04-SM-101/92-PM 10.6-12.9/PM R12.0-R14.5
04-2Q790 – 0419000049
October 2020

Project Study Report-Project Development Support (PSR-PDS)

To

Request Approval for Locally Funded Project to Proceed to Project Approval and Environmental Document Phase (PA&ED)

At US 101/SR 92 Separation

On Route US 101 between 0.6 mile south of East Hillsdale Boulevard Overcrossing and 0.6 mile south of 3rd Avenue Overcrossing

And

On Route SR 92 between 0.4 mile east of South Delaware Street Undercrossing and San Mateo-Hayward Bridge

APPROVAL RECOMMENDED:

Joseph Hurley, San Mateo County Transportation Authority, Project Sponsor, accepts risks identified in this PSR-PDS and attached risk register

Sandy L. Wong, City/County Association of Governments, Project Sponsor, accepts risks identified in this PSR-PDS and attached risk register

Norm Dorais, City of Foster City, Project Sponsor, accepts risks identified in this PSR-PDS and attached risk register

Brad Underwood, City of San Mateo, Project Sponsor, accepts risks identified in this PSR-PDS and attached risk register

APPROVAL RECOMMENDED:

Jean C. R. Finney, Deputy District Director
Transportation Planning and Local Assistance

APPROVAL RECOMMENDED:

Mohammad Suleiman, Caltrans Project Manager

APPROVED:

Tony Tavares, District Director

11/16/2020
Date

Vicinity Map

This project study report-project development support has been prepared under the direction of the following registered civil engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

10/26/20

SASHA D. DANSKY, REGISTERED CIVIL ENGINEER *DATE*

Reviewed by:

Celia McCuaig

11/02/2020

CELIA MCCUAIG, Office Chief *DATE*
Office of Advance Planning

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1. INTRODUCTION

Project Description:

The United States (US) 101 / State Route (SR) 92 Interchange in San Mateo County experiences directional peak period traffic congestion. Westbound SR 92 to northbound and southbound US 101 experiences congestion during the morning commute hours. While northbound and southbound US 101 to eastbound SR 92 experiences congestion during the afternoon commute hours.

The San Mateo County Transportation Authority (SMCTA) in partnership with the cities of Foster City and San Mateo and the City/County Association of Governments of San Mateo County (C/CAG), and in cooperation with California Department of Transportation (Caltrans) proposes to add a managed lane direct connector at the US 101 and SR 92 Interchange area. The US 101 / SR 92 Managed Lane Direct Connector Project (Project) considers two build alternatives.

Build Alternatives:

- Alternative 1: US 101 / SR 92 managed lane direct connector from westbound SR 92 to northbound and southbound US 101
- Alternative 2: Reversible US 101 / SR 92 managed lane direct connector ramps

Both Alternatives 1 and 2 provide a morning commute benefit for high occupancy vehicle (HOV) users traveling westbound SR 92 to both directions of US 101. By providing a managed lane direct connector to the northbound and southbound directions of US 101, HOV vehicles are able to bypass queues at the US 101 / SR 92 Interchange and access the express lanes being constructed in both directions of US 101. In addition to the morning commute benefit, Alternative 2 also provides a PM peak period commute benefit by reversing the direction of the managed lane direct connector ramps in the afternoon.

Alternative 2 includes improvements along eastbound SR 92, which terminate just west of the San Mateo-Hayward Bridge. Alternative 2 also considers a design variation which would terminate the eastbound improvements on SR 92 at the Mariner Island Interchange.

Alternative 2 improvements include a part-time lane on eastbound SR 92 in the afternoon commute hours. Depending upon how the part-time managed lane along SR 92 is ultimately classified, legislative action or a pilot project may be required. Current California Statue prohibits using freeway shoulders for any purposes other than emergencies. If the part-time lane is ultimately determined to be a "shoulder," implementing Alternative 2 would require either legislative action to amend the California Vehicle Code to permit the operation of the part-time lane concept or project implementation as a pilot project. [1]

[1] If deemed a shoulder and if a legislative amendment is not possible, Alternative 2 would then require proceeding as a pilot project, or either approval of a non-standard zero-foot inside shoulder and/or additional widening and realignment of SR 92.

This Project Study Report - Project Development Support (PSR-PDS) identifies the project scope, schedule, capital costs, and support costs needed to complete necessary studies and work to be performed during the Project Approval & Environmental Document (PA&ED) phase. It also develops concept geometric alternatives, considers right of way and environmental impacts, and identifies nonstandard features requiring design exceptions associated with each alternative.

Project Limits	04-SM-US 101 (PM 10.6 to 12.9) and SR 92 (PM R 12.0 to R 14.5)
Number of Alternatives	Three alternatives (Two Build + No Build)
Current Capital Outlay Support Estimate for PA&ED	$10.8 M to $12.2 M
Current Capital Outlay Construction Cost Range (Escalated to year 2026)	$110.5 M to $124.1 M ($131.9 M to $ 148.2 M)
Current Capital Outlay Right of Way Cost (Escalated to year 2025)	$2.4 M ($2.7 M)
Funding Source	Local, State, and Federal
Type of Facility	Freeway
Number of Structures	3
Anticipated Environmental Determination or Document	CEQA – Environmental Impact Report; NEPA – Routine Environmental Assessment with proposed Finding of No Significant Impact
Legal Description	In San Mateo County in San Mateo and Foster City, on Route 101 from 0.6 mile south of East Hillsdale Boulevard Overcrossing to 0.6 mile south of 3rd Avenue Overcrossing, and on Route 92 from 0.4 mile east of South Delaware Street Undercrossing to San Mateo-Hayward Bridge
Project Development Category	Category 3

The PA&ED phase will serve as the formal programming document for the remaining support and capital components of the project. A Project Report will serve as approval of the "preferred" improvements and to program construction and right of way costs. Caltrans is providing Quality Management Assessment for the project, and Caltrans would be the lead agency for National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) approvals. The PA&ED phase is scheduled to begin in the Summer of 2020 and gain project approval in the Summer of 2023.

The anticipated funding fiscal year for construction is 2025/26

2. BACKGROUND

A Preliminary Planning Study (PPS) was completed in June 2016 by SMCTA in partnership with the cities of Foster City and San Mateo, and C/CAG. The PPS identified short-term and long-term alternatives to address the congestion and safety concerns in the vicinity of the US 101 / SR 92 Interchange. Compared to the quick delivery of the short-term improvements, the long-term alternatives consist of relatively greater impacts, higher implementation costs, and a longer schedule. The improvements identified for the short term, (EA 2Q800, ID 04000050) were separated from this Project, are being documented in a separate PID, and are scheduled to be constructed in winter/spring 2023 and completed by summer 2024.

In addition, SMCTA in cooperation with C/CAG and Caltrans is constructing express lanes in San Mateo and Santa Clara Counties between 0.3 mile north of the San Antonio Road Interchange and 0.3 mile south of the Grand Avenue Interchange in the both the northbound and southbound directions of US 101. Construction began in Spring of 2019 and is scheduled to be completed in 2022.

3. PURPOSE AND NEED

Purpose:
The purpose of the project is to:

- Improve the operational efficiency for multi-occupant vehicles and express lane users traveling between US 101 and SR 92, east of US 101,
- Increase person throughput (the number of people moved), and
- Encourage carpooling and transit use.

Need:
The US 101/SR 92 Interchange is a major facility that serves substantial regional traffic as well as local street connections. There are no existing High Occupancy Vehicle (HOV) bypasses or lane designations for the connecting ramps at US 101 and SR 92 that might provide incentives for carpool or bus use. There is substantial delay and congestion within the interchange area caused by heavy traffic volumes and inadequate capacity during peak periods, without any options for multi-occupant vehicles to bypass the existing congested conditions. In addition, inefficient weaving and merging at the interchange ramp connections contribute to the existing congestion. Congestion and weaving conflicts also contribute to higher than average collision rates at ramp and connector locations throughout the project limits. Specific major congestion locations are summarized below.

AM Peak Period
Heavy traffic movement along westbound SR 92, from San Mateo-Hayward Bridge to northbound and southbound US 101, creates substantial delay during the AM peak period.

- **Westbound SR 92 to Southbound US 101**. The existing single-lane loop connector does not carry adequate capacity to handle the heavy traffic volume from westbound

SR 92 to southbound US 101. In addition, the westbound to southbound loop connector ramp merge with the southbound US 101 mainline resulting in congestion on US 101, which spills back upstream of the loop connector ramp merge, contributing to additional delay along both southbound US 101 and the westbound to southbound connector ramp. Also contributing to the delay at this location are vehicles originating from the Edgewater Boulevard / Mariners Island Boulevard on-ramp heading westbound on SR 92 beyond US 101 that must weave across the lanes exiting to the connector ramps to northbound and southbound US 101to get to the number one lane or the number two lane on westbound SR 92, and this weaving activity adds to delays.

- **Westbound SR 92 to Northbound US 101**. The queue from the westbound SR 92 loop connector ramp to southbound US 101 (described above) extends beyond the connector ramp to northbound US 101, affecting westbound SR 92 mainline operation by blocking one of the two exit lanes to northbound US 101. Additionally, the westbound SR 92 to northbound US 101 connector ramp is controlled by a ramp meter. Heavy traffic volumes using this connector ramp merge with traffic from the metered Fashion Island Boulevard on-ramp (one general purpose lane and one HOV lane) after the ramp meter lines but prior to merging onto the northbound US 101 mainline. The queuing on this connector ramp is due to inadequate capacity on the US 101 mainline and weaving/merging along the ramp resulting in congestion that spills back upstream along the connector ramp and onto westbound SR 92.

- **Eastbound and Westbound SR 92**. Eastbound traffic on SR 92 entering the interchange extends from the southbound US 101 ramp to beyond Alameda de las Pulgas (west of the US 101/SR 92 interchange). In the westbound direction, there is a bottleneck that develops between South Delaware Street on-ramp and El Camino Real off-ramp forming a queue that extends back to the connector from northbound US 101. The westbound SR 92 off-ramp queue extends from the southbound/northbound US 101 ramps to the Foster City Boulevard interchange.

PM Peak Period

Heavy traffic movement from northbound and southbound US 101 along eastbound SR 92 to the San Mateo- Hayward Bridge creates substantial delay at several locations during the PM peak period.

- **Northbound and Southbound Connector Ramps and Eastbound SR 92 Mainline.** Heavy traffic on the southbound US 101 connector ramp merging with the northbound US 101 connector ramps and the eastbound SR 92 mainline traffic over a short distance of approximately 1,000 feet results in substantial delays backing up traffic onto both northbound and southbound US 101 and eastbound SR 92. The congestion on eastbound SR 92 extends beyond Alameda de las Pulgas west of the US 101/SR 92 interchange. A bottleneck also occurs at the mainline lane drop east of Foster City Boulevard interchange and the queue from this bottleneck extends back to the US 101/SR 92 interchange and merges with the bottleneck at the US 101 ramps merge/lane drops. Another major bottleneck starts from the inclined part of

the San Mateo-Hayward bridge, and merges with the bottleneck upstream at Foster City Boulevard.

- **Northbound US 101 to Eastbound SR 92.** The one-lane connector ramp does not have adequate capacity to handle traffic volume from northbound US 101 to eastbound SR 92, resulting in traffic queues on northbound US 101 that typically extends several miles back past the East Hillsdale Boulevard and Marine Parkway/Ralston Avenue Interchanges.

4. TRAFFIC ENGINEERING PERFORMANCE ASSESSMENT

The Traffic Engineering Performance Assessment (TEPA) was prepared in March 2020. The full study can be found in Attachment E. This TEPA presents existing and future traffic data and establishes a potential scope of work for traffic analysis during the PA&ED phase.

The following scope items and future traffic engineering studies are recommended:

Project Study Limits: The project study limits for traffic operations analysis will include all ramps and mainline along US 101, from Ralston Avenue Interchange to Broadway Interchange and SR 92 from Alameda de Pulgas Interchange to the high-rise portion of the San Mateo/Hayward Bridge (east of US 101). These are the Project Study Limits for this PID document. Project Study Limits may be refined and finalized during the PAED phase. The study will also include the following intersections:

- Eastbound SR 92 Ramps and Alameda de las Pulgas
- Westbound SR 92 Ramps and Alameda de las Pulgas
- Eastbound SR 92 Ramps and El Camino Real
- Westbound SR 92 Ramps and El Camino Real
- Eastbound SR 92 Ramps and Delaware Street
- Westbound SR 92 Ramps and Delaware Street
- Eastbound SR 92 Ramps and Mariners Island Boulevard
- Westbound SR 92 Ramps and Cape Drive
- Eastbound SR 92 Ramps and Foster City Boulevard
- Westbound SR 92 Ramps and Foster City Boulevard
- Northbound US 101 off ramp and Ralston Avenue
- Southbound US 101 off ramp and Ralston Avenue
- Northbound US 101 off ramp and East Hillsdale Boulevard
- Southbound US 101 off ramp and Fashion Island Boulevard
- Northbound US 101 Ramps and Kehoe Avenue
- Northbound US 101 off ramp and Dore Avenue
- Southbound US 101 Ramps and Poplar Avenue
- Northbound US 101 Ramps and Peninsula Avenue
- Northbound US 101 Ramps and Anza Boulevard
- Northbound US 101 Ramps and Old Bayshore Highway/Broadway'
- Southbound US 101 Ramps and Broadway

Traffic Data Collection: The mainline and ramp data will be collected from Caltrans census or PeMS data. If the data is more than 3 years old, it may require adjustments to calibrate it to current conditions, in coordination with Caltrans, SMCTA, C/CAG and local agencies. Latest existing mainline and ramp data may need to be collected manually. For the intersections, local agencies will be contacted to obtain the most current turning movement data that includes vehicle, pedestrian and bicycle traffic counts for weekday conditions. If necessary, new peak hour intersection counts will be collected.

Field Observations: As part of data collection, field observations will be made during peak hours to document queues and operating conditions. This will include travel time runs along US 101 and SR 92 to document the queues in a specific lane, in addition to INRIX data. Based on the bottleneck locations and queue lengths, demand volumes will be determined for analysis.

Traffic Forecasting: Future demands on US 101, SR 92, ramps and local streets in the project study limits will be forecasted for both opening year (2028) and design year (2045). Model outputs from the C/CAG Travel Demand Model System (C/CAG Model) will be used as a basis for creating future year transportation models for the project.

To confirm that the models reflect the current plans for the area, a review of the land use and network assumptions in the C/CAG model for the area surrounding the project will be conducted. Land use assumptions will be reviewed for consistency with the cities' most current General Plans and with new projects that may be planned and approved near the interchange area. The review will determine if there would be a need to modify the assumptions for the construction year or design year prior to generating the future travel demand forecasts for both the no project and project alternatives.

The model outputs will be compared to existing traffic demand volumes in the study area. Validation and verification of the model will focus on the peak hour and peak period traffic demand volumes. The results of the model validation and verification will be documented in the Existing Conditions and Calibration Report. This report will be submitted to the Caltrans for their review and approval.

Traffic Safety Analysis: A detailed collision analysis will be included in the traffic study.

Freeway and Ramp Operational Analysis: Freeway analysis will be performed using the VISSIM simulation model. The operational analysis will be completed for existing and future conditions (opening and design years) for the no project and for each alternative, and will incorporate any proposed project construction phasing. The traffic analysis will also identify any potential bottlenecks within the study area. Freeway facility operations will be presented in terms of level of service (LOS), speed, bottleneck locations, queue length and travel times. Also, the No Build and Build conditions will be compared in terms of vehicle miles travelled (VMT), vehicle hours travelled (VHT), vehicle hours of delay (VHD), vehicle throughput and person throughput.

Intersection Capacity and Operational Analysis: The traffic analysis will evaluate impacts to the intersections using Synchro/Sim-Traffic software.

Traffic Operations Analysis Report (TOAR): The findings of the PA&ED traffic analysis will be documented in a Final TOAR, which will be used to help identify design alternatives and support the project purpose and need.

Traffic Management Planning: A preliminary Traffic Management Plan (TMP) will be developed during the PA&ED process.

Project Construction Staging: It is recommended that construction be completed in stages to minimize temporary construction impacts to traffic and local circulation. Any impacts to existing facilities that require closures will be included in the study.

5. DEFICIENCIES

Within the project area, there are several distinct roadway deficiencies as summarized below.

- In the AM peak period, westbound SR 92 to northbound and southbound US 101 ramps experience heavy traffic movement coming from the East Bay. To connect to northbound US 101, westbound traffic from the San Mateo-Hayward Bridge exits onto a metered two-lane connector ramp which merges with the metered Fashion Island Boulevard on-ramp traffic prior to merging onto northbound US 101. To connect to southbound US 101, westbound SR 92 traffic exits onto a single-lane loop connector ramp with posted speed limit of 25 mph. The single-lane loop connector ramp has inadequate capacity contributing to an extended queue back along westbound SR 92.

- In the PM peak period, there is a high volume of traffic from northbound and southbound US 101 onto eastbound SR 92. The two-lane southbound US 101 connector ramp and single lane northbound US 101 connector ramp merge at the same location as the merge with the two lanes of eastbound SR 92. These five lanes of traffic then merge to form three eastbound through lanes on SR 92 over a short distance resulting in heavy congestion and queueing at this location.

- The physical constraints on the San Mateo-Hayward Bridge restrict speed and capacity and create a bottleneck at the bridge's west terminus on SR 92 in Foster City. The bridge has a sustained incline grade of 3% at the west approach for approximately 4,060 feet. The bridge then crests through a 1,500-foot vertical curve before descending along a 3% grade. The posted speed limit on the bridge is 65 mph, however the design speed of the crest vertical curve is 59 mph (providing 576 feet of stopping sight distance). The elevated section of the bridge has a narrow cross section with three lanes and no inside or outside shoulders. The combination of the sustained grade, limited stopping sight distance on the vertical curve, and

nonstandard shoulders reduces the capacity of eastbound SR 92, causing a bottleneck at the west end of the bridge. This bottleneck contributes to a PM period queue extending westward along SR 92 from the bridge through the US 101 / SR 92 Interchange to Alameda de las Pulgas, and south on US 101 towards the Ralston Avenue Interchange.

6. CORRIDOR AND SYSTEM COORDINATION

6A. Route Description

US 101

US 101 is a north-south principal arterial that is part of the National Highway System (NHS), is a Strategic Highway Network (STRAHNET) route, and is part of the State Highway Extra Legal Load (SHELL) route system. US 101 is a National Truck Network route, a Surface Transportation Assistance Act (STAA) route, and functions as a principal truck route between the Central Valley, Central Coast, and San Francisco Bay Areas. US 101 was adopted into the California State Highway System in 1909. The present alignment within the project limits was designated as Route 101 in 1937 and widened into a separated freeway in 1960. Within California, Route 101 is part of the California Freeway and Expressway System in accordance with the Streets and Highways Code.

