 2

	Major Street	Minor Street
Street Name	580 Off-ramp	Norbridge Ave
Direction	E-W	N-S
Number of Lanes	1	1
Approach Speed	25	25

Population less than 10,000? No
Date of Count: Saturday, January 0, 1900
Scenario: Existing AM + Project

Warrant 3 Met?: Met when either Condition A or B is met — **No**

Condition A: Met when conditions A1, A2, and A3 are met — Not Met

Condition A1 — Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.17 vehicle-hours

Condition A2 — Not Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic of 150 vph for two moving lanes

Minor Approach Volume: 83 vph

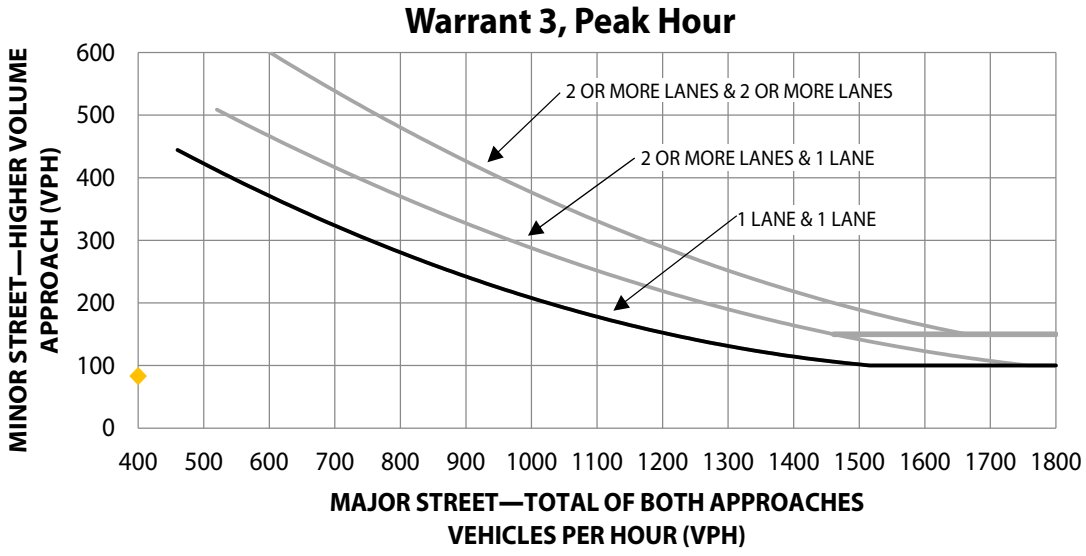
Condition A3 — Not Met

The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more appraches or 650 vph for intersections with three approaches

Total Entering Volume: 419 vph

Condition B — Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

580 Off-ramp & Norbridge Ave
Alameda County

Project Name: Strobridge-CV Blvd Study

Intersection: 2

	Major Street	Minor Street
Street Name	580 Off-ramp	Norbridge Ave
Direction	E-W	N-S
Number of Lanes	1	1
Approach Speed	25	25

Population less than 10,000? No
Date of Count: Saturday, January 0, 1900
Scenario: Existing PM + Project

Warrant 3 Met?: Met when either Condition A or B is met — **No**

Condition A: Met when conditions A1, A2, and A3 are met — Not Met

Condition A1 — Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.37 vehicle-hours

Condition A2 — Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic of 150 vph for two moving lanes

Minor Approach Volume: 133 vph

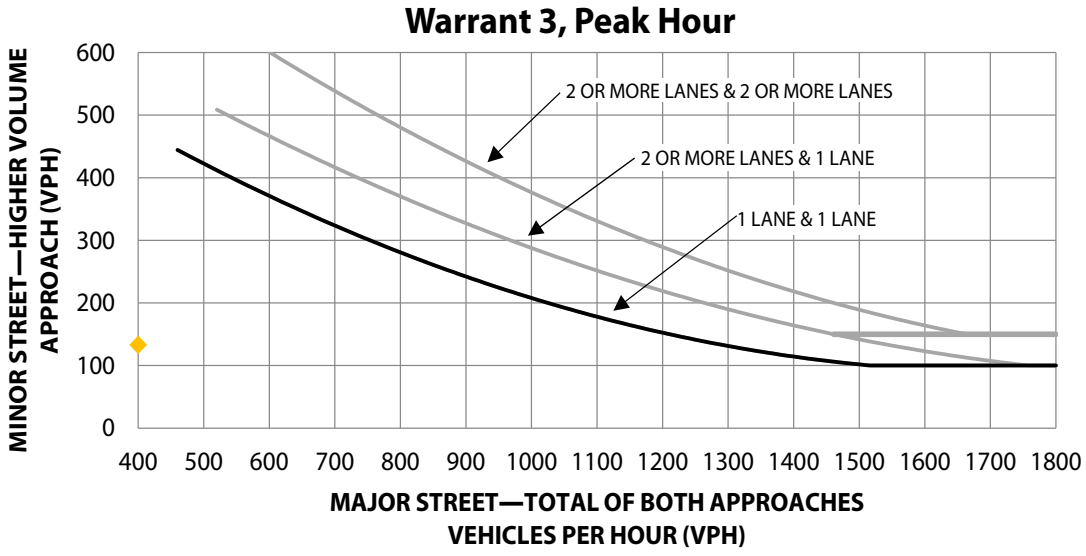
Condition A3 — Not Met

The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more appraches or 650 vph for intersections with three approaches