US 101 on the San Francisco Peninsula is the main access route to San Francisco International Airport (SFO) from the North and South Bays. It also serves as a major gateway route between San Francisco and the Silicon Valley. From south to north, within the project limits, the interchanges along US 101 are:

- East Hillsdale Boulevard (local street interchange)
- SR 92 (freeway to freeway interchange) with access to Fashion Island Boulevard interchange
- Kehoe Avenue (partial local street interchange in the northbound direction only)

Within the project limits US 101 is typically an 8-lane facility (4 general purpose lanes in each direction) with four 12-foot wide traveled lanes in each direction. Inside shoulders vary from 4 feet to 10 feet wide with concrete barrier in the median, while outside shoulders are 10 feet wide. Auxiliary lanes (5^{th} lane in each direction) extend between all interchanges along US 101 within the project limits. All on-ramps within the project limits are equipped with ramp metering equipment, except for the westbound 92 and eastbound 92 loop connector ramps to US 101. One SamTrans bus route (Line 398) currently serves US 101 at E Hillsdale Blvd Interchange. Within the project limits, US 101 has a flat grade, and the posted speed limit is 65 mph.

Caltrans' 2015 Interregional Transportation Strategic Plan (ITSP) lists US 101 as part of the San Jose/San Francisco Bay Area corridor which accommodates interregional, regional, and local traffic. Over the next two decades, the ITSP investment priorities promote a fix-it-first

policy for US 101. The 2010 Caltrans Corridor System Management Plan (CSMP) for US 101 between the San Mateo/San Francisco County border to the SR 85 South Interchange in Santa Clara County recommends corridor management strategies such as Intelligent Transportation Systems (ITS), ramp metering, auxiliary lanes, and construction of HOV lanes to be consistent with a regional plan that can be converted to Express Lanes.

In 2018, the US 101 South Comprehensive Corridor Plan (CCP) was completed toserve as an update and supplement to the 2010 US 101 Peninsula/South CSMP. The CCP documents changes from the CSMP, identifies multimodal needs, and recommends multi-modal improvement projects. The US 101 South CCP identifies expanding the existing Park and Ride lot at the south-western quadrant of US 101/SR 92 to create an additional 90 new parking spaces. Other projects such as implementing ramp meters at the SB and NB on-ramp, installing Traffic Operation Systems (TOS) and fiber, repairing the existing Transportation Management System (TMS) elements, improving operations and pavement conditions, and installing Accessible Pedestrian Signal (APS) systems and Rectangular Rapid Flashing Beacons (RRFB) for safety were identified. The CCP was prepared for the Solutions for Congested Corridors (SCCP) funding program under Senate Bill 1. An expanded version known as Congested Multimodal Corridor Plan (CMCP) is currently underway for Cycle 2 of SCCP.

The SMCTA US 101 Managed Lanes Project began construction in Spring 2019, and will construct 22 miles of express lanes on both directions of US 101 between 0.3 mile north of the San Antonio Road Interchange in Santa Clara County and 0.3 mile south of the Grand Avenue Interchange in San Mateo County, while maintaining auxiliary lanes in most locations. US 101 in San Mateo County is part of the Metropolitan Transportation Commission (MTC) HOV Master Plan and the Bay Area Express Lanes network as published in the Bay Area High Occupancy/Toll (HOT) Network Study Final Report. For the purposes of this PSR-PDS, the proposed San Mateo US 101 Managed Lanes Project is assumed to be an existing condition for the improvements that are presented.

SR 92

The segment of SR 92 between Interstate 280 (I-280) and US 101, was originally constructed as two separate freeway sections. The first section from West Hillsdale Boulevard to S. Grant Street and the SR 92/US 101 partial interchange, were constructed prior to 1965. The route was then extended westerly from West Hillsdale Boulevard to Ralston Avenue in 1968. In 1974, the SR 92/I-280 Interchange was added including connecting SR 92 up to Ralston Avenue. After a down-scope due to lack of funds, the remaining part of the SR 92/US 101 Interchange was completed in 1985. This segment of SR 92 has been virtually unchanged since its original construction, except for median paving/barrier work, seismic retrofit of the Hayward Park Overhead over the Caltrain railroad tracks, and modifications of SR 92 / SR 82 Interchange in 2018.

SR 92 is part of the National Highway System (NHS) and the California Freeway and Expressway System. Although eligible for the State Scenic Highway System, it is not a scenic highway as defined by Caltrans. SR 92 provides an east-west connection in the San

Francisco Bay area from Half Moon Bay on the Pacific Ocean Coast to I-280, then to US 101. It extends to I-880 in the East Bay via the San Mateo-Hayward Bridge. From west to east, within the project limits, the interchanges along SR 92 are:

- S. Delaware Street (local street interchange)
- US 101 (freeway to freeway interchange)
- Mariners Island Boulevard/Edgewater Boulevard (local street interchange)
- Foster City Boulevard (local street interchange)

There are two general purpose lanes in each direction on SR 92 between I-280 and US 101. There are three general purpose lanes in each direction on SR 92 between US 101 and the San Mateo-Hayward Bridge. There are no High Occupancy Vehicle (HOV) lanes or planned HOV lanes per the MTC Bay Area HOV Master Plan. In the eastbound direction, there are existing auxiliary lanes from S. Delaware Street to US 101 and from Mariners Island Boulevard to Foster City Boulevard. In the westbound direction, there is an existing auxiliary lane from east of Foster City Boulevard to S. Delaware Street. None of the on-ramps are currently metered. Inside shoulders vary from 4 feet to 10 feet wide with concrete barrier or three-beam barrier in the median, while outside shoulders are 10 feet wide.

Two SamTrans bus routes currently run on SR 92 west of US 101, Lines 53 and 294 (53 serves Borel Middle School and Delaware Street and 294 serves Half Moon Bay to the west). AC Transit M Line serves SR 92 from Foster City Boulevard to the east to the Hayward Bart Station. From SR 92, the M Route uses Hillsdale Blvd to West of US 101 to Hilldale Caltrain. It is not anticipated that the M line would use these connectors. The posted speed limit on this segment of SR 92 is 55 mph, except eastbound SR 92 east of Mariners Island Parkway where the posted speed limit is 65 mph.

6B. System Planning

Regional Planning

The MTC is the transportation planning, coordinating and financing agency for the nine county San Francisco Bay Area, including San Mateo County. The MTC functions as both the Regional Transportation Planning Agency (a State designation), and the region's Metropolitan Planning Organization (MPO) for federal purposes. The MTC and Association of Bay Area Governments (ABAG) prepared and adopted in 2017 the most recent long-range Regional Transportation Plan (RTP), ***"Plan Bay Area 2040: Regional Transportation Plan and Sustainable Communities Strategy for the San Francisco Bay Area 2017-2040,"*** which established the regional transportation and land use roadmap for future growth. The inclusion of the Sustainable Communities Strategy (SCS) in the RTP will guide the nine county San Francisco Bay Area in meeting the requirements of the California Sustainable Communities and Climate Protection Act of 2008 (Senate Bill 375).

This Project is included in the Plan Bay Area 2040

RTP ID	Project Name
17-06-0009	Improve operations at US 101 near Route 92

A new initiative called Horizon developed by MTC and ABAG tackles challenging questions outside of the traditional regional planning process through June 2019 on driverless vehicles, sea level rise, earthquakes, economic and political volatility that may alter the future by the Year 2050. The specific strategies and investments that perform best in multiple scenarios based on the Horizon process which are resilient to uncertainties will be recommended for inclusion in the Preferred Scenario for Plan Bay Area 2050. The new Plan Bay Area 2050 (PBA 2050), now underway by MTC, will integrate long-range transportation investment strategies with land use development in the nine-county region.

Local Planning

Established in 1988, SMCTA has been managing and administering designated sales tax revenues since the voters of San Mateo County approved a ballot measure (Measure A) and the Transportation Expenditure Plan (TEP) to allow the collection and distribution of a half-cent transaction and use tax in San Mateo County to fund transportation improvements. Voter approval of the Measure A and Transportation Expenditure Plan in 2004 authorized the collection and distribution by SMCTA of Measure A half-cent sales tax for an additional 25 years through 2033. In 2018, voters of San Mateo County approved Measure W, an additional ½ cent sales tax. SMCTA will administer half of the revenue generated by Measure W.

The SMCTA Board of Directors sets the overall policy direction and decision for SMCTA. Before the Transportation Expenditure Plan was presented to voters, SMCTA developed a Strategic Plan that established the policy framework and allocation decisions for Measure A funds. The Strategic Plan outlines the vision, goals, and implementation procedures for the Measure A program. It also establishes funding prioritization, criteria for evaluating and selecting candidate projects, and procedures for cities and local agencies to initiate and implement projects. This Project meets the intent of the Strategic Plan 2014-2019 and has been awarded Measure A funds through application to the SMCTA's 2017 Highway Program Call-for-Projects process.

C/CAG is the designated Congestion Management Agency (CMA) for San Mateo County. It is a joint powers agency whose Board of Directors is comprised of representatives from every city and town in San Mateo County and the County of San Mateo. C/CAG plays a major role in the planning, development, funding, and delivery of regionally significate transportation projects. As the CMA for San Mateo County, C/CAG is required to prepare and adopt a Congestion Management Program (CMP) on a biennial basis. The purpose of the CMP is to identify strategies to respond to future transportation needs, develop procedures to alleviate and control congestion, and promote countywide solutions. The CMP is required to be consistent with the MTC planning process that includes regional goals, policies, and projects for the Regional Transportation Improvement Program (RTIP).

In February 2017, C/CAG adopted the San Mateo Countywide Transportation Plan 2040 (SMCTP 2040), a long-range comprehensive transportation document that is intended to

articulate transportation planning goals and objectives and promote consistency and compatibility among all transportation plans and programs within the County.

Future Projects

The City of San Mateo completed the PA&ED phase for the US 101/ E Hillsdale Boulevard pedestrian overcrossing in 2015. This project will create a grade-separated, Class I pedestrian/bicycle overcrossing structure over US 101 south of the Hillsdale Boulevard overcrossing to provide pedestrians and bicyclists a safe and comfortable route across the freeway without going through the US 101/Hillsdale Boulevard Interchange.

During the peak PM period, Foster City roadways experience significant cut-through traffic as motorists seek to avoid congestion on US 101 and SR 92 by using local streets. To address this cut-through traffic, Foster City has implemented a Traffic Relief Pilot Program that prohibits left turns and U-turns from eastbound East Hillsdale Boulevard onto Edgewater Boulevard and onto Shell Boulevard during the weekday peak PM period, Monday-Friday from 4pm-7pm. This temporary measure will be evaluated periodically for effectiveness and safety.

7. ASSET MANAGEMENT

This project does not have any funding from the State Highway Operation and Protection Program (SHOPP). Currently, there is no requirement to track the assets in this project since there is no SHOPP funding. In the future, if this project gets any SHOPP funding, it will be subject to the Asset Management requirements for the SHOPP.

8. ALTERNATIVES

The following alternatives are being considered:

7A. No Build Alternative

Under the No Build Alternative, the existing transportation facilities within the project area would remain unchanged, except for planned and programmed improvements proposed by the SMCTA US 101 Managed Lanes project as described in Section 6A.

7B. Build Alternatives

Two build alternatives that satisfy the purpose and need of the project are outlined below. The build alternatives have been developed in sufficient detail to establish project factors to be studied and evaluated in the PA&ED phase of project development. Plans and typical sections for each alternative are provided in Attachment B of the PSR-PDS. Neither build alternative would have any impact to either existing or planned bicycle or pedestrian facilities.

Alternative 1: Managed Lane Direct Connector from Westbound SR 92 to US 101

This alternative would construct a managed lane direct connector from the median of westbound SR 92 to the northbound and southbound US 101 median express lanes. The managed lane direct connector would begin on westbound SR 92 approximately 800 feet west of Mariner Island Blvd. Improvements to westbound SR 92 extend 1300 feet west of the Vintage Park Drive Overcrossing. At that location, a managed lane would be added to the left of the three (3) existing general-purpose lanes on SR 92. The managed lane would diverge from the general-purpose lanes at the Mariners Island Overcrossing and would climb on an elevated structure above the adjacent SR 92 lanes along the median of SR 92. Once adequate vertical clearance is achieved, the structure would branch into two lanes, one to the north and one to the south. The northbound and southbound connectors would cross over the existing freeway to freeway connector ramps and would cross northbound US 101 before descending within the median of US 101 and merge with the northbound and southbound median express lanes. The northbound connector ramp would be constructed as a single lane ramp with 5- and 10- foot shoulders. To provide optimum stopping sight distance on the curved portion of the ramp, the southbound single lane US 101 connector ramp would be constructed with an 18-foot left shoulder and 6-foot right shoulder. See Attachment B for layouts and cross sections.

The US 101 mainline would be widened to the east and west to accommodate the managed lane direct connector. On-ramp and off-ramp gores would be modified to accommodate the widening; however, significant ramp realignment is not anticipated except at the Kehoe Avenue ramps. Reconstruction of the NB US 101 Kehoe Avenue on- and off-ramps will be necessary to accommodate the Direct Connector improvements.

The westbound SR 92 improvements are proposed to extend to Vintage Park Drive. Improvements include minor modifications at Bakers Way off-ramp. Currently, there are 3 lanes on WB 92. A 4th westbound lane will be needed to add the managed lane. The Mariner Island Boulevard Overcrossing will span the improvements proposed and no modifications are anticipated. The specific layout of the start of the westbound managed lane will be studied further as part of the PA&ED phase, including determining the optimal location for beginning the improvements on westbound SR 92.

The proposed managed lane direct connector ramps would vertically clear all existing connector ramps and SR 92 and US 101 mainlines.

Improvements along northbound US 101 would extend from SR 92 to 1000 feet north of Kehoe Avenue. The limits along southbound US 101 would extend from SR 92 to approximately 1,500 feet south of the Hillsdale Boulevard Overcrossing.

Construction staging and lane closure requirements for this alternative appear consistent with typical major freeway interchange projects. Consideration of staging and traffic management will be considered during PA&ED phases and further developed during PS&E.

This alternative would perpetuate and maintain existing Transportation Management System (TMS) elements such as closed-circuit television (CCTV), vehicle detection systems, changeable message signs (CMS), variable message signs (VMS) for Highway Advisory Radio (HAR), fiber communication network/hubs, and/or ramp meters. Additional TMS features would be included as determined appropriate and consistent with TMS system plans during the PA&ED and PS&E phases of the project.

The proposed San Mateo US 101 Managed Lanes Project described in section 6a Route Description for US 101 will construct a CHP enforcement area in the median of US 101 1 mile south of this project. Currently SR 92 does not have any CHP enforcement areas nor are any currently proposed under this alternative.

Alternative 2: Reversible US 101 / SR 92 Managed Lane Direct Connector

This alternative would construct reversible managed lane median direct connector ramps between US 101 and SR 92. In the AM peak period, the reversible managed lane direct connector ramps would be open to SR 92 westbound traffic to provide access to the northbound and southbound US 101 median express lane. During the PM peak period, the traffic on the direct connector ramps would operate in reverse, providing access from the northbound and southbound US 101 express lanes to eastbound SR 92.

In the AM peak period the median reversible managed lane direct connector would begin on westbound SR 92 800 feet west of Mariner Island Blvd. Improvements to westbound SR 92 extend 1300 feet west of the Vintage Park Drive Overcrossing. At that location, a managed lane would open to the left of the three (3) existing general-purpose lanes on SR 92. The managed lane would diverge from the other general-purpose lanes at the Mariners Island Overcrossing and enter the reversible managed lane direct connector ramp at a gate. Once beyond the gate, the managed lane would climb on an elevated structure above the adjacent SR 92 lanes along the median of SR 92 and would branch to two lanes, one to the north and one to the south once adequate vertical clearance is achieved to allow elevating over SR 92. The northbound and southbound connectors would cross over the existing freeway-to-freeway connector ramps and would cross northbound US 101 before descending within the median of US 101 and merging with the northbound and southbound median express lanes. The northbound connector ramp would be constructed as a single lane ramp with 5-foot left shoulder and 10-foot right shoulder. To provide optimum stopping sight distance on the curved portion of the ramp, the southbound single lane US 101 connector ramp would be constructed with an 18-foot left shoulder and 5-foot right shoulder.

In the PM peak period, the median reversible managed lane direct connector would operate in reverse. North of SR 92 the reversible managed lane direct connector would begin by opening a second HOV lane in the median of southbound US 101 just south of Kehoe Avenue. Vehicles would enter the reversible managed lane direct connector at a gate located approximately 1,900 feet north of SR 92 at which point vehicles would travel along the reversible managed lane direct connector towards eastbound SR 92. South of SR 92 the reversible managed lane direct connector would begin by opening a second median HOV lane in the median of northbound US 101 approximately 600 feet north of Hillsdale

Boulevard. Vehicles would enter the reversible managed lane direct connector at a gate located approximately 1,900 feet south of SR 92 at which point vehicles would travel along the reversible managed lane direct connector towards eastbound SR 92. The southbound to eastbound and northbound to eastbound direct connectors would merge into a single lane east of US 101 and then descend into the median of eastbound SR 92.

Since the PM peak period traffic would be using the same managed lane direct connector ramp structures as the AM peak period traffic (but in reverse), in the PM peak period the southbound to eastbound connector ramp would operate as a single lane ramp with a 10-foot left shoulder and 5-foot right shoulder. The northbound to eastbound connector ramp would operate as a single lane ramp with an 18-foot right shoulder and 5-foot left shoulder.

The US 101 mainline would be widened to the east and west to accommodate the managed lane direct connector where they connect in the center median of US 101. On-ramp and off-ramp gores would be modified to accommodate the widening; however, significant ramp realignment is not anticipated. Improvements along northbound US 101 would extend from SR 92 to 1000 feet north of Kehoe Avenue. Reconstruction at the NB US 101 exit at Kehoe Ave will be necessary to accommodate the Direct Connector improvements.
The limits along southbound US 101 would extend from SR 92 to approximately 1,500 feet south of the Hillsdale Boulevard Overcrossing.

The westbound SR 92 improvements will add a managed lane as the 4th lane to the existing 3-lane westbound SR 92. The westbound managed lane would operate in the AM peak-period and would extend westward from approximately 1200 feet west of the Vintage Park Drive Overcrossing. Improvements include minor modifications at Bakers Way off-ramp. The Mariner Island Boulevard Overcrossing will span the improvements proposed and no modifications to the structure are anticipated. Extending the westbound managed lane further east to the Foster City Boulevard overcrossing would require additional widening along westbound SR 92 from Vintage Park Drive to the Foster City Boulevard Overcrossing and realigning the westbound Foster City interchange ramps. The extension of the westbound managed lane to Foster City Boulevard is not included herein but determining the optimal location for beginning the improvements on westbound SR 92 will be studied as part of the PA&ED phase. The project benefit would be improved by extending the lane back to Foster City Boulevard on westbound SR 92. However the current base geometry does not permit a level of design that would adequately determine the impacts. During PA&ED, the first order of work will be to attain detailed topography which will provide more certainty in determining the geometry of existing lanes, and proposed improvements. The westbound SR 92 managed lane is proposed as a 12-foot wide lane with a 3-foot left shoulder. The managed lane diverges from the general purpose lanes at Mariner Island Boulevard.

Improvements to eastbound SR 92 extend from US 101 to the San Mateo-Hayward Bridge. The eastbound SR 92 improvements would include widening eastbound SR 92 to accommodate a 4th eastbound lane to be operated as a managed lane. The new managed lane would converge with the general purpose eastbound SR 92 lanes approximately 400 feet west of the Mariners Island Overcrossing and extend to a point approximately 900 feet

west of the Foster City Overcrossing. At that point, the managed lane ends and it continues as a general purpose lane eastbound. Improvements along eastbound SR 92 include the realignment of the Foster City Boulevard on-ramp to accommodate the 4th eastbound lane. The Foster City Boulevard on-ramp will be reconstructed as a standard ramp, including the 1000-foot auxiliary lane which will be dropped via a standard 50:1 merge taper. Eastbound SR 92 will be reduced to 3 lanes by dropping the outside eastbound lane west of the San Mateo Hayward Bridge. The outside lane drop from 4 to 3 lanes will be a standard lane drop with standard signage and standard lane drop taper. The ending of the eastbound managed lane will be studied in more detail during the PA&ED phase of the project to determine the exact location of the lane drop.

The operation of the peak-period the managed lanes on SR 92 (westbound in the AM and eastbound in the PM) would be operated through overhead changeable lane signage indicating when the managed lane is opened or closed to traffic with green arrows or red X's, respectively. The managed lane in both directions along SR 92 would be 12 feet wide and would have a 0- to 3-foot left shoulder. When not in operation, the managed lane would be closed to traffic and would exist as a 12-foot inside buffer between operating traffic and the median barrier.

A potential CHP enforcement area along SR 92 has been identified for this Alternative. As depicted, the CHP enforcement area would be generally centered near Vintage Park Drive and the cost for the CHP enforcement area is included in the project cost estimate. Final determination of inclusion, location and features of the CHP enforcement area will be studied during PA&ED.

Openings to the reversible managed lane in all directions would be regulated at three (3) gate locations to control the direction of traffic flow: one in the median of SR 92 west of the Mariners Island Boulevard Overcrossing, one in the median of US 101 approximately 1,900 feet north of SR 92, and one in the median of US 101 approximately 1,900 feet south of SR 92. In the approach direction of the managed lane direct connector entrance gates, a 1,000-foot-long auxiliary lane would be provided parallel to the general-purpose lanes on SR 92 and the express lanes on US 101 to facilitate safe lane changes. The managed lane direct connector reversible access openings would be controlled by an automatic gating system combined with automated channelizers that would rise out of the roadway pavement. On approach of the non-operating direction, the gating system would close the managed lane direct connector opening and the automated channelizers would close the auxiliary lanes in advance of the gates. The exact type gating system has not been determined, but the gating system may use a series of swing arm gates, a physical wire gate, a section of movable barriers, or some other system. See Attachment M for a depiction of the reversible gating system. Further study and determination of the gating system to be used will be studied during PA&ED. Consideration for prevention of wrong-way movement will be given during the PA&ED studies.

Depending upon how the part-time managed lane along SR 92 is ultimately classified, legislative action or a pilot project may be required. Current California Statue prohibits using freeway shoulders for any purposes other than emergencies. If the managed lane is

ultimately determined to be a "shoulder," implementing Alternative 2 would require legislative action to amend the California Vehicle Code to permit the operation of the managed lane concept. An alternative to legislative action would be to proceed with the managed lane concept as a pilot project. Pilot projects implement innovative or novel design elements which are otherwise not permitted by Caltrans, but which show significant promise for improved operations, reduced cost, or reduced environmental footprint. Pilot projects are implemented with an evaluation period during which improvements are judged against specific performance measures to determine the effectiveness and safety of the pilot improvements. Pilot project study periods are typically three to five years. At the end of the pilot study period, the efficacy of the improvements would be evaluated for permanent approval or removal if not meeting stated performance criteria. Should the managed lane not meet the performance criteria, the part-time managed lane use improvements would be removed. Should the improvements be shown to be effective and be determined to be a "shoulder," legislation would then be enacted allowing the operation of the managed lane.

The reversible lane option will require regular ongoing maintenance and operations of the gating systems and managed lanes. It is estimated that the effort will require two crews and two trucks along with supervision to operate the reversible lanes. Depending upon the final selection of reversible lane features and design, the annual operations and maintenance cost is estimated to be between $1.0 - $1.5M per year. The annual operations and maintenance cost are not factored into the Construction Capital or support costs for this alternative and would be in addition thereto.

Construction staging and lane closure requirements for this alternative appear consistent with typical major freeway interchange projects. Consideration of staging and traffic management will be considered during PA&ED phases and further developed during PS&E.

This alternative would perpetuate and maintain existing Transportation Management System (TMS) elements such as closed circuit television (CCTV), vehicle detection systems changeable message signs (CMS), variable message signs (VMS) for Highway Advisory Radio (HAR), fiber communication network/hubs, and/or ramp meters. Additional TMS features would be included as determined appropriate and consistent with TMS system plans during the PA&ED and PS&E phases of the project.

Alternative 2 Design Variation

Given the potential risks associated with the managed lane concept, including the requirement for legislative action or approval of significant non-standard features, a variation for Alternative 2 would terminate the eastbound SR 92 managed lane east of the Mariners Island Boulevard Overcrossing. The eastbound SR 92 managed lane would continue as a mixed flow lane west of Vintage Park Drive Overcrossing and the outside mixed flow lane would be terminated with a standard lane drop taper and associated standard signage.

Additional Alternatives Studied

Additional Alternatives (such as a Diverging Diamond Interchange) may be introduced and studied during the PA&ED phase of the project. Any new alternatives introduced would be consistent with the project Purpose & Need.

Improvements on San Mateo-Hayward Bridge (Not Included with Project)

In evaluating the potential benefits of Alternative 2, it has been recognized that there would likely be both regional and US 101 / SR 92 Interchange operations benefits if additional managed lane capacity could be extended onto and across the San Mateo- Hayward Bridge to the Clawiter Road/Eden Landing Road Interchange. The high-rise portion of the San Mateo-Hayward Bridge is constrained and cannot accommodate an additional lane. To improve capacity of the high-rise section of the bridge without widening the structure, a movable barrier system which would enable conversion of one westbound through lane to an eastbound managed lane in the PM peak period could be a feasible option. During the AM peak period, the high-rise portion of the bridge would maintain three eastbound and three westbound lanes. In the PM peak period, a moveable barrier could shift 12 feet to the north, creating a lane configuration of four eastbound (one (1) managed lane and three (3) general purpose lanes) and two westbound general-purpose lanes. The existing lighting in the center median of the high-rise portion of the bridge could be relocated to the outside barriers. For the causeway portion of the bridge, the eastbound inside shoulder could be used as a part- time managed lane, in addition to the existing three general purpose lanes. On the causeway portion of the bridge, the three westbound general purpose lanes could be maintained without modification. The eastbound inside part-time lane could continue on to the east side of the bridge and terminate at the Clawiter Road/Eden Landing Road Interchange. However, improvements on the San Mateo-Hayward Bridge are beyond the scope of this project and would require discussions between appropriate parties such as Caltrans, BATA, the Alameda County Transportation Commission (ACTC), and the adjacent cities. This project will only focus on improvements up to the west end of the San Mateo-Hayward Bridge. An exhibit depicting the additional improvements can be found in Attachment N.

Construction staging and lane closure requirements for this alternative appear consistent with typical major freeway interchange projects. Staging and traffic management will be considered during PA&ED phases and further developed during PS&E.

7C. Rejected Alternatives

Both long-term and short-term improvements were considered in the PPS prepared in June 2016. Below is a summary of the long-term alternatives considered in the PPS but rejected for further study. The alternatives were rejected by consensus of the SMCTA and Cities of San Mateo and Foster City in review of the PPS.

Table 1: Rejected Alternatives

Alternative No. from the PPS:	PPS Alternative Description:	Status:
1X	Braid SR 92 ramps with Hillsdale Boulevard ramps to eliminate weaving conditions on US 101 mainline.	Rejected due to substantial right of way impacts.
1Y	Provides a collector-distributor system for the northbound US 101 to SR 92 connection, with a braided ramp for E Hillsdale Boulevard on-ramp to northbound US 101.	Rejected due to substantial right of way impacts.
3X	Extend weaving distance between SR 92 and Kehoe Avenue by extending the 6th northbound US 101 acceleration lane to 3rd Avenue off-ramp.	Alternative not with this PSR-PDS because of right of way impacts. Managed Lane project results in 6 lanes between 92 and 3rd Street (1Express & 5 GP.) Severe right of way constraint near the Kehoe ramps would not allow additional lane to be added within existing right of way. Shifting traffic to the west is also constrained by right of way.
8X	Provide a branch connector from southbound US 101 to eastbound SR 92 and eliminate inside merge and quick merge between northbound and southbound US 101 ramps and eastbound SR 92 mainline.	Rejected because it does not meet the purpose and need of the project.
8Y	Provides slip ramp from eastbound SR 92 (existing over US 101) directly to Mariners Island off-ramp to avoid the existing merging friction with the US 101 connectors.	Not recommended due to modest weaving improvements relative to the high cost.
8Z	Provides a combination of alternatives 8X and 8Y.	Rejected because it does not meet the purpose of the project and provides only modest weaving improvements relative to high cost.
8ZX	Provides complete separated collector distributor road system adjacent to eastbound SR 92 that begins at the Delaware Street on-ramp to eastbound SR 92 and ends at Foster City Boulevard off-ramp.	Alternative rejected due to potential impact to local traffic circulation and lack of local agency support.
9Y	Closes the Edgewater Boulevard / Mariners Island Boulevard on-ramp to westbound SR 92 and constructs a new on-ramp from the Mariners Island Boulevard overcrossing which allows traffic to enter westbound SR 92 mainline without weaving.	Rejected because it does not meet the purpose of the project.

7D. Complete Streets

Neither build alternative would have any impact to either existing or planned bicycle or pedestrian facilities.

7E. Transportation Management Plan

Transportation Management Plan Data Sheets were prepared for this project. See Attachment O for TMP Data Sheets. Preliminary TMP elements have been included such as public information Brochures and Press Release, Telephone Hotline and other methods of communication will be utilized for preserving safety. Other strategies such as Changeable Message Signs, Ground Mounted Signs and Highway Advisory Radio (HAR) are also potential elements. COZEEP has been included for incident management. A Transportation Management Plan (TMP) will need to be developed in more detail in subsequent phases to minimize disruption to the traveling public during construction.

7F. Ramp Metering Considerations for Build Alternatives

Ramp metering of the direct connectors is not proposed for either Alternative 1 nor Alternative 2 due to concerns that metering would diminish the effectiveness of the proposed direct connectors. Under Alternative 1 the proposed direct connector would begin from the median on westbound SR 92 and then split into separate single lane connector ramps that merge into the northbound and southbound US 101median express lanes. For Alternative 2, these same ramps would be time of day controlled reversible lanes, controlled by gates. In both alternatives the direct connectors would be open to only HOV users and paid express lane users. During peak periods it is expected the connectors would be dominated by qualified HOV users. Metering of the flow would diminish the attractiveness of the connectors for HOV users. If metering was added, it would: 1) require two lanes as direct connector volumes are expected to be greater than 900 vph, triggering the need for two lanes, additional widening and a substantial increase in project cost; 2) create driver confusion due to incompatibility of ramp metering striping and signing for the two directions, and 3) trigger the need for CHP enforcement, further increasing project cost. Ramp metering will be further evaluated during PA&ED.

The Cost Estimate includes $1M for ramp metering. This is to reset or modify the existing Ramp Metering at Kehoe to NB US 101, Fashion Island Blvd to NB US 101, WB SR 92 to NB US 101, Hillsdale Blvd to SB US 101 and to install Ramp Metering at Edgewater/Mainers Blvd to EB 92 and Foster City Blvd to EB 92. In addition, $4M has been added for installing ramp metering at EB 92 to NB 101, WB 92 to SB 101, NB 101 to EB 92, SB 101 to EB 92, Mariners Island Blvd to EB 92, Metro Center Blvd to EB 92, SB 101 to WB 92 and NB 101 to WB 92.

7G. Nonstandard Design Features of Build Alternatives

Tables 2A and 2B on the following pages contain a list of nonstandard features that do not conform to the design standards of the seventh edition Caltrans Highway Design Manual (HDM). These nonstandard features have been discussed with Caltrans District 4 and the Headquarters Project Delivery Coordinator at meetings on April 10th and July 2nd, 2019. Additional design exceptions may be identified as the geometry is developed in further detail and reviewed in the future phases. Design Decision Documents will be prepared and submitted to Caltrans during the PA&ED phase.

Alternative 1: Managed Lane Direct Connector from Westbound SR 92 to US 101

Table 2A. Design Standard Risk Assessment

Design Feature Number	Design Standard from Highway Design Manual	Standard Design Requirement	Description and Location	Probability of Design Exception Approval (None, Low, Medium, High)	Justification for Probability Rating
1	201.1 Stopping Sight Distance	**Table 201.1 shows the minimum standards for stopping sight distance related to design speed for motorists, V=50 mph, SSD = 430 feet.**	A. NB connector provides 395 feet. B. SB connector provides 369 feet. Both SB and NB connectors meet 45 mph stopping sight distance.	Medium	Will need to justify not meeting 50 mph standards.
2	301. 1 Lane Width	**The minimum lane width on multilane highways shall be 12 feet.** **Where a multilane State highway connects to a freeway within an interchange, the outer most lane of the highway in each direction of travel shall be 12 feet.**	A. US 101 NB, Lane #2, #3, and #4. B. US 101 SB, Lane #2, #3, and #4. Matching existing conditions proposed by the Managed Lanes Project.	High	Matching existing conditions.

Design Feature Number	Design Standard from Highway Design Manual	Standard Design Requirement	Description and Location	Probability of Design Exception Approval (None, Low, Medium, High)	Justification for Probability Rating
3	302.1 Shoulder Width Standards	**The shoulder widths given in Table 302.1 shall be the minimum continuous usable width of paved shoulder on highways.** **(10 feet left and 10 feet right shoulder for six or more lanes).**	A. NB US 101, inside proposed inside shoulder minimum 3 feet. B. SB US 101, inside proposed inside shoulder minimum 3 feet. Matching existing conditions proposed by the Managed Lanes Project. C. WB SR 92, proposed inside shoulder minimum 3 feet.	A. High B. High C. High	Existing conditions and urban setting are precedent for reduced inside shoulder.
4	501.3 Interchange Spacing	**The minimum interchange spacing shall be one mile in urban areas and 2 miles outside of urban areas, and 2 miles between freeway-to-freeway interchanges and other interchanges.**	A. SR 92 and Kehoe is 0.4 mile. B. SR 92 and Hillsdale Blvd is 0.5 mile.	A. High B. High	Not modifying existing condition interchange spacing.
5	305.1 Median Width	**In areas where restrictive conditions prevail, the minimum median width shall be 22 feet.**	US 101 mainline proposed 8 feet.	High	Existing conditions and urban setting are precedent for reduced median.

Design Feature Number	Design Standard from Highway Design Manual	Standard Design Requirement	Description and Location	Probability of Design Exception Approval (None, Low, Medium, High)	Justification for Probability Rating
6	504.2A Single Lane Freeway Entrance 504.2B Single Lane Freeway Exit	**Ramp entrance and exit geometric requirements**	Reconstructing ramps with current non-standard geometry A. Northbound US 101 at the Kehoe Avenue Exit B. Northbound US 101 at the Entrance Ramp	Low	Preference would be to reconstruct interchange to meet design criteria.
7	504.4(5) Single Lane Connectors	**Single lane connectors in excess of 1,000 ft in length should be widened to two lanes to provide for passing maneuvers.**	A. Northbound Connector is 1456 ft long B. Southbound Connector is 1305 ft long	Medium	Geometric, horizontal, and vertical constraints determine length of connectors. The single lane connectors ramps connect single lane express lanes on either side.

Alternative 2: Reversible US 101 / SR 92 Managed Lane Direct Connector

Table 2B. Design Standard Risk Assessment

Design Feature Number	Design Standard from Highway Design Manual	Standard Design Requirement	Description and Location	Probability of Design Exception Approval (None, Low, Medium,	Justification for Probability Rating
1	201.1 Stopping Sight Distance	**Table 201.1 shows the minimum standards for stopping sight distance related to design speed for motorists, V=50 mph, SSD = 430 feet.**	A. NB connector provides 395 feet. B. SB connector provides 369 feet. Both SB and NB connectors meet 45 mph stopping sight distance.	A. Medium B. Medium	Will need to justify not meeting 50 mph standards.
2	301.1 Lane Width	**The minimum lane width on multilane highways shall be 12 feet.** **Where a multilane State highway connects to a freeway within an interchange, the outer most lane of the highway in each direction of travel shall be 12 feet.**	A. US 101 NB, Lane #2, #3, and #4 are proposed to be 11 feet. B. US 101 SB, Lane #2, #3, and #4 are proposed to be 11 feet. Matching existing conditions being proposed by the Managed Lanes Project. C. At Foster City Blvd OC, in AM #1 and #2 lane and in PM #2 and #3 lane taper to 11 feet to avoid impacts to the structure.	A. High B. High C. High	A. Existing condition B. Existing condition. C. Urban setting and only for a short distance.

3	302.1 Shoulder Width Standards	**The shoulder widths given in Table 302.1 shall be the minimum continuous usable width of paved shoulder on highways.** **(10 feet left and 10 feet right shoulder for six or more lanes).**	A. NB US 101, inside proposed inside shoulder minimum 3 feet. B. SB US 101, inside proposed inside shoulder minimum 3 feet. Matching existing conditions being proposed by the Managed Lanes Project. C. WB SR 92, proposed inside shoulder minimum 3 feet. D. EB SR 92, proposed inside shoulder minimum 0 foot. E. At the Hillsdale Blvd OC on US 101, zero outside shoulder and varies 6 to 8 foot inside shoulder at the spot location. F. At Foster City Blvd OC, 8-foot outside shoulder.	A. High B. High C. High D. Low E. Low	A. Existing condition B. Existing condition C. Similar to existing condition and for a short duration D. Preference would be to modify geometry to allow for 1 to 2 feet of shoulder, justification needed. E. Preference would be to modify geometry to allow for 1 to 2 feet of shoulder, justification needed.
4	501.3 Interchange Spacing	**The minimum interchange spacing shall be two miles in urban areas between freeway-to-freeway interchanges and other interchanges.**	A. SR 92 and Kehoe is 0.4 mile. B. SR 92 and Hillsdale Blvd is 0.5 mile.	A. High B. High	Not modifying existing condition interchange spacing.