Total Entering Volume: 478 vph

Condition B — Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

Strobridge Ave & 580 Off-ramp
Alameda County

Project Name: Strobridge-CV Blvd Study

Intersection: 1

	Major Street	Minor Street
Street Name	Strobridge Ave	580 Off-ramp
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	25	25

Population less than 10,000? No
Date of Count:
Scenario: Existing AM + Project

Warrant 3 Met?: Met when either Condition A or B is met — **No**

Condition A: Met when conditions A1, A2, and A3 are met — Not Met

Condition A1 — Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.34 vehicle-hours

Condition A2 — Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic of 150 vph for two moving lanes

Minor Approach Volume: 279 vph

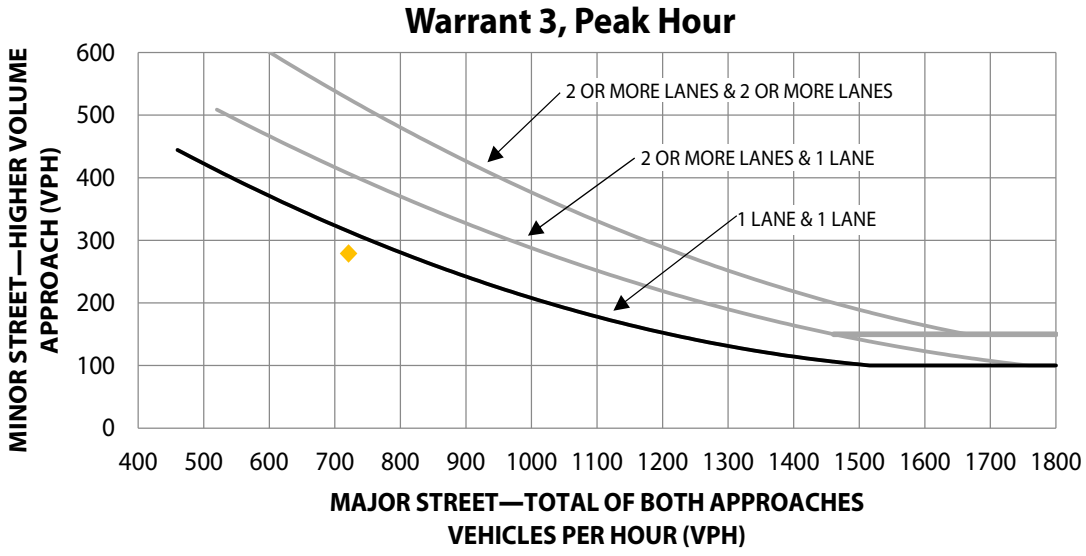
Condition A3 — Met

The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more appraches or 650 vph for intersections with three approaches

Total Entering Volume: 1000 vph

Condition B — Not Met

The plotted point falls above the curve



Warrant 3: Peak-Hour Volumes and Delay

Strobridge Ave & 580 Off-ramp
Alameda County

Project Name: Strobridge-CV Blvd Study

Intersection: 1

	Major Street	Minor Street
Street Name	Strobridge Ave	580 Off-ramp
Direction	N-S	E-W
Number of Lanes	1	1
Approach Speed	25	25

Population less than 10,000? No
Date of Count:
Scenario: Existing PM + Project

Warrant 3 Met?: Met when either Condition A or B is met — **No**

Condition A: Met when conditions A1, A2, and A3 are met — Not Met

Condition A1 — Not Met

The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach

Minor Approach Delay: 0.25 vehicle-hours

Condition A2 — Met

The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic of 150 vph for two moving lanes