5	305.1 Median Width	**In areas where restrictive conditions prevail, the minimum median width shall be 22 feet.**	US 101 mainline proposed 8 feet.	High	Existing conditions and urban setting are precedent for reduced median.
6	504.2A Single Lane Freeway Entrance 504.2B Single Lane Freeway Exit	**Ramp entrance and exit geometric requirements**	Reconstructing ramps with current non-standard geometry C. Northbound US 101 at the Kehoe Avenue Exit A. Northbound US 101 at the Kehoe Avenue Entrance Ramp	Low	Preference would be to reconstruct interchange to meet design criteria.
7	504.4(5) Single Lane Connectors	**Single lane connectors in excess of 1,000 ft in length should be widened to two lanes to provide for passing maneuvers.**	C. Northbound Connector is 1456 ft long D. Southbound Connector is 1305 ft long	Medium	Geometric, horizontal, and vertical constraints determine length of connectors. The single lane connectors ramps connect single lane express lanes on either side.

9. RIGHT OF WAY

The following section includes project information addressing right of way acquisition and utility relocation.

8A. Right of Way

For build alternatives 1 and 2, right of way acquisition will be required to widen US 101 to accommodate the managed lane direct connector. Sliver acquisitions from up to fifteen (15) parcels along Washington and Adams Streets in San Mateo east of US 101 will be required. In addition, acquisition of up to 10-feet of an existing 30-foot Public Utility Easement (PUE) which lies within up to 16 parcels north and south of Kehoe Avenue will be required. Temporary Construction Easements (TCE) will be needed to reconstruct sound walls at various locations along US 101 north and south of SR 92. Existing airspace tenants within the project limits, such as parking lots, storage facilities, and various businesses, may be temporarily impacted by the project. Proper notice and compensation (as appropriate and per contract terms) will be provided for any impact to airspace tenants.

8B. Utilities and Drainage

There are numerous utilities within or adjacent to the project limits. PG&E distribution facilities and San Mateo storm drainage facilities lie within a 30-foot PUE directly adjacent to the east side of US 101 north of SR 92 in the area of the Kehoe Avenue ramps. San Mateo sanitary sewer facilities appear to lie within US 101 north and south of Kehoe Ave, and a 39-inch sanitary sewer crosses US 101 at 16th Avenue. Joint utility poles cross US 101 at Haddon Drive and south of Hillsdale Boulevard. Two PG&E underground electrical facilities cross US 101 near Borel Creek. Encased PG&E gas facilities cross US 101 at 16th Avenue, south of SR 92, and south of Hillsdale Boulevard. An encased 30” water line crosses US 101north of SR 92.

Along SR 92, PG&E overhead transmission electric facilities cross SR 92 west of Vintage Parkway, west of Foster City Boulevard, and west of the San Mateo-Hayward Bridge. Underground PG&E electric facilities cross SR 92 on the west side of Mariner Island Boulevard and west of Vintage Parkway. PG&E gas lines cross SR 92 at Mariner Island Boulevard and Foster City Boulevard. Foster City domestic water lines cross SR 92 at within both Mariner Island and Foster City Boulevards. Further, underground telephone lines cross SR 92 near both Mariner Island and Foster City Boulevards.

During the PA&ED phase of the project, the design team will collect additional utility facility mapping and verify impacts with utility owners through the utility verification process as prescribed by the Caltrans Project Development Procedures Manual Chapter 17. Should utility relocation be required, Buy American provisions will be implemented per NEPA clearance. During the PA&ED and PS&E phases, all existing utilities within the project limits will be evaluated for compliance with utility encroachment policies. All non-compliant utilities facilities must be relocated unless Caltrans’ Headquarters Chief of the Division of Design approves a UPVR which allow(s) the facility/facilities to remain in place.

10. STAKEHOLDER INVOLVEMENT

Stakeholder involvement includes coordination with the Caltrans, cities of Foster City and San Mateo, and C/CAG. Thus far, all project stakeholders have participated in Project Development Team meetings and are fully engaged in developing the project purpose and need and in reviewing the project improvements.

11. ENVIRONMENTAL COMPLIANCE

This project is anticipated to require an Environmental Impact Report (EIR) under the California Environmental Quality Act (CEQA) and an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA). The project has the potential to be processed as a "Routine EA" because the alternatives are not complex (they would be built within the existing median of the highways, but do require at least partial property acquisition at two locations), and they should not involve complex endangered species consultation or high mitigation costs. Further work will be needed to verify whether a "Complex EA" will be required. Factors for consideration for a Routine versus Complex EA for this project may include, but not be limited to, project controversy over potentially significant environmental impacts, substantial mitigation, or if the project will result in an unavoidable Section 4(f) use determination.

The project will construct new elevated managed lane direct connector ramps within the State right-of-way, which will be visible to nearby properties including residences. The existing interchange has ramps at two elevations, and this project would add a third layer of managed lane direct connector ramps. These new ramps will be new HOV lane connectors, adding new capacity within the interchange. An analysis of vehicle miles traveled (VMT) will be necessary to compare the project's build and no build alternatives, and existing conditions, to determine impacts consistent with CEQA VMT requirements. An EIR is identified to address the potential for significant visual effects and mitigation, VMT associated impacts, and any associated controversy. If technical studies and scoping do not identify these issues as significant or controversial, then the CEQA document could be a Negative Declaration or Mitigated Negative Declaration.

Right of Way Impacts and Section 4(f). The project would involve at least partial property acquisitions from single family residential parcels in two quadrants of the interchange. It may be possible to maintain the existing homes in place if acquisition can be accomplished by maintaining the lots in compliance with local zoning lot set back standards.

Otherwise, full property acquisitions should be assumed until right-of-way negotiations take place as part of the PS&E phase.

Sliver acquisition may be required at the City of San Mateo Washington Playground, a small park in the northeast quadrant of the interchange. This partial acquisition would impact the westerly edge of the park to enable relocation of an existing sound wall, but it is not anticipated that the continued use of the park would be affected. Construction of

the project may require temporary closure of the San Francisco Bay Trail where it passes underneath the San Mateo-Hayward Bridge. However, no acquisition is anticipated at this location. Similarly, a temporary trail closure may be needed at the Foster City Levee Pedway located on the east side of Seal Slough (a recreational multi-use trail) during installation of additional bridge decking above the trail. These actions would require review under Section 4(f).

Sliver acquisitions may also be required at the parcels located north and south of the NB US 101 exit and onramps at Kehoe Ave. The area impacted by the reconstruction of the off and on ramps at Kehoe is incombered by a 30 feet PUE. The project would affect the PUE and necessitate partial acquisition at the two properties that border the on-and off-ramps. It will be necessary to coordinate this acquisition with Caltrans, the City of San Mateo and the private homeowners.

Bay Conservation and Development Commission (BCDC). BCDC jurisdiction does not appear to include the Seal Slough or the Foster City Lagoon as they are not subject to tidal influence. BCDC jurisdiction does include the Bay Shoreline at and beneath the western abutment of the San Mateo-Hayward Bridge. Work on or below the bridge would require a BCDC permit.

Biological Resources. The project area is highly urbanized but does include creeks and drainages. The need for any widening above Borel Creek where it is crossed by US 101 will need to be determined. On SR 92, widening of the structure above Seal Slough would be necessary, and would involve placement of new bents in and/or near this channel. In addition, there are ephemeral jurisdictional drainages within the quadrants of the interchange which may be affected by construction. A wetland delineation, Natural Environmental Study (NES), and Biological Assessment (BA) will be required, and mitigation may be necessary. Consultation with US Fish and Wildlife Service (USFWS) will be required. Consultation with the National Marine Fisheries Service (NMFS) will be required regarding work within Seal Slough and with the California Department of Fish and Wildlife for work within non-tidal waters. Pre-construction bird nesting surveys will be needed if vegetation removal is necessary between February 1 and August 31.

Cultural Resources. With the exception of the San Mateo-Hayward Bridge, the review of cultural resources records did not reveal properties eligible for the National Register of Historic Places (NRHP) or California Register of Historic Places (CRHR). Proposed work would not extend onto the San Mateo-Hayward Bridge, but work within the median and lighting may be required just to the west of the bridge.

These changes would need further evaluation during PA&ED to determine if a Finding of Effect is required. The project would involve at least partial acquisition of residential properties at two locations, and the structures on those properties will require evaluation for eligibility; all are post-World War II housing. Four sites were identified in the archaeological resource records search, but all are located outside of the project area. Anticipated cultural resources reporting would involve at least a Historic Resources Evaluation Report (HRER), Archaeological Survey Report (ASR), and a Historic Properties Survey Report (HPSR).

Noise. Segments of existing noise walls in the northeast and southwest quadrants would require removal and reconstruction to accommodate freeway widening and ramp realignments. The project would also introduce two new overhead connector ramp structures that will change the existing noise environment. A Noise Survey Report (NSR) and Noise Abatement Decision Report (NADR) will be required. Public notification and outreach should be planned to provide affected residences advanced notification, and community meetings should be planned to provide updates and information.

Air Quality. As the project would involve new through lanes, an Air Quality Impact report will be required, along with consultation with the Bay Area Air Quality Management District (BAAQMD) Task Force. The Air Quality Impact report will evaluate greenhouse gas emissions against current significance criteria.

Water Quality. Water quality studies will be needed. This project will result in additional paved surfaces and runoff that will require treatment and permits. Assessment of whether treatment can be achieved within the right-of-way should be completed early during the PA&ED phase.

Sea Level Rise and Floodplains. Although the project would not be within a 100-year floodplain, it would be adjacent to Seal Slough, the Foster City Lagoon, and the nearby San Francisco Bay. In 2018, Foster City passed Measure P to address Sea Level Rise (SLR). In addition, San Mateo County completed a SLR Vulnerability Study the same year. This issue will require an SLR assessment, and coordination with the County and Foster City during the PA&ED phase.

Approvals during the PA&ED phase will be required, and include:

- Federal Highway Administration (FHWA) for concurrence with the project's conformity to the Federal Clean Air Act and other requirements.
- US Fish & Wildlife Service (USFWS) and possibly National Marine Fisheries Service (NMFS) for Section 7 consultation for threatened and endangered species.
- State Historic Preservation Officer (SHPO) for concurrence on the findings for historic resources and Section 106 requirements.
- US Army Corps of Engineers (USACE) for concurrence on the delineation of wetlands and other waters of the United States.
- Bay Area Air Quality Conformity Task Force for concurrence on whether or not this is a Project of Air Quality Concern.

Regulatory permits will be required during PS&E. These may include:

- Section 404 permit from the US Army Corps of Engineers
- Section 401 Water Quality Certification or Waiver from the SF Regional Water Quality Control Board
- California Department of Fish and Wildlife: 1602 Lake and Streambed Alteration Notification for affects to non-tidal channels and water bodies
- San Francisco Bay Conservation and Development Commission: Permit for work within 100-feet of the Bay shoreline at and near the San Mateo-Hayward bridge

Caltrans will act as the lead agency for CEQA/NEPA.

12. FUNDING

It has been determined that this project is eligible for Federal-aid funding.

11A. Funding

Funding for the subsequent phases is anticipated to be provided through a mix of State, local, and federal sources, but no funding for future phases has been identified.

This project is listed in the SMCTA's 2004 Expenditure Plan as a highway project in Key Congested Areas and is eligible for Measure A Highway Program funding. It is also listed as an eligible Countywide Highway Congestion Improvements in the San Mateo County Relief Plan for Measure W approved by voters in 2018. The project is listed in the Regional Transportation Plan, Plan Bay Area 2040 (RTP ID#17-06-0009) and the Transportation Improvement Program (TIP ID #SM-090014). The project is also listed in the Regional Measure 3 (RM3) Expenditure Plan under Corridor-Specific Capital Projects category. Construction funding is anticipated to be either STIP RTIP, Measure A, Measure W, other future funding programs, or a combination of those funding sources.

11B. Programming

Funding for future phases has not been identified or programmed. Funding for PA&ED phase will be identified before PA&ED begins.

Funding	**Fiscal Year Estimate***					
	Prior	**20/21**	**21/22**	**22/23**	**23/24**	**Total**
Component	**In thousands of dollars ($1,000)**					
PA&ED Support	-	-	-	-	-	TBD
PS&E Support	-	-	-	-	-	TBD
Right of Way Support	-	-	-	-	-	TBD
Construction Support	-	-	-	-	-	TBD
Right of Way	-	-	-	-	-	TBD
Construction	-	-	-	-	-	TBD
Total	-	-	-	-	-	**-TBD**

*Funding is not yet identified for future phases. Funding for PA&ED will be in place before the beginning of PA&ED phase and future phase funding will be identified later.

11C. Capital Outlay Project Estimate

The estimated total project capital outlay cost for the build alternative ranges from approximately $108.1 million to $121.8 million as shown in the table below. Attachment C includes the breakdown of the cost estimates.

	Range of Estimate (Escalated @ 3%)		
	Construction[2]	**Right of Way[3]**	**Total**
Alternative 1	$108.1 M ($129.2M)	$2.4 M ($2.7 M)	$110.5 M ($131.9 M)
Alternative 2	$121.8 M ($145.5 M)	$2.4 M ($2.7 M)	$124.1 M ($148.2M)
Alternative 2 Design Variation	$120.8 M ($144.3 M)	$2.4 M ($2.7 M)	$123.2 M ($147.0 M)

The level of detail available to develop these capital outlay project estimates is only accurate to within the above ranges and is intended for long-range planning purposes only. The capital outlay project estimates should not be used to program or commit State-programmed capital outlay funds.

11D. Capital Outlay Support Estimate

The Capital Outlay Support Cost needed to complete the PA&ED phase is estimated to range from $10.8 million to $12.2 million for the project improvements (estimated at 10% of the un-escalated construction cost). At the start of the PA&ED phase, a workplan can be developed to capture the true estimate for PA&ED support cost since the estimated amount in the approved PSR-PDS is not based on the bottom up estimate. Bottom up detailed estimate can be prepared at that time.

11E. Cooperative Agreement

A Cooperative Agreement for the PA&ED phase will be executed between Caltrans and SMCTA and/or C/CAG prior to the start of the PA&ED phase. A draft Cooperative Agreement has been included, see Attachment Q: Coop Agreement. This approved document serves as the authorizing document for the Project to move into the development of PA&ED Phase. Separate future Cooperative Agreements for the Plans, Specifications, and Estimates (PS&E) and Construction phases of the project will be prepared before those phases begin.

[2] Escalation to year 2026
[3] Escalation to year 2025 and Includes Environmental Mitigation Cost

13. DELIVERY SCHEDULE

Project Milestones	Scheduled Delivery Date (Season/Year)
Begin Environmental (PA&ED) Phase	Fall 2020
Complete PA&ED Phase	Summer 2023
Begin PS&E Phase	Summer 2023
Right of Way Certification	Winter 2025
Ready to List	Winter 2025
Begin Construction	Summer 2026
End Construction	Winter 2028

The anticipated funding fiscal year for construction is 2025/26.

14. RISKS

The Risk Register, which lists potential project risks is included in Attachment G. In summary, the main risks are as follows:

- Design and Environmental risks include not gaining approval for non-standard features, public or stakeholder project opposition, potential for the need to identify and study additional alternatives during PA&ED, uncertainty of utility locations, and discovery of hazardous materials in the Initial Site Assessment.
- Project Management and Organizational risks include potential delays in project development due to lack of available funding for subsequent phases, lack of community support due to project right of way impacts, and coordination with adjacent projects.
- Construction risks include discovery of unknown paleontological/ cultural resources or hazardous materials, unanticipated impacts to other state facilities, unanticipated conflicts with existing utilities, and inadequate traffic management during construction.

The current cost estimate and schedule does not account for quantitative impacts of the risks identified in the risk register. Attachment G includes the cost and schedule impacts of each individual risk.

The risk that is associated with a high cost impact includes rejection of the non-standard design features, particularly those that have a medium or low probability of approval. Rejection of these non-standard design features would result in significant additional project cost and right of way impact. For example, rejection of the non-standard outside shoulder at the Hillsdale Boulevard OC and the Foster City Boulevard OC would require the replacement of each structure. In addition, developing connector ramp geometry to meet 50 mph stopping sight distance would require connector ramp radii of greater than 2500 ft, resulting in significant additional structural cost and right of way acquisition. As

a result, the project cost would increase by between $100 million and $150 million and right of way cost by between $20 and $40 million.

15. EXTERNAL AGENCY COORDINATION

Federal Highway Administration (FHWA)
This project is considered to be a delegated project in accordance with the current Stewardship and Oversight Agreement signed between FHWA and Caltrans on May 28th, 2015.

The project requires the following coordination:

US Army Corps of Engineers
Department of the Army Permit for:

- Concurrence on delineation of wetlands and waters of the United States
- Clean Water Act Section 404

United States Coast Guard

- Bridge Permit

United States Fish & Wildlife Service and National Marine Fisheries Service

- Section 7 consultation for threatened and endangered species.

Federal Highway Administration (FHWA)

- Concurrence with the project's conformity to the Federal Clean Air Act and other requirements.

State Historic Preservation Officer (SHPO)

- Concurrence on the findings for historic resources and Section 106 requirements.

Bay Area Air Quality Conformity Task Force

- Concurrence on whether or not this is a Project of Air Quality Concern.

California Department of Fish and Wildlife

- California Fish and Game Code Section 1602

California State Lands Commission

- Section 106

Regional Water Quality Control Board

- Clean Water Act Section 401
- General Construction permits

San Francisco Bay Conservation and Development Commission

- California Government Code Title 7.2
- California Public Resources Code Division 19
- Major Permit

16. PROJECT REVIEWS

District Maintenance	*Leah Badu*	Date	April 17, 2020
District Traffic Safety Engineer	*Katie Yim*	Date	January 10, 2020
Headquarters Project Delivery Coordinator	*Robert Effinger*	Date	April 17, 2020
Project Manager	*Mohammad Suleiman*	Date	September 23, 2020
District Safety Review	*Haixiong Xu*	Date	September 23, 2020
Constructability Review	*Robert Kobal*	Date	April 17, 2020

17. PROJECT PERSONNEL

Mohammad Suleiman, Caltrans Project Manager	(510) 622-5943
Celia McCuaig, Caltrans Advance Planning Office Chief	(510) 286-5659
Mimy Hew, Caltrans Oversight Senior Engineer	(510) 286-5578
Robert Effinger, Caltrans Headquarters Project Delivery Coordinator	(916) 653-4937
Thomas Rosevear, Caltrans Environmental	(510) 286-5360
Michael O'Callaghan, Caltrans Right of Way	(510) 286-5308
Lance Hall, Caltrans Highway Operations	(510) 286-6311
Cesar Pujol, Caltrans Senior Engineer, TMP	(510) 286-4594
Arul Edwin, SMCTA Project Manager	(650) 339-8845
Michelle Cheung, SMCTA Assistant Project Manager	(650) 622-7897
Van Dominic Ocampo, C/CAG Transportation System Coordinator	(650) 599-1460
Sasha Dansky, Mark Thomas Project Manager	(925) 324-1703
Olga Rodriguez, Mark Thomas Project Engineer	(408) 453-5373
Swathi Korpu, Traffic Analysis, AECOM	(408) 961-8455
Jeff Zimmerman, Environmental, AECOM	(510) 874-3005

18. ATTACHMENTS

A. Location Map (1)
B. Project Alternatives Exhibits with Cross Sections (6)
C. Capital Outlay Project Estimates (6)
D. Preliminary Environmental Analysis Report (PEAR) (33)
E. Traffic Engineering Performance Assessment (TEPA) (41)
F. Not Used

G. Risk Register (1)
H. Storm Water Data Report (42)
I. PSR-PDS Survey Needs Questionnaire (1)
J. Quality Management Plan (19)
K. Division of Engineering Services PSR-PDS Scoping Checklist (4)
L. Design Scoping Index (8)
M. Reversible Gating System (1)
N. Improvements on San Mateo-Hayward Bridge (Not Included with Project) (9)
O. TMP Data Sheets (8)
P. Right of Way Conceptual Estimate (4)
Q. Draft Cooperative Agreement (19)

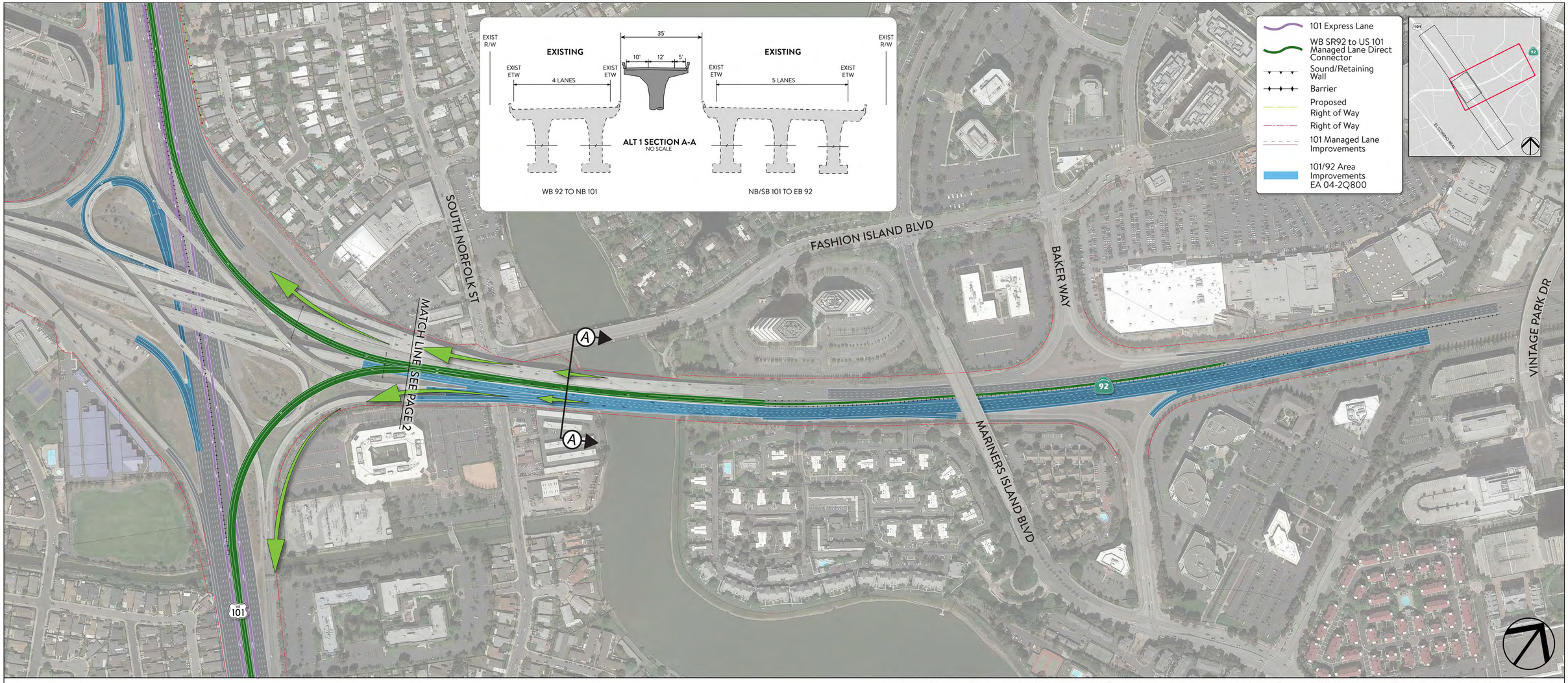
Attachment A

Location Map


N
Burlingame
101
END
PM R14.5
92
END
PM 12.9
San Mateo
82
Foster City
Hillsborough
BEGIN
PM R12.0
BEGIN
PM 10.6
92
Redwood City
101
Belmont
82
San Carlos
INTERSTATE
280

Attachment B

Project Alternatives Exhibits with Cross Sections



MARK THOMAS

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Graphic Scale
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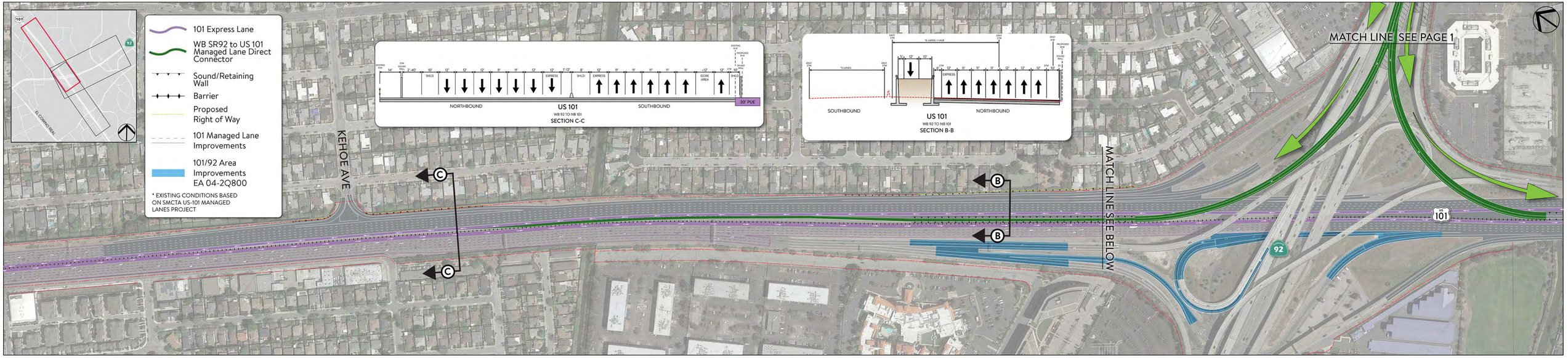
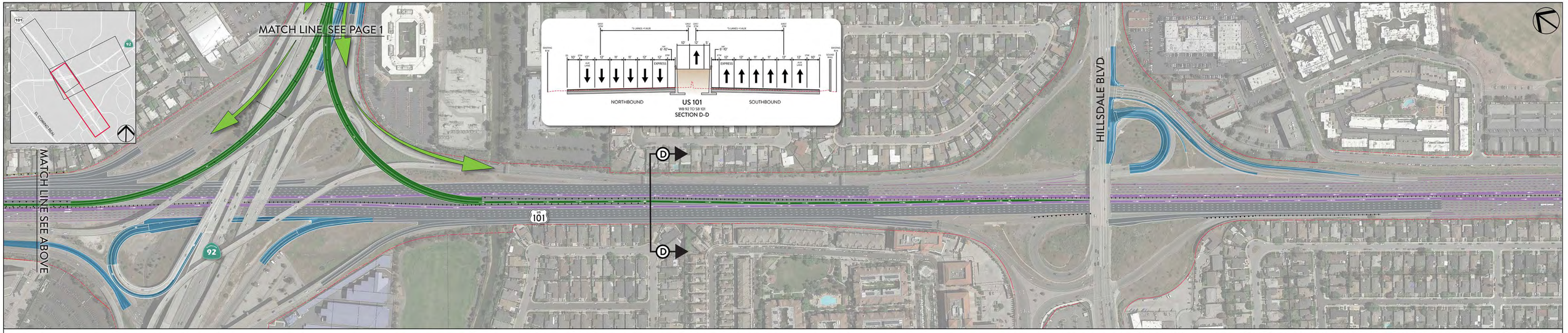
US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR PROJECT

ALTERNATIVE 1 - MANAGED LANE DIRECT CONNECTOR FROM WESTBOUND SR 92 TO US 101

PAGE 1





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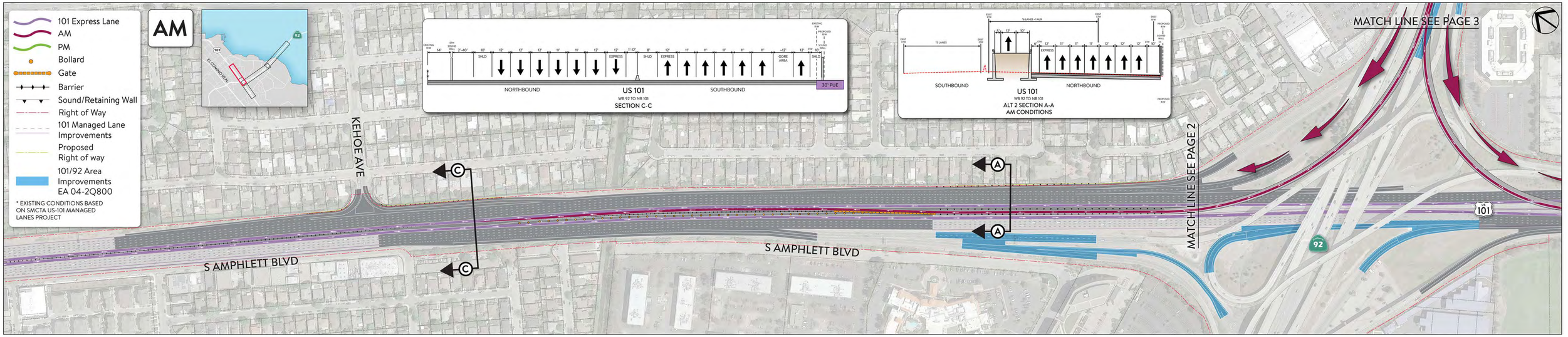
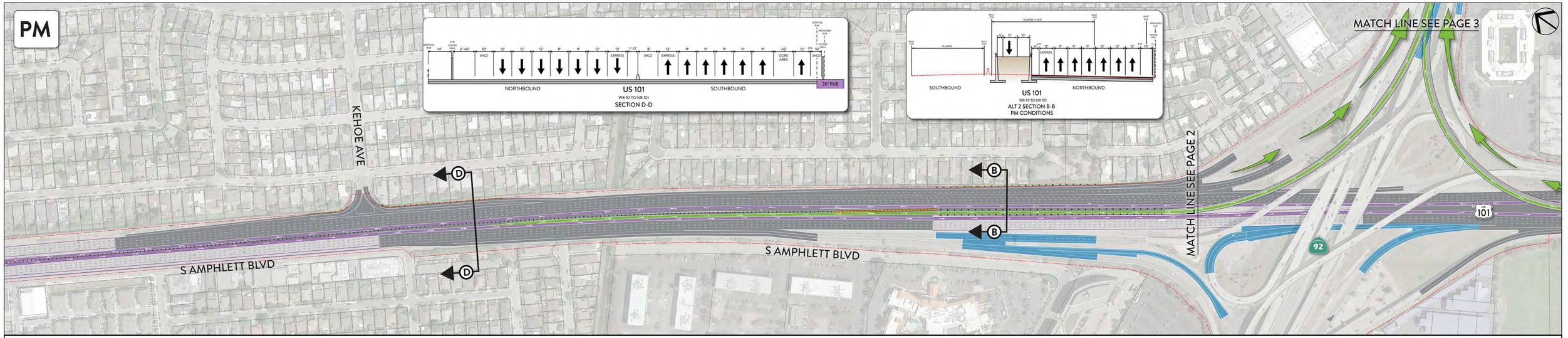
US 101 / SR DIRECT CONNECTOR PROJECT

ALTERNATIVE 1 - DIRECT CONNECTOR FROM WESTBOUND SR 92 TO US 101

PAGE 2





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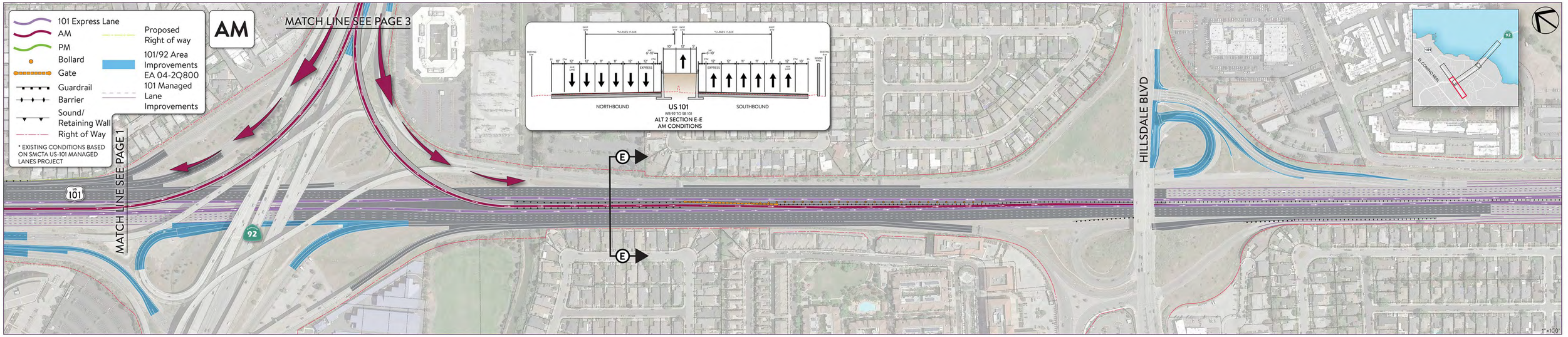
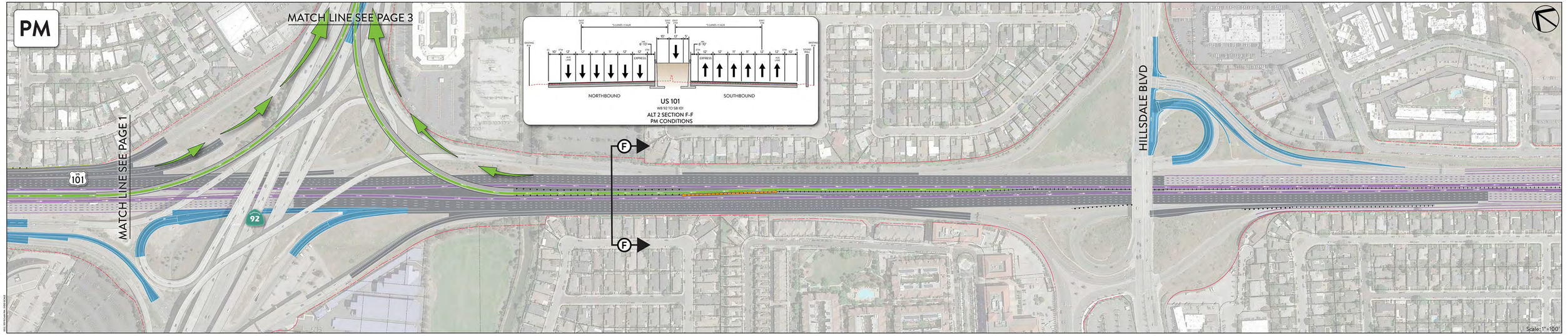
US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR PROJECT

ALTERNATIVE 2 - REVERSIBLE US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR

PAGE 1





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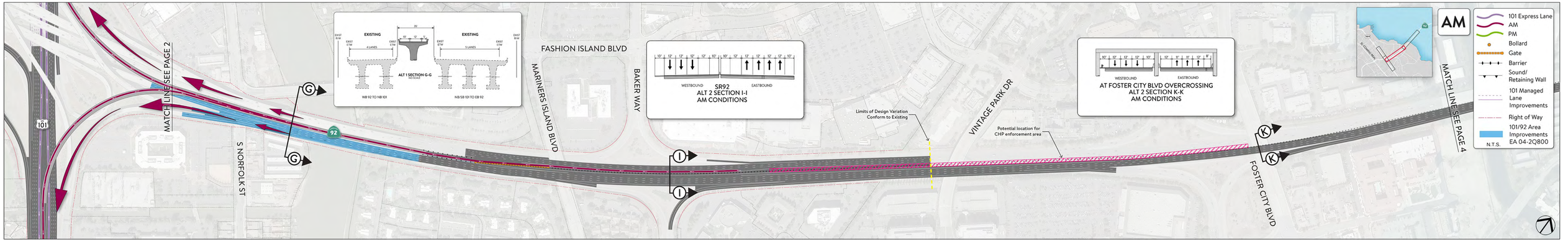
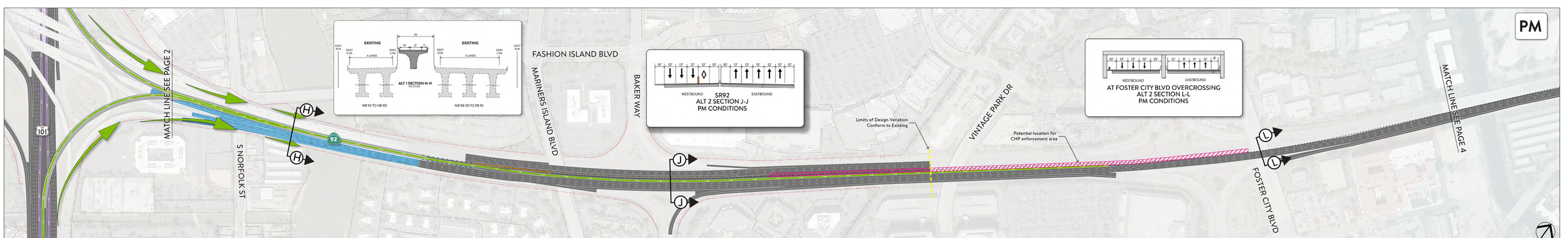
US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR PROJECT

ALTERNATIVE 2 - REVERSIBLE US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR

PAGE 2





MARK THOMAS

US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR PROJECT

ALTERNATIVE 2 - REVERSIBLE US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR

MARK THOMAS

US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR PROJECT

ALTERNATIVE 2 - REVERSIBLE US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR

Attachment C

Capital Outlay Project Estimates

US 101/SR 92 Direct Connector Project

PSR-PDS COST ESTIMATE

Alternative 1: US 101 / SR 92 Direct Connector from Westbound SR 92 to Northbound and Southbound US 101