Minor Approach Volume: 194 vph

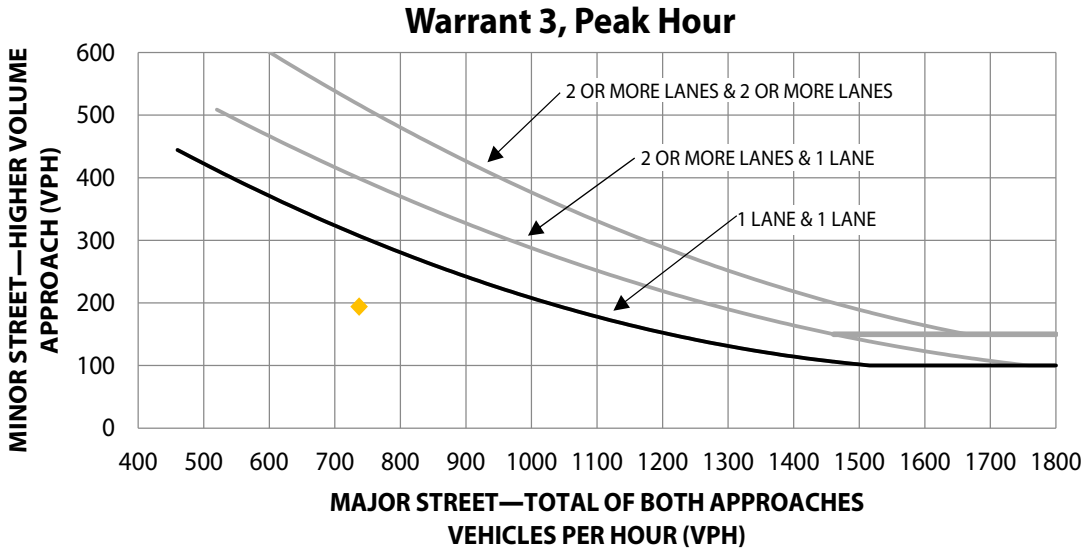
Condition A3 — Met

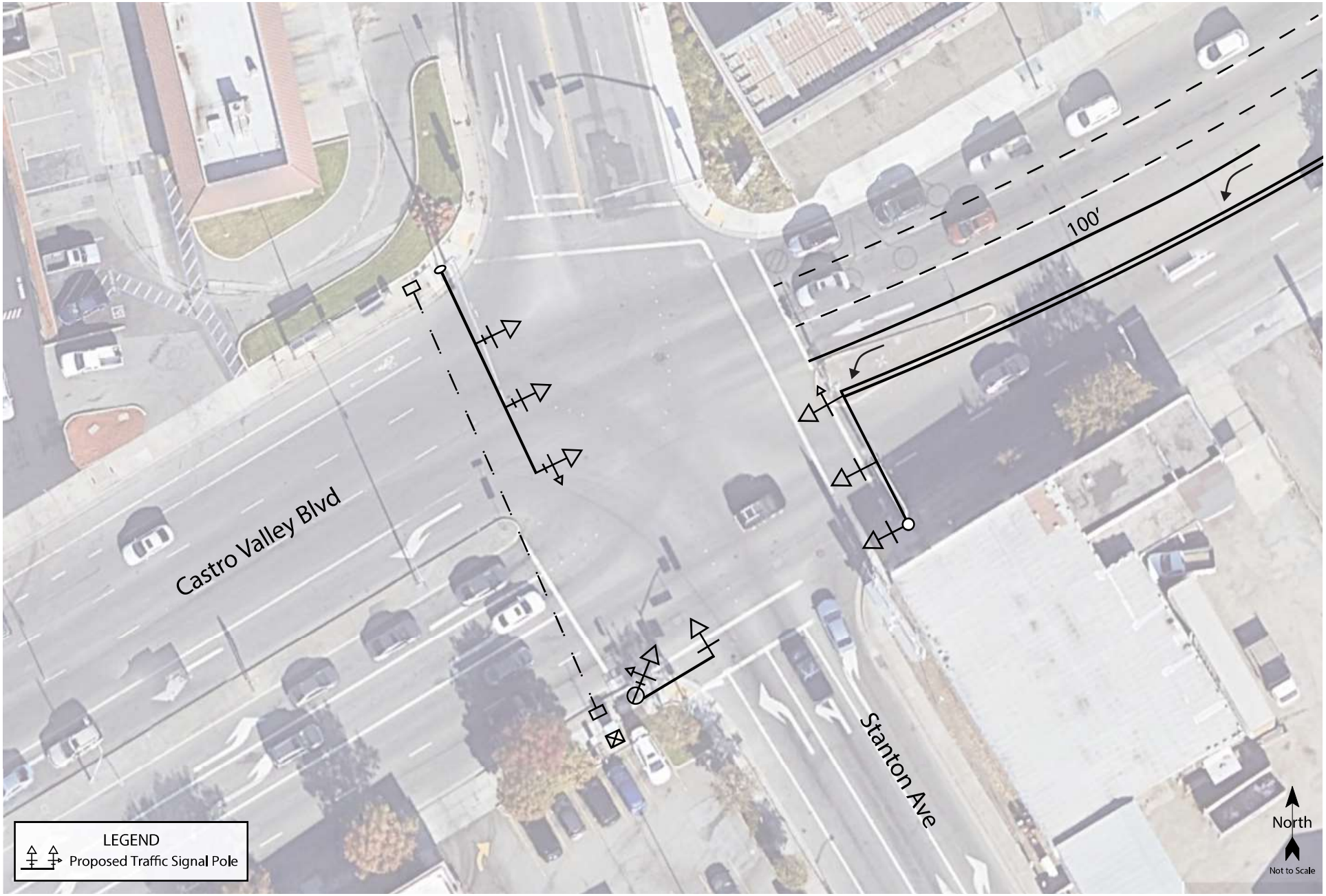
The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more appraches or 650 vph for intersections with three approaches