6/16/2020

Roadway Items:	Quantity	Unit	Unit Cost	Item Total	Total
Clearing and Grubbing	12.6	AC	$ 6,500	$ 83,000	
New Pavement - Mainline[1]	426,000	SF	$ 14	$ 5,964,000	
New Pavement - Ramp / Local Road[1]	124,000	SF	$ 9	$ 1,116,000	
Pavement Overlay	10,000	SF	$ 3.50	$ 35,000	
Sound Wall	1,300	LF	$ 500	$ 650,000	
Retaining Wall	18,500	SF	$ 125	$ 2,313,000	
Barrier	14,000	LF	$ 250	$ 3,500,000	
Midwest Guardrail System (MGS)	1,000	LF	$ 50	$ 50,000	
Automated Gate	0	EA	$ 500,000	$ -	
Hydraulic Channelizers	0	EA	$ 15,000	$ -	
Landscape/Irrigation	1	LS	$ 500,000	$ 500,000	
Ramp Metering	1	LS	$ 5,000,000	$ 5,000,000	
Fiber Optic Conduit System	8,000	LF	$ 120	$ 960,000	
OH Sign (Cantilever)	8	EA	$ 160,000	$ 1,280,000	
OH Sign (Butterfly)	3	EA	$ 220,000	$ 660,000	
Street lighting (Circuit)	0	EA	$ 25,000	$ -	
High Mast Lighting (Circuit)	30	EA	$ 25,000	$ 750,000	
Traffic Control (Includes TMP Elements)	1	LS	$ 2,680,000	$ 2,680,000	
Storm Drain	17,000	LF	$ 170	$ 2,890,000	
Temporary WPC	1	LS	$ 356,000	$ 356,000	
WPC / Treatment	1	LS	$ 2,530,000	$ 2,530,000	
Trash Capture	1	LS	$ 1,010,240	$ 1,011,000	
Minor & Misc. items (20%)	1	LS	$ 6,264,000	$ 6,264,000	
Mobilization (10%)	1	LS	$ 3,860,000	$ 3,860,000	
Contingency (25%)	1	LS	$ 9,648,000	$ 9,648,000	
Roadway Subtotal					*$ 52,100,000*

Structure items:	Quantity	Unit	Unit Cost	Item Total	Total
New Bridge	140,000	SF	$ 400	$ 56,000,000	
Widen Bridge	0	SF	$ 350	$ -	
Structure Demolition	0	SF	$ 15	$ -	
Structure Subtotal					*$ 56,000,000*

Subtotal Construction Cost	***$ 108,100,000***

Construction Cost Escalation (3% per year)	Construction Cost	Escalation (6 years)	Total
Escalated Construction Cost (Year 2026)	$ 108,100,000	$ 20,980,000	**$ 129,100,000**

Right of way Items:	Cost	Total
Acquisition costs	$ 750,000.00	
Utility Relocation (Est)	$ 100,000	
Environmental Mitigation (Estimate)	$ 1,500,000	
Subtotal Right of Way Cost		***$ 2,350,000***

Right of Way Cost Escalation (3% per year)	Right of Way Cost	Escalation (5 years)[3]	Total
Escalated Right of Way Cost (Year 2025)[3]	$ 2,350,000	$ 335,000	**$ 2,685,000**

Capital Outlay Support Costs[2]	Cost	Total
Preliminary Eng/Envir (10%)	$ 10,810,000	
Final Design (10%)	$ 10,810,000	
Construction Administration (15%)	$ 16,215,000	
Construction Staking (1%)	$ 1,081,000	
R/W Engineering/Acquisition[3]	$ 1,100,000	
Subtotal Capital Outlay Support Costs		**$ 40,020,000**

Grand Total (Escalated)	**$ 171,800,000**

1. New Pavement unit prices include roadway excavation.
2. All Soft costs (except R/W Engineering) are calculated as percentage of unescalated Roadway and Structure Items.
3. See Right of Way Conceptual Estimate for Details

US 101/SR 92 Direct Connector Project

PSR-PDS COST ESTIMATE

Alternative 2 Reversible US 101 / SR 92 Managed Lane Direct Connector

6/16/2020

Roadway Items:	Quantity	Unit	Unit Cost	Item Total	Total
Clearing and Grubbing	14.4	AC	$ 6,500	$ 94,000	
New Pavement - Mainline[1]	495,000	SF	$ 14	$ 6,930,000	
New Pavement - Ramp / Local Road[1]	133,500	SF	$ 9	$ 1,229,000	
Pavement Overlay	30,000	SF	$3.50	$ 105,000	
Sound Wall	1,700	LF	$ 500	$ 850,000	
Retaining Wall	21,000	SF	$ 125	$ 2,625,000	
Barrier	16,500	LF	$ 250	$ 4,125,000	
CHP Enforcement Area	1	LS	$ 1,600,000	$ 1,600,000	
Midwest Guardrail System (MGS)	2,000	LF	$ 50	$ 100,000	
Automated Gate	3	EA	$ 500,000	$ 1,500,000	
Hydraulic Channelizers	120	EA	$ 15,000	$ 1,800,000	
Landscape/Irrigation	1	LS	$ 500,000	$ 500,000	
Ramp Metering	1	LS	$ 5,000,000	$ 5,000,000	
Fiber Optic Conduit System	8,000	LF	$ 120	$ 960,000	
OH Sign (Cantilever)	8	EA	$ 160,000	$ 1,280,000	
OH Sign (Butterfly)	3	EA	$ 220,000	$ 660,000	
Street lighting (Circuit)	0	EA	$ 50,000	$ -	
High Mast Lighting (Circuit)	35	EA	$ 25,000	$ 875,000	
Traffic Control (Includes TMP Elements)	1	LS	$ 3,160,000	$ 3,160,000	
Storm Drain	17,000	LF	$ 170	$ 2,890,000	
Temporary WPC	1	LS	$ 454,000	$ 454,000	
WPC / Treatment	1	LS	$ 2,890,000	$ 2,890,000	
Trash Capture	1	LS	$ 1,154,429	$ 1,155,000	
Minor & Misc. items (20%)	1	LS	$ 7,926,000	$ 7,926,000	
Mobilization (10%)	1	LS	$ 4,871,000	$ 4,871,000	
Contingency (25%)	1	LS	$ 12,177,000	$ 12,177,000	
Roadway Subtotal					*$ 65,760,000*

Structure items:	Quantity	Unit	Unit Cost	Item Total	Total
New Bridge	140,000	SF	$ 400	$ 56,000,000	
Widen Bridge	0	SF	$ 350	$ -	
Structure Demolition	0	SF	$ 15	$ -	
Structure Subtotal					*$ 56,000,000*

Subtotal Construction Cost	***$ 121,760,000***

Construction Cost Escalation (3% per year)	Construction Cost	Escalation (6 years)	Total
Escalated Construction Cost (Year 2026)	$ 121,760,000	$ 23,630,000	**$ 145,400,000**

Right of way Items:	Cost	Total
Acquisition costs	$ 750,000.00	
Utility Relocation (Est)	$ 100,000	
Environmental Mitigation (Estimate)	$ 1,500,000	
Subtotal Right of Way Cost		***$ 2,350,000***

Right of Way Cost Escalation (3% per year)	Right of Way Cost	Escalation (5 years)[3]	Total
Escalated Right of Way Cost (Year 2025)[3]	$ 2,350,000	$ 335,000	**$ 2,685,000**

Capital Outlay Support Costs[2]	Cost	Total
Preliminary Eng/Envir (10%)	$ 12,176,000	
Final Design (10%)	$ 12,176,000	
Construction Administration (15%)	$ 18,264,000	
Construction Staking (1%)	$ 1,218,000	
R/W Engineering/Acquisition[3]	$ 1,100,000	
Subtotal Capital Outlay Support Costs		**$ 44,940,000**

Grand Total (Escalated)	**$193,000,000**

1. New Pavement unit prices include roadway excavation.
2. All Soft costs (except R/W Engineering) are calculated as percentage of unescalated Roadway and Structure Items.
3. See Right of Way Conceptual Estimate for Details

US 101/SR 92 Direct Connector Project

PSR-PDS COST ESTIMATE

Alternative 2 DV Reversible US 101 / SR 92 Direct Connector - Design Variation

6/16/2020

Roadway Items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
Clearing and Grubbing	14.4	AC	$ 6,500	$ 94,000	
New Pavement - Mainline[1]	495,000	SF	$ 14	$ 6,930,000	
New Pavement - Ramp / Local Road[1]	133,500	SF	$ 9	$ 1,202,000	
Pavement Overlay	30,000	SF	$ 3.50	$ 105,000	
Sound Wall	1,700	LF	$ 500	$ 850,000	
Retaining Wall	25,000	SF	$ 125	$ 3,125,000	
Barrier	16,500	LF	$ 250	$ 4,125,000	
CHP Enforcement Area	1	LS	$ 1,600,000	$ 1,600,000	
Midwest Guardrail System (MGS)	1,500	LF	$ 50	$ 75,000	
Automated Gate	3	EA	$ 500,000	$ 1,500,000	
Hydraulic Channelizers	120	EA	$ 15,000	$ 1,800,000	
Landscape/Irrigation	1	LS	$ 500,000	$ 500,000	
Ramp Metering	1	LS	$ 5,000,000	$ 5,000,000	
Fiber Optic Conduit System	10,000	LF	$ 120	$ 1,200,000	
OH Sign (Cantilever)	6	EA	$ 160,000	$ 960,000	
OH Sign (Butterfly)	3	EA	$ 220,000	$ 660,000	
Street lighting (Circuit)	0	EA	$ 50,000	$ -	
High Mast Lighting (Circuit)	30	EA	$ 25,000	$ 750,000	
Traffic Control (Includes TMP Elements)	1	LS	$ 2,680,000	$ 2,680,000	
Storm Drain	15,000	LF	$ 170	$ 2,550,000	
Temporary WPC	1	LS	$ 447,000	$ 447,000	
WPC / Treatment	1	LS	$ 2,890,000	$ 2,890,000	
Trash Capture	1	LS	$ 1,154,429	$ 1,155,000	
Minor & Misc. items (20%)	1	LS	$ 7,809,000	$ 7,809,000	
Mobilization (10%)	1	LS	$ 4,801,000	$ 4,801,000	
Contingency (25%)	1	LS	$ 12,002,000	$ 12,002,000	
Roadway Subtotal					*$ 64,810,000*

Structure items:	**Quantity**	**Unit**	**Unit Cost**	**Item Total**	**Total**
New Bridge	140,000	SF	$ 400	$ 56,000,000	
Widen Bridge	0	SF	$ 350	$ -	
Structure Demolition	0	SF	$ 15	$ -	
Structure Subtotal					*$ 56,000,000*

Subtotal Construction Cost	***$ 120,810,000***

Construction Cost Escalation (3% per year)	**Construction Cost**	**Escalation (6 years)**	**Total**
Escalated Construction Cost (Year 2026)	$ 120,810,000	$ 23,450,000	**$ 144,260,000**

Right of way Items:	**Cost**	**Total**
Acquisition costs	$ 750,000.00	
Utility Relocation (Est)	$ 100,000	
Environmental Mitigation (Estimate)	$ 1,500,000	
Right of way Subtotal		***$ 2,350,000***

Right of Way Cost Escalation (3% per year)	**Right of Way Cost**	**Escalation (5 years)[3]**	**Total**
Escalated Right of Way Cost (Year 2025)[3]	$ 2,350,000	$ 335,000	**$ 2,685,000**

Capital Outlay Support Costs[2]	**Cost**	**Total**
Preliminary Eng/Envir (10%)	$ 12,081,000	
Final Design (10%)	$ 12,081,000	
Construction Administration (15%)	$ 18,122,000	
Construction Staking (1%)	$ 1,209,000	
R/W Engineering/Acquisition[3]	$ 1,100,000	
Subtotal Capital Outlay Support Costs		**$ 44,600,000**

Grand Total (Escalated)	**$191,500,000**

1. New Pavement unit prices include roadway excavation.
2. All Soft costs (except R/W Engineering) are calculated as percentage of unescalated Roadway and Structure Items.
3. See Right of Way Conceptual Estimate for Details

Project Study Report – Project Development Support
Capital Outlay Project Estimate

Dist - Co – Rte	04-SM-US 101 & SR 92
Post Mile	PM 10.6-12.9/ PM R12.0- R14.5
Program Code	
Project Number	EA 04-2Q790
Month/Year	September 2020

PROJECT DESCRIPTION: US 101 / SR 92 Direct Connector Project

Limits: Along US 101 from 0.6 mile south of East Hillsdale Boulevard Overcrossing to 0.6 mile south of 3rd Avenue Overcrossing and along SR 92 from 0.4 mile east of South Delaware Street Undercrossing and the San Mateo-Hayward Bridge.

Proposed Improvement (Scope): The two project alternatives include:

- A managed lane direct connector from westbound SR 92 to northbound and southbound US 101
- A reversible managed lane direct connector that would be open from westbound SR 92 to northbound and southbound US 101 in the AM peak period and would be open from northbound and southbound US 101 to eastbound SR 92 in the PM peak period

SUMMARY OF ESCALATED PROJECT COST ESTIMATE[1]

TOTAL ESCALATED ROADWAY ITEMS	$ 62.3 M to $ 78.6 M
TOTAL ESCALATED STRUCTURE ITEMS	$ 66.9 M
SUBTOTAL ESCALATED CONSTRUCTION	$ 129.2 M to $ 145.5 M
TOTAL ESCALATED ENVIRONMENTAL	$ 1.7 M
TOTAL ESCALATED RIGHT-OF-WAY ITEMS	$ 1.0 M
TOTAL ESCALATED PROJECT CAPITAL OUTLAY	$ 131.9 M to $ 148.2 M

[1] 3% escalation has been assumed for a 5-year period (2020 -2025) for Environmental Mitigation and Right of Way Items, while a 6-year period (2020-2026) has been used for Construction Costs

SUMMARY OF UNESCALATED PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 52.1 M to $ 65.8 M
TOTAL STRUCTURE ITEMS	$ 56.0 M
SUBTOTAL CONSTRUCTION COSTS	$108.1 M to $ 121.8
TOTAL ENVIRONMENTAL MITIGATION ITEMS	$ 1.5 M
TOTAL RIGHT-OF-WAY ITEMS	$ 0.9 M
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 110.5 M to $ 124.1 M

I. ROADWAY ITEMS

Explanation:
The road items include structural pavement section, median barrier, overhead signs, retaining wall, sound wall, drainage, water pollution control, fiber optic system, lighting, reversable lane gating system, traffic control and other minor items.

TOTAL ROADWAY ITEMS $ 45.6 M to $ 59.2 M

II. STRUCTURES ITEMS

Alternative 1 and 2:

Bridge Name	Structure (1) SR 92 Connector	Structure (2) North US 101 Connector	Structure (3) South US 101 Connector
Total Cost for Structure	$ 25.4 M	$ 15.7 M	$ 14.9 M

Explanation:
The new direct connector structures from SR 92 to US 101.

TOTAL STRUCTURE ITEMS $ 56.0 M

III. ENVIRONMENTAL MITIGATION
Alternative 1 and 2:

Explanation:
Environmental mitigation cost is an allowance as actual mitigation costs have not been identified. Cost includes anticipated permitting and mitigation costs.

TOTAL ENVIRONMENTAL MITIGATION ITEMS $1.5 M

IV. RIGHT-OF-WAY ITEMS
Alternative 1 and 2:

	Value
A. Acquisition, including damages to remainder(s) and Goodwill, and temporary construction easements.	$ 400,000
B. Grantor Appraisal Cost	$ 250,000
C. Title and Escrow Fees	$ 100,000
D. Utility Relocation (State Local Agency Share)	$ 100,000

Explanation:
Right of way cost includes partial (sliver) takes from as many as 31 parcels east of US 101 north of SR 92. Acquisitions from 16 parcels are limited to up to a 10-foot strip encumbered by a Public Utility Easement. Acquisitions from the remaining parcels are a sliver acquisition encompassing a total of 3000 square feet cumulatively across the 15 parcels. Temporary construction easements will be required north and south of SR 92 to enable reconstruction of sound walls at the existing right of way. A total of 50 acquisitions are assumed.

No utility conflicts have yet been identified. A $100,000 allowance has been included for any possible unforeseen impacts.

TOTAL RIGHT-OF-WAY ITEMS $ 850,000

Attachment D

Preliminary Environmental Analysis Report (PEAR)

PRELIMINARY ENVIRONMENTAL ANALYSIS REPORT

1. Project Information

District 04	County SM	Route US 101/SR 92	PM 04-SM-US 101 (PM 10.6 to 12.9) and SR 92 (PM R 12.0 to R 14.5)	EA 04-2Q790
Project Title: US 101/State Route 92 Direct Connector Project				
Project Manager Mohammad Suleiman			Phone # (510) 622-5943	
Project Engineer Sasha Dansky, Mark Thomas			Phone # (925) 938-0383	
Environmental Branch Chief, Thomas Rosevear			Phone # (510) 286-5360	
PEAR Preparer Jeff Zimmerman, AECOM			Phone # (510) 874-3005	

2. Project Description

PURPOSE
The purpose of the project is to:

- Improve the operational efficiency for multi-occupant vehicles and express lane users traveling between US 101 and SR 92, east of US 101,
- Increase person throughput (the number of people moved), and
- Encourage carpooling and transit use.

NEED
The US 101/SR 92 interchange is a major facility that serves substantial regional traffic as well as local street connections. There are no existing High Occupancy Vehicle (HOV) bypasses or lane designations for the connecting ramps at US 101 and SR 92 that might provide incentives for carpool or bus use. There is substantial delay and congestion within the interchange area caused by heavy traffic volumes and inadequate capacity during peak periods, without any options for multi-occupant vehicles to bypass the existing congested conditions. In addition, inefficient weaving and merging at the interchange ramp connections contribute to the existing congestion. Congestion and weaving conflicts also contribute to higher than average collision rates at ramp and connector locations throughout the project limits. Specific major congestion locations are summarized below.

Congestion locations

AM Peak Period
Heavy traffic movement along westbound SR 92, from the San Mateo-Hayward Bridge to northbound and southbound US 101, creates substantial delay during the AM peak period.

- **Westbound SR 92 to Southbound US 101**. The existing single-lane loop connector does not carry adequate capacity to handle the heavy traffic volume from westbound SR 92 to southbound US 101. In addition, the westbound to southbound connector ramp merge with the US 101 mainline results in congestion on US 101 which spills back upstream of the loop connector merge, contributing to additional delay along both US 101 and the westbound to southbound connector ramp. Also contributing to the delay at this location are vehicles originating from the Edgewater Boulevard / Mariners Island Boulevard on-ramp heading westbound on SR 92 which must exit to northbound US 101 unless they merge to the number one lane or the number two lane, and this merging activity adds to delays.

- **Westbound SR 92 to Northbound US 101**. The queue from westbound SR 92 loop connector ramp to southbound US 101 (described above) extends beyond the off-ramp to northbound US 101, affecting westbound SR 92 mainline operation by blocking one of the exit lanes to northbound US 101. Additionally, the westbound SR 92 to northbound US 101 connector ramp is controlled by a ramp meter. Heavy traffic volumes using this connector merge with the Fashion Island Boulevard on-ramp (one general purpose lane and one HOV lane) prior to entering the northbound US 101 mainline. The queuing on this connector ramp is due to inadequate capacity on the US 101 mainline and weaving/merging along the ramp and at the ramp terminus, resulting in substantial backups beyond the ramp limit and onto westbound SR 92.

- **Eastbound and Westbound SR 92**. Eastbound traffic on SR 92 entering the interchange extends from the southbound US 101 ramp to beyond Alameda de las Pulgas (west of the US 101/SR 92 interchange). In the westbound direction, there is a bottleneck that develops at the South Delaware Street off-ramp forming a queue that extends back to the connector from northbound US 101. The westbound SR 92 off-ramp queue extends from the southbound/northbound US 101 ramps to the Foster City Boulevard interchange.

PM Peak Period
Heavy traffic movement from northbound and southbound US 101 to San Mateo-Hayward Bridge, through eastbound SR 92, creates substantial delay at several locations during the PM peak period.

- **Northbound and Southbound Connector Ramps and Eastbound SR 92 Mainline.** Heavy traffic on southbound US 101 connector ramp merging with the

northbound US 101 connector and the eastbound SR 92 mainline traffic over a short distance of 1,000 feet results in substantial delays, backing up traffic onto both the US 101 and SR 92 freeway mainlines. The congestion on eastbound SR 92 extends beyond Alameda de las Pulgas west of the US 101/SR 92 interchange. A bottleneck also occurs at the mainline lane drop east of Foster City Boulevard interchange and the queue from this bottleneck extends back to the US 101/SR 92 interchange and merges with the bottleneck at the US 101 ramps merge/lane drops.

- **Northbound US 101 to Eastbound SR 92.** The one-lane connector ramp does not have adequate capacity to handle traffic volume from northbound US 101 to eastbound SR 92, resulting in traffic typical queues on northbound US 101 that extends several miles past the East Hillsdale Boulevard and Marine Parkway/Ralston Avenue interchanges.

DESCRIPTION OF WORK
The following alternatives are being considered:

No Build Alternative
Under the No Build Alternative, the existing transportation facilities within the project area would remain unchanged, except for planned and programmed improvements proposed by the San Mateo US 101 Express Lanes Project as description in Section 6A of the PSR-PDS.

Build Alternatives
Two build alternatives that satisfy the purpose and need of the project are outlined below. The build alternatives have been developed in sufficient detail to establish project factors to be studied and evaluated in the PA&ED phase of project development. Plans and typical sections for each alternative are provided in Attachment B of the PSR-PDS. Neither build alternative would have any impact to either existing or planned bicycle or pedestrian facilities.

Alternative 1: Managed Lane Direct Connector from Westbound SR 92 to US 101
This alternative would construct a managed lane direct connector from the median of westbound SR 92 to the northbound and southbound US 101 median express lanes. The managed lane direct connector would begin on westbound SR 92 approximately 800 feet west of Mariner Island Blvd. Improvements to westbound SR 92 extend 1300 feet west of the Vintage Park Drive Overcrossing. At that location, a managed lane would be added to the left of the three (3) existing general-purpose lanes on SR 92. The managed lane would diverge from the general-purpose lanes at the Mariners Island Overcrossing and would climb on an elevated structure above the adjacent SR 92 lanes along the median of SR 92. Once adequate vertical clearance is achieved, the structure would branch into two lanes, one to the north and one to the south. The northbound and southbound connectors would cross over the existing freeway to freeway connector ramps and would cross northbound US 101 before descending within the median of US 101 and merge with the northbound and southbound median express lanes. The northbound connector ramp would be

constructed as a single lane ramp with 5- and 10- foot shoulders. To provide optimum stopping sight distance on the curved portion of the ramp, the southbound single lane US 101 connector ramp would be constructed with an 18-foot left shoulder and 6-foot right shoulder. See Attachment B of the PSR-PDS for layouts and cross sections.

The US 101 mainline would be widened to the east and west to accommodate the managed lane direct connector. On-ramp and off-ramp gores would be modified to accommodate the widening; however, significant ramp realignment is not anticipated except at the Kehoe Avenue ramps. Reconstruction of the NB US 101 Kehoe Avenue on- and off-ramps will be necessary to accommodate the Direct Connector improvements.

The westbound SR 92 improvements are proposed to extend to Vintage Park Drive. Improvements include minor modifications at Bakers Way off-ramp. Currently, there are 3 lanes on WB 92. A 4th westbound lane will be needed to add the managed lane. The Mariner Island Boulevard Overcrossing will span the improvements proposed and no modifications are anticipated. The specific layout of the start of the westbound managed lane will be studied further as part of the PA&ED phase, including determining the optimal location for beginning the improvements on westbound SR 92.

The proposed managed lane direct connector ramps would vertically clear all existing connector ramps and SR 92 and US 101 mainlines.

Improvements along northbound US 101 would extend from SR 92 to 1000 feet north of Kehoe Avenue. The limits along southbound US 101 would extend from SR 92 to approximately 1,500 feet south of the Hillsdale Boulevard Overcrossing.

Construction staging and lane closure requirements for this alternative appear consistent with typical major freeway interchange projects. Consideration of staging and traffic management will be considered during PA&ED phases and further developed during PS&E.

This alternative would perpetuate and maintain existing Transportation Management System (TMS) elements such as closed-circuit television (CCTV), vehicle detection systems, changeable message signs (CMS), variable message signs (VMS) for Highway Advisory Radio (HAR), fiber communication network/hubs, and/or ramp meters. Additional TMS features would be included as determined appropriate and consistent with TMS system plans during the PA&ED and PS&E phases of the project.

The proposed San Mateo US 101 Managed Lanes Project described in section 6a Route Description for US 101 will construct a CHP enforcement area in the median of US 101 1 mile south of this project. Currently SR 92 does not have any CHP enforcement areas nor are any currently proposed under this alternative.

Alternative 2: Reversible US 101 / SR 92 Managed Lane Direct Connector

This alternative would construct reversible managed lane median direct connector ramps between US 101 and SR 92. In the AM peak period, the reversible managed lane direct connector ramps would be open to SR 92 westbound traffic to provide access to the northbound and southbound US 101 median express lane. During the PM peak period, the traffic on the direct connector ramps would operate in reverse, providing access from the northbound and southbound US 101 express lanes to eastbound SR 92.

In the AM peak period the median reversible managed lane direct connector would begin on westbound SR 92 800 feet west of Mariner Island Blvd. Improvements to westbound SR 92 extend 1300 feet west of the Vintage Park Drive Overcrossing. At that location, a managed lane would open to the left of the three (3) existing general-purpose lanes on SR 92. The managed lane would diverge from the other general-purpose lanes at the Mariners Island Overcrossing and enter the reversible managed lane direct connector ramp at a gate. Once beyond the gate, the managed lane would climb on an elevated structure above the adjacent SR 92 lanes along the median of SR 92 and would branch to two lanes, one to the north and one to the south once adequate vertical clearance is achieved to allow elevating over SR 92. The northbound and southbound connectors would cross over the existing freeway-to-freeway connector ramps and would cross northbound US 101 before descending within the median of US 101 and merging with the northbound and southbound median express lanes. The northbound connector ramp would be constructed as a single lane ramp with 5-foot left shoulder and 10-foot right shoulder. To provide optimum stopping sight distance on the curved portion of the ramp, the southbound single lane US 101 connector ramp would be constructed with an 18-foot left shoulder and 5-foot right shoulder.

In the PM peak period, the median reversible managed lane direct connector would operate in reverse. North of SR 92 the reversible managed lane direct connector would begin by opening a second HOV lane in the median of southbound US 101 just south of Kehoe Avenue. Vehicles would enter the reversible managed lane direct connector at a gate located approximately 1,900 feet north of SR 92 at which point vehicles would travel along the reversible managed lane direct connector towards eastbound SR 92. South of SR 92 the reversible managed lane direct connector would begin by opening a second median HOV lane in the median of northbound US 101 approximately 600 feet north of Hillsdale Boulevard. Vehicles would enter the reversible managed lane direct connector at a gate located approximately 1,900 feet south of SR 92 at which point vehicles would travel along the reversible managed lane direct connector towards eastbound SR 92. The southbound to eastbound and northbound to eastbound direct connectors would merge into a single lane east of US 101 and then descend into the median of eastbound SR 92.

Since the PM peak period traffic would be using the same managed lane direct connector ramp structures as the AM peak period traffic (but in reverse), in the PM peak period the southbound to eastbound connector ramp would operate as a single lane ramp with a 10-foot left shoulder and 5-foot right shoulder. The northbound to eastbound connector ramp

would operate as a single lane ramp with an 18-foot right shoulder and 5-foot left shoulder.

The US 101 mainline would be widened to the east and west to accommodate the managed lane direct connector where they connect in the center median of US 101. On-ramp and off-ramp gores would be modified to accommodate the widening; however, significant ramp realignment is not anticipated. Improvements along northbound US 101 would extend from SR 92 to 1000 feet north of Kehoe Avenue. Reconstruction at the NB US 101 exit at Kehoe Ave will be necessary to accommodate the Direct Connector improvements. The limits along southbound US 101 would extend from SR 92 to approximately 1,500 feet south of the Hillsdale Boulevard Overcrossing.

The westbound SR 92 improvements will add a managed lane as the 4th lane to the existing 3-lane westbound SR 92. The westbound managed lane would operate in the AM peak-period and would extend westward from approximately 1200 feet west of the Vintage Park Drive Overcrossing. Improvements include minor modifications at Bakers Way off-ramp. The Mariner Island Boulevard Overcrossing will span the improvements proposed and no modifications to the structure are anticipated. Extending the westbound managed lane further east to the Foster City Boulevard overcrossing would require additional widening along westbound SR 92 from Vintage Park Drive to the Foster City Boulevard Overcrossing and realigning the westbound Foster City interchange ramps. The extension of the westbound managed lane to Foster City Boulevard is not included herein but determining the optimal location for beginning the improvements on westbound SR 92 will be studied as part of the PA&ED phase. The westbound SR 92 managed lane is proposed as a 12-foot wide lane with a 3-foot left shoulder. The managed lane diverges from the general purpose lanes at Mariner Island Boulevard.

Improvements to eastbound SR 92 extend from US 101 to the San Mateo-Hayward Bridge. The eastbound SR 92 improvements would include widening eastbound SR 92 to accommodate a 4th eastbound lane to be operated as a managed lane. The new managed lane would converge with the general purpose eastbound SR 92 lanes approximately 400 feet west of the Mariners Island Overcrossing and extend to a point approximately 900 feet west of the Foster City Overcrossing. At that point, the managed lane ends and it continues as a general purpose lane eastbound. Improvements along eastbound SR 92 include the realignment of the Foster City Boulevard on-ramp to accommodate the 4th eastbound lane. The Foster City Boulevard on-ramp will be reconstructed as a standard ramp, including the 1000-foot auxiliary lane which will be dropped via a standard 50:1 merge taper. Eastbound SR 92 will be reduced to 3 lanes by dropping the outside eastbound lane west of the San Mateo Hayward Bridge. The outside lane drop from 4 to 3 lanes will be a standard lane drop with standard signage and standard lane drop taper.

The operation of the peak-period the managed lanes on SR 92 (westbound in the AM and eastbound in the PM) would be operated through overhead changeable lane signage indicating when the managed lane is opened or closed to traffic with green arrows or red X's, respectively. The managed lane in both directions along SR 92 would be 12 feet wide and would have a 0- to 3-foot left shoulder. When not in operation, the managed

lane would be closed to traffic and would exist as a 12-foot inside buffer between operating traffic and the median barrier.

A potential CHP enforcement area along SR 92 has been identified for this Alternative. As depicted, the CHP enforcement area would be generally centered near Vintage Park Drive and the cost for the CHP enforcement area is included in the project cost estimate. Final determination of inclusion, location and features of the CHP enforcement area will be studied during PA&ED.

Openings to the reversible managed lane in all directions would be regulated at three (3) gate locations to control the direction of traffic flow: one in the median of SR 92 west of the Mariners Island Boulevard Overcrossing, one in the median of US 101 approximately 1,900 feet north of SR 92, and one in the median of US 101 approximately 1,900 feet south of SR 92. In the approach direction of the managed lane direct connector entrance gates, a 1,000-foot-long auxiliary lane would be provided parallel to the general-purpose lanes on SR 92 and the express lanes on US 101 to facilitate safe lane changes. The managed lane direct connector reversible access openings would be controlled by an automatic gating system combined with automated channelizers that would rise out of the roadway pavement. On approach of the non-operating direction, the gating system would close the managed lane direct connector opening and the automated channelizers would close the auxiliary lanes in advance of the gates. The exact type gating system has not been determined, but the gating system may use a series of swing arm gates, a physical wire gate, or some other system. See Attachment M of the PSR-PDS for a depiction of the reversible gating system. Further study and determination of the gating system to be used will be studied during PA&ED. Consideration for prevention of wrong-way movement will be given during the PA&ED studies.

Depending upon how the part-time managed lane along SR 92 is ultimately classified, legislative action or a pilot project may be required. Current California Statue prohibits using freeway shoulders for any purposes other than emergencies. If the managed lane is ultimately determined to be a “shoulder,” implementing Alternative 2 would require legislative action to amend the California Vehicle Code to permit the operation of the managed lane concept. An alternative to legislative action would be to proceed with the managed lane concept as a pilot project. Pilot projects implement innovative or novel design elements which are otherwise not permitted by Caltrans, but which show significant promise for improved operations, reduced cost, or reduced environmental footprint. Pilot projects are implemented with an evaluation period during which improvements are judged against specific performance measures to determine the effectiveness and safety of the pilot improvements. Pilot project study periods are typically three to five years. At the end of the pilot study period, the efficacy of the improvements would be evaluated for permanent approval or removal if not meeting stated performance criteria. Should the managed lane not meet the performance criteria, the part-time managed lane use improvements would be removed. Should the improvements be shown to be effective and be determined to be a “shoulder,” legislation would then be enacted allowing the operation of the managed lane.

The reversible lane option will require regular ongoing maintenance and operations of the gating systems and managed lanes. It is estimated that the effort will require two crews and two trucks along with supervision to operate the reversible lanes. Depending upon the final selection of reversible lane features and design, the annual operations and maintenance cost is estimated to be between $1.0 - $1.5M per year. The annual operations and maintenance cost are not factored into the Construction Capital or support costs for this alternative and would be in addition thereto.

Construction staging and lane closure requirements for this alternative appear consistent with typical major freeway interchange projects. Consideration of staging and traffic management will be considered during PA&ED phases and further developed during PS&E.

This alternative would perpetuate and maintain existing Transportation Management System (TMS) elements such as closed circuit television (CCTV), vehicle detection systems changeable message signs (CMS), variable message signs (VMS) for Highway Advisory Radio (HAR), fiber communication network/hubs, and/or ramp meters. Additional TMS features would be included as determined appropriate and consistent with TMS system plans during the PA&ED and PS&E phases of the project.

Alternative 2 Design Variation

Given the potential risks associated with the part-time lane concept, including the requirement for legislative action or approval of significant non-standard features, a variation for Alternative 2 would terminate the eastbound SR 92 managed lane east of the Mariners Island Boulevard Overcrossing. The eastbound SR 92 managed lane would continue as a mixed flow lane west of Vintage Park Drive Overcrossing and the outside mixed flow lane would be terminated with a standard lane drop taper and associated standard signage.

Improvements on San Mateo-Hayward Bridge (Not Included with Project)

In evaluating the potential benefits of Alternative 2, it has been recognized that there would likely be both regional and US 101 / SR 92 interchange operations benefits if additional managed lane capacity could be extended onto and across the San Mateo-Hayward Bridge to Clawiter Road/Eden Landing Road Interchange. The high-rise portion of the San Mateo-Hayward Bridge is constrained and cannot accommodate an additional lane. To improve capacity of the high-rise section of the bridge without widening the structure, a movable barrier system which enable conversion of one westbound through lane to an eastbound managed lane in the PM peak period could be a feasible option. During the AM peak period, the high-rise portion of the bridge would maintain three eastbound and three westbound lanes. In the PM peak period, a moveable barrier could shift 12 feet to the north, creating a lane configuration of four eastbound (one (1) managed lane and three (3) general purpose lanes) and two westbound general purpose lanes. The existing lighting in the center median of the high-rise portion of the bridge could be relocated to the outside barriers. For the causeway portion of the bridge, the eastbound inside shoulder could be used as a part-time managed lane, in addition to the existing three general purpose lanes. On the causeway portion of the bridge, the three

westbound general purpose lanes could be maintained without modification. The eastbound inside part-time lane could continue on to the east side of the bridge and terminate at Clawiter Road/Eden Landing Road Interchange. However, improvements on the San Mateo-Hayward Bridge are beyond the scope of this project and would require discussions between appropriate parties such as Caltrans, BATA, the Alameda County Transportation Commission (ACTC), and the adjacent cities. This project will only focus on improvements up to the west end of the San Mateo-Hayward Bridge.

Construction staging and lane closure requirements for this alternative appear consistent with typical major freeway interchange projects. Consideration of staging and traffic management will be considered during PA&ED phases and further developed during PS&E.

3. Anticipated Environmental Approval

Check the anticipated environmental determination or document for the proposed project in the table below.

CEQA		NEPA	
Environmental Determination			
Statutory Exemption	☐		
Categorical Exemption	☐	Categorical Exclusion	☐
Environmental Document			
Initial Study or Focused Initial Study with proposed Negative Declaration (ND) or Mitigated ND	☐	Routine Environmental Assessment with proposed Finding of No Significant Impact Complex Environmental Assessment with proposed Finding of No Significant Impact	☒ ☐
Environmental Impact Report	☒	Environmental Impact Statement	☐
CEQA Lead Agency (if determined):		Caltrans	
Estimated length of time (months) to obtain environmental approval:		Approximately 36 months	
Estimated person hours to complete identified tasks:		1312	

4. Special Environmental Considerations

This project is anticipated to require an Environmental Impact Report (EIR) under the California Environmental Quality Act (CEQA) and an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA). The project will construct new elevated direct connector ramps within the State right-of-way, that will be visible to nearby properties including residences. The existing interchange has ramps at two elevations, and this project would add a third layer of direct connector ramps. These new

ramps will be new HOV lane connectors, adding new capacity within the interchange. An analysis of vehicle miles traveled (VMT) will be necessary to compare the project's build and no build alternatives, and existing conditions, to determine impacts consistent with CEQA VMT requirements. An EIR is identified to address the potential for significant visual effects and mitigation, VMT associated impacts, and any associated controversy. If technical studies and scoping do not identify these issues as significant or controversial, then the CEQA document could be a Negative Declaration or Mitigated Negative Declaration.

The alternatives are not complex (they would be built mostly within the existing median of the highways, but would require partial property acquisition at two locations), and should not involve complex endangered species consultation or high mitigation costs. For these reasons, the project has the potential to be processed as a "Routine EA." To verify that a Complex EA is not required further work will need to be completed to determine the potential for project controversy and that Section 4(f) properties can be avoided or impacts minimized such that existing use is not adversely affected.