Total Entering Volume: 931 vph

Condition B — Not Met

The plotted point falls above the curve





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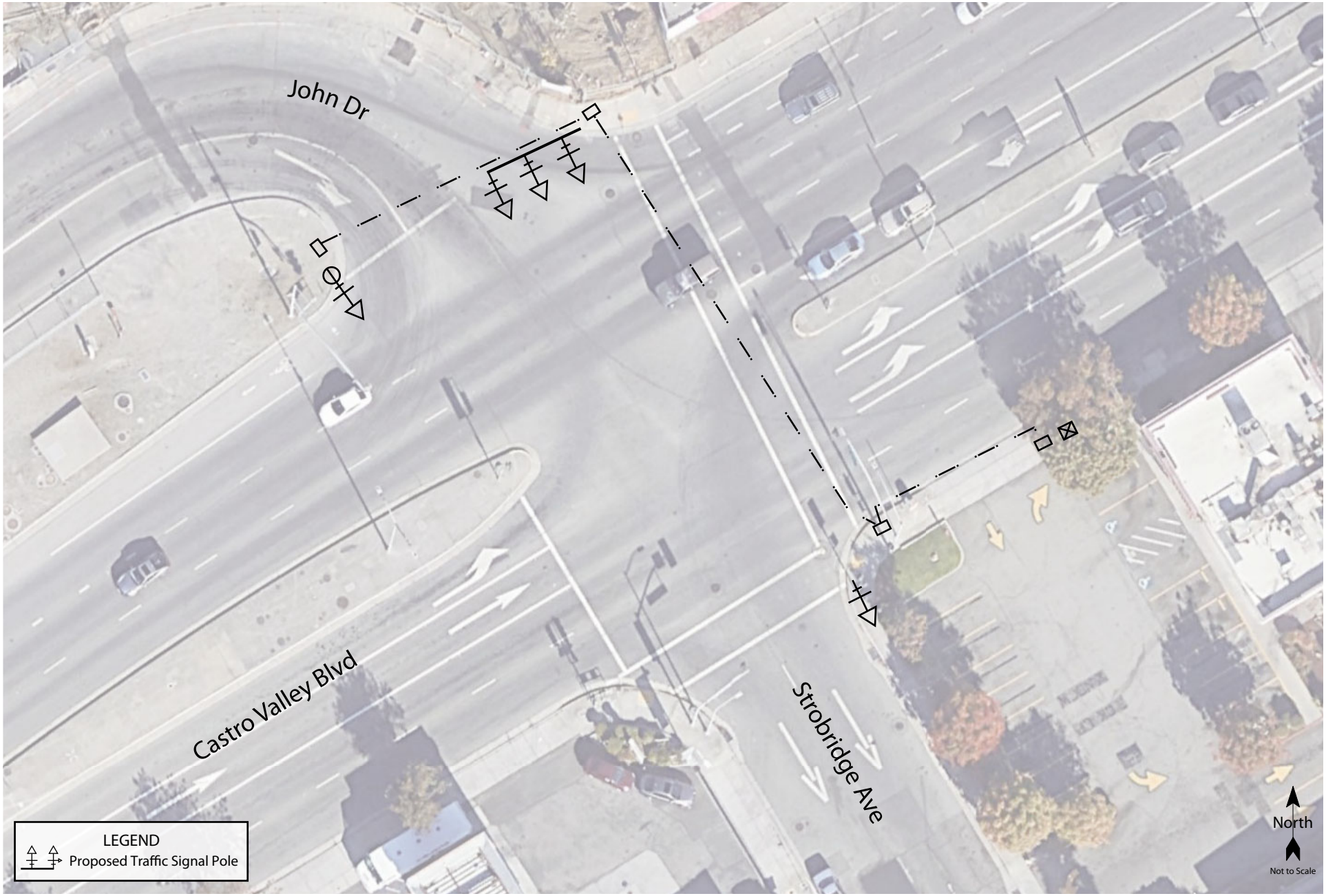
Supplemental Analysis at Strobridge Avenue-Norbridge Avenue Area

Figure 1 – Concept Sketch
Stanton Avenue



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Supplemental Analysis at Strobridge Avenue-Norbridge Avenue Area

Figure 2 – Concept Sketch
John Drive