The project will involve at least partial property acquisitions at single family residential parcels in two quadrants of the US 101/SR 92 interchange, where the eastbound ramps connecting to north and southbound US 101 will encroach on the rear yards of residential properties. It may be possible to maintain the existing homes in place if acquisition can be accomplished by maintaining the lots in compliance with local zoning lot set back standards. Otherwise, full property acquisitions may have to be assumed until right-of-way negotiations take place.

A sliver acquisition may be required at the City of San Mateo Washington Playground, a small park in the northeast quadrant of the interchange. This partial acquisition would affect the edge of the park to allow relocation of an existing sound wall, but it is not anticipated that it would affect the continued use of the park. The San Francisco Bay Trail passes underneath the San Mateo-Hayward bridge. No acquisition is anticipated at this location, but construction may require temporary trail closure for safety purposes. Similarly, a temporary trail closure may also be needed at Foster City Levee Pedway (a recreational multi-use trail) during installation of additional bridge decking above the trail. These actions would require review under Section 4(f).

Sliver acquisitions may also be required at the parcels located north and south of the northbound US 101 off- and on-ramps at Kehoe Avenue. The area impacted by the reconstruction of the off- and on-ramps at Kehoe is encumbered by a 30 ft City of San Mateo drainage easement. The project would affect the drainage easement, and partial acquisition at the two properties that border the on-and off-ramps. It will be necessary to coordinate this acquisition with Caltrans, the City of San Mateo and the private homeowners.

Bay Conservation and Development Commission (BCDC) jurisdiction does not appear to include the Seal Slough or the Foster City Lagoon because they are not subject to tidal influence. BCDC jurisdiction does include the Bay Shoreline at and beneath the western

abutment of the San Mateo-Hayward Bay Bridge. Work below the bridge along the shoreline, if needed, would require a BCDC permit. No work is proposed on the bridge.

The project area is highly urbanized but does include creeks and drainages. The need for any widening above Borel Creek where it is crossed by US 101 will need to be determined. On SR 92, widening of the structure above Seal Slough would be necessary, and would involve placement of new bents in and/or near this channel. In addition, there are ephemeral jurisdictional drainages within the quadrants of the interchange which may be affected by construction. A wetland delineation, NES, and BA will be required, and mitigation will be necessary. Consultation with US Fish and Wildlife Service will be required. Consultation with the National Marine Fisheries Service (NMFS) will be necessary regarding work within Seal Slough, and with the California Department of Fish and Wildlife for work within non-tidal waters.

Pre-construction bird nesting surveys will be needed if vegetation removal is necessary between February 1 and August 31.

The review of cultural resources records did not reveal properties eligible for the NRHP or CRHR. The San Mateo-Hayward Bridge is NRHP eligible, but no work is proposed on the bridge. Lighting would be added within the median just to the west of the bridge. The project will also involve at least partial acquisition of residential properties at two locations, and these structures will require evaluation for eligibility; all are post-World War II housing. For archaeological resources, four sites were identified in the records search, but all are outside of the project area. Anticipated cultural resources reporting would involve at least a Historic Resources Evaluation Report (HRER), an Archaeological Survey Report (ASR), and a Historic Properties Survey Report (HPSR).

Segments of existing sound walls in the northeast and southwest quadrants of the US 101/SR 92 interchange would require removal and reconstruction to accommodate ramp realignments. The project would also introduce two new overhead ramp structures that would change the existing noise environment. The potential realignment of the US 101 northbound lanes near Kehoe Avenue, and realignment of the off- and on-ramps may also require relocation of a portion of the soundwalls on the northbound side of the freeway. A Noise Survey Report and Noise Abatement Decision Report will be required. Because the project would involve new through lanes, an Air Quality Impact Assessment will be required, as well as consultation with the Bay Area Air Quality Task Force. The Air Quality Report will need to evaluate greenhouse gas emissions against current significance criteria.

The project is not within a 100-year floodplain with the exception of Seal Slough, the Foster City Lagoon, and the nearby San Francisco Bay. An assessment of sea level rise risks with respect to these water bodies should be performed.

5. Anticipated Environmental Commitments

The following environmental commitments may result from environmental review. This Preliminary Environmental Analysis Report (PEAR) is prepared for a Project Study

Report – Project Development Study (PSR-PDS) and therefore no cost estimate for environmental permits or commitments was developed.

- Land Use, Community, and Section 4(f): The project would involve at least partial acquisition of parcels in the City of San Mateo, at the northeast and southwest quadrants of the interchange. If minimum lot sizes cannot be maintained compliant with local zoning, full acquisition of some of these parcels may be necessary. Several Section 4(f) land uses were identified within the project limits including the Washington Playground, Foster City Levee Pedway, and the San Francisco Bay Trail. Effects to these properties may include partial or sliver acquisition, temporary construction easements, and temporary construction closure. However, it is anticipated that permanent use of these recreational resources can be restored and continue following completion of construction.
- Biological Resources: Several water bodies and ephemeral drainages are crossed by the project. Work will be necessary to construct new bents at Seal Slough, and there may be a need for widening at two bridges on US 101. Jurisdictional waters would be affected, and possibly wetlands, requiring regulatory permit approvals. Mitigation will be required. Pre-construction bird nesting surveys will be needed if vegetation removal is necessary between February 1 and August 31.
- Cultural resources: No sensitive resources are known within the project limits, other than the NRHP-eligible San Mateo-Hayward bridge (which is also a Section 4(f) property). Resource discovery requirements should be included in contract requirements.
- Water Quality and Flood Hazards: The extent of new impervious pavement and reworked areas should be estimated during PA&ED to determine if any permitting or necessary treatment is required. If applicable, allowance for treatment area within the project and cost of treatment should be included in the project budget. New bents would be required within or near Seal Slough; an assessment of changes to the existing flood water elevation should be completed, and mitigation included if needed.
- Hazardous Materials: The project would involve excavation for piers and grading. Groundwater is shallow, and dewatering may be required for pier excavation ; excavated materials should be tested for proper handling, re-use, and/or disposal. As for all roadway construction projects, ADL testing should be considered for any grading or for excavated soils.
- Noise: Some existing sound walls would require removal and reconstruction. New soundwalls may be added. Public notification and outreach should be planned to provide affected residences advanced notification, and community meetings should be planned to provide updates and information.

6. Permits and Approvals

Resource and regulatory consultation will be required during the PA&ED phase. This will include consultation with the:

- State Historic Preservation Officer (SHPO) regarding the inventory and eligibility determinations for historic and archaeological surveys and findings.

- Bay Area Air Quality Task Force consultation, and an air quality conformity determination from the Federal Highways Administration.
- US Fish and Wildlife and National Marine Fisheries Service for listed or protected species.
- Cities of San Mateo, Foster City, and the managers of the San Francisco Bay Trail (if different from the local cities) with respect to Section 4(f) requirements for temporary or permanent use effects to recreational facilities.

Regulatory permits and approvals will be required during the PS&E phase. These will include:

- Section 404 permit from the US Army Corps of Engineers.
- Section 401 Water Quality Certification or Waiver from the SF Regional Water Quality Control Board.
- California Department of Fish and Wildlife: Lake and Streambed Alteration Notification for affects to non-tidal channels and water bodies.
- San Francisco Bay Conservation and Development Commission: Permit for work within 100-feet of the Bay shoreline at and near the San Mateo-Hayward bridge.

7. Level of Effort: Risks and Assumptions

This project will require permits and authorizations from regulatory agencies. Review and approvals may require extended time. This project also involves major new flyover ramp connections, and there is a potential that public controversy may require additional time and effort.

8. PEAR Technical Summaries

8.1 **Land Use and Community.** The project occurs within the City of San Mateo and City of Foster City, San Mateo County. The interchange alignments cross urban land uses consisting of residential, commercial, office, recreational, and public uses within and adjacent to each City.

The project would involve at least partial acquisition of parcels in the City of San Mateo, at the northeast and southwest quadrants of the interchange. These acquisitions would affect residential properties, and potentially a portion of a public park (see Section 4(f) discussion below regarding the park). It is anticipated that the acquisitions would involve sliver takes along the edge of the backyards of the properties, on Adams and Washington Streets in the northeast quadrant, and on Portsmouth Way in the southwest quadrant. If minimum lot sizes at the residential properties cannot be maintained compliant with local zoning, full acquisition of some of these parcels may be necessary. Sliver acquisitions may also be required at the parcels located north and south of the northbound US 101 off- and on-ramps at Kehoe Avenue; this would affect a drainage easement that parallels US 101 and a portion of the two parcels that border the Kehoe on- and off-ramps. A more detailed evaluation of right-of-way acquisition would be made during the next phase of the project. Any relocation impacts would require completion of a

relocation impact document (memo, statement, or report), and effects summarized in the Community Impact Report.

Educational land uses near the project include the Samuel Merritt University on South Pamphlet Boulevard, the Fiesta Gardens International School (K-5 elementary) on 19th Avenue near the elevated portion of the SR 92 eastbound off-ramp to southbound US 101, and Kids Connection Schools on E. Hillsdale Boulevard near the west end of the San Mateo-Hayward Bridge touchdown. None of these school properties would be directly affected by the project.

The San Francisco Bay Conservation and Development Commission (BCDC) jurisdiction applies to the shoreline band at and underneath the west end of the San Mateo-Hayward Bridge. Work on or beneath the San Mateo-Hayward bridge within the shoreline band would require a permit, permit application and fees, and possible mitigation. SR 92 also crosses Seal Slough and the Foster City Lagoon (Central Lake). Seal Slough has tidal gates at each end, and the Foster City Lagoon does not physically connect with the Bay. As such, these water bodies and their shorelines are not within BCDC jurisdiction. This should be confirmed during the PA&ED phase.

8.2 **Section 4(f) Properties**: The following park and recreational resources are adjacent or near the interchange:

- *Bridgeview Park, Foster City*: Located south of SR 92 near the western end of the San Mateo-Hayward Bridge, at Coyote Point. This relatively new city-owned and maintained park is south of the Caltrans right-of-way and maintenance yard.
- *San Francisco Bay Trail*. The trail is located along the Foster City shoreline and consists of a multi-use paved path that crosses underneath the bridge.
- *Werder Pier*. This pier is currently closed to public use. It is owned by San Mateo County, located adjacent to the south side of the San Mateo-Hayward Bridge. It was originally built and open to vehicle use before the San Mateo-Hayward bridge was constructed, following which it was open to recreational fishing until it was closed in 1999 for safety reasons. Although publicly owned, it is not open to public access except for a short section near the shoreline.
- *Foster City Levee Pedway*. This is a multi-use pathway along the eastern edge of Seal Slough (also known as Marina Lagoon and/or O'Neal Slough). Within the project, it passes below SR 92 within the City of San Mateo.
- *Washington Playground*. This is a city-owned/operated mini-park at the corner of Washington Street/Queens Avenue and Adams Street/Cleveland Avenue. It is adjacent to the westbound SR 92/Fashion Island Boulevard to northbound US 101 on-ramp.
- *Fiesta Meadows Park and Path along Borel Creek*. This is a city-owned/operated recreational field at Bermuda Drive/Fiesta Drive. It is adjacent to the SR 92 eastbound off-ramp to southbound US 101. There also appears to be an informal path along Borel Creek (the creek borders the

park); the path connects to Bermuda Drive, and is fenced with a gate. This path does not appear to be affected by the project; if the path might be affected by the project it should be further investigated as to ownership, and public access rights and use.

- *San Mateo-Hayward Bridge*. This National Register eligible bridge is also a Section 4(f) property.

Most, if not all, of the above likely qualify as Section 4(f) properties. A sound wall protecting the Washington Playground may require replacement associated with realignment of the northbound Fashion Island Boulevard ramp that connects with northbound US 101. Temporary construction easements and potential permanent acquisition appears minimal but would require a Section 4(f) evaluation. At Fiesta Meadows Park a similar realignment of the SR 92 eastbound off-ramp to southbound US 101 may affect the property but can probably avoid the actively used area of the park. There is no existing sound wall at this park. At Seal Slough, widening of the median will require work above the Foster City Levee Pedway, and may require temporary closure of the multi-use trail during construction. All potential affects, both temporary and permanent, will require a Section 4(f) evaluation, including consultation with the local entities that own and operate these recreational properties. The type of Section 4(f) approval will need to be determined based on the extent of permanent and temporary effects to the use of each individual property.

8.2 **Biological Environment**: The project area is situated within a heavily developed, urban freeway corridor along US 101 and SR 92 in San Mateo County. Although it is primarily paved roadway, the project area includes pockets of ruderal and landscaped vegetation in highway margins and on private parcels beside the highways. It also crosses freshwater streams and sloughs (Google Earth 2018). The San Francisco Bay is a tidally influenced saline environment while the sloughs may be either freshwater or saline. The study area has the potential to support habitat for special status species, and the project area may support avian and bat species habitat.

Based on a review of the National Wetlands Inventory (USFWS 2009) and National Hydrography Dataset (USGS 2019), US 101 crosses at least two channelized creeks, Borel Creek just south of the US 101/SR 92 interchange, Leslie Creek located between the SR 92 and 3rd Avenue interchanges, and a drainage ditch that connects to Leslie Creek and parallels the northbound side of US 101. SR 92 crosses over Seal Slough and the Foster City Lagoon. There are additional ephemeral drainages within the US 101/SR 92 interchange ramps. The project is near, but not within, the San Francisco Bay.

There is potential for special status species[1], including plants and terrestrial wildlife species, to occur within the project area. Based on a review of the California Native Diversity Database (CNDDB) (CDFW 2019a), the following special-status plant and wildlife species have been documented within the proposed project area. These occurrences are all considered extant.

Plants

- Point Reyes bird's-beak (*Cordylanthus maritimus ssp. Palustris*, California Native Plant Society [CNPS] Rare Plant Rank List 1B.2),
- California seablite (*Suaeda californica*, state endangered and CNPS Rare Plant Rank List 1B.1),
- Franciscan onion (*Allium peninsulare* var. *franciscanum*, CNPS Rare Plant Rank List 1B.2)
- Hairless popcorn flower (*Plagiobothrys glaber*, CNPS Rare Plant Rank List 1A)
- Congdon's tar plant (*Centromadia parryi* ssp. *congdonii*, CNPS Rare Plant Rank List 1B.1)
- Hillsborough chocolate lily (*Fritillaria biflora var. ineziana*, CNPS Rare Plant Rank List 1B.1)
- saline clover (*Trifolium hydrophilum*, CNPS Rare Plant Rank List 1B.2)

Animals

- California Ridgway's rail (*Rallus obsoletus*, federally endangered and state endangered),
- San Francisco garter snake (*Thamnophis sirtalis tetrataenia*, federally endangered and state endangered, state fully protected)
- salt-marsh harvest mouse (*Reithrodontomys raviventris,* federally endangered and state endangered), American peregrine falcon (*Falco peregrinus anatum*, federally and state delisted),
- western snowy plover (*Charadrius alexandrinus nivosus*, federally threatened),
- Alameda song sparrow (*Melospiza melodia pusillula*, state species of special concern),
- saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*, state species of special concern),
- White-Tailed Kite (*Elanus leucurus*, state Fully Protected Species),
- California Black Rail (*Laterallus jamaicensis coturniculus*, state threatened and fully protected) (California Department of Fish and Wildlife [CDFW] 2019, CalFlora 2019).
- California least tern (*Sternula antillarum browni*, federally endangered and state endangered, state fully protected)
- Longfin smelt (*Spirinchus thaleichthys*, federal candidate species and state

[1] Special-status species are federally, and state listed species, state species of special concern and fully protected species, Western Bat Working Group (WBWG) species of special concern and species included on California Rare Plant Rank lists 1 and 2

threatened)
- Northern harrier (*Circus hudsonius*, state species of special concern)
- Pallid bat (*Antrozous pallidus*, state species of special concern)
- Salt marsh wandering shrew (*Sorex vagrans halicoetes*, state species of special concern)
- Hoary bat (*Lasiurus cinereus*, WBWG species of concern)
- black skimmer (*Rynchops niger*, state species of special concern)

The project area contains sensitive resources and documented occurrences of special status species. Saline habitats support wildlife species such as salt marsh harvest mouse, black rail, salt marsh wandering shrew, and California Ridgway's rail. The freshwater riparian habitats support species such as the San Francisco garter snake, which was observed in the project area in 2016.

Construction will occur at the US 101/SR 92 interchange and its approaches. Ruderal habitat within the interchange area would be disturbed or removed to allow for construction, including grading and excavation needed for the construction of piers to support the proposed direct connector ramps. Where the SR 92 ramp connectors merge with north and south US 101, median widening would be necessary that will require widening of outside pavement. Widening of existing bridges will need to be defined at two locations on US 101: Boral and Leslie Creeks. On SR 92, the east and westbound bridge structures over Seal Slough would be filled in where the proposed ramp connections merge into the center of the freeway. At least one and potentially two new bridge bents (piers) at Seal Slough would be needed to support the proposed median bridge widening, and these may be needed within the waters or near the shoreline of the slough. These bents would be similar to the existing bents at this bridge. Methods of construction at Seal Slough are to be determined, but could involve cast in place foundations, pile driving, and coffer dams.

Due to the complexity and extent of the project area within known sensitive habitat, a Natural Environment Study (NES), wetland delineation, and Biological Assessment should be prepared (A BA for USFWS for terrestrial species, and a BA for NMFS for placement of piers in Seal Slough). The wetland delineation and preliminary jurisdictional determination for wetlands and waters of the U.S. and State should be used to define minimization and avoidance areas. Unavoidable resources would be used to quantify impacts to wetlands and waters of the U.S. and State for regulatory permitting purposes.

Work within the San Francisco Bay waters, including any tributaries such as Borel and Leslie Creeks may require consultation with NOAA Fisheries under Section 7 of the ESA for construction-related effects to listed fish and marine mammal species, designated critical habitat, and EFH.

The NES should also define the need (if any) for rare plant surveys. This is a highly urbanized interchange and surrounding area, and no specific requirement for rare

plant surveys has been identified but this should be verified at the initiation of studies for PA&ED.

During PS&E, regulatory permits will need to be obtained for work within any waters. Temporary construction and permanent fill within Seal Slough and any other creek or aquatic feature will require regulatory permits from the US Army Corps of Engineers (Section 404 permit) and SF Regional Water Quality Control Board (RWQCB Section 401). Depending upon the magnitude of anticipated placement of dredge or fill material in jurisdictional waters, the project may qualify for coverage under Nationwide Permit 14: *Linear Transportation Projects*. Otherwise, an Individual permit from USACE would require additional time, and may require consideration of alternatives that minimize or avoid wetland fill.

In addition, if non-tidal riparian resources or the bed, channel, or bank of a non-tidal stream in the project area is going to altered in such a way that flow is diverted or obstructed; the bed, channel or bank is changed; or material is deposited into the feature a California Department of Fish and Wildlife (CDFW) Lake and Streambed Alteration Notification will need to be prepared and sent to CDFW for approval under Section 1602 of the Fish and Game Code (CDFW 2019b).

CDFW would also need to be consulted and an Incidental Take Permit (ITP) would need to be obtained if project work is anticipated to permanently remove or impact habitat used by state-listed reptile, bird and mammal species. Project-specific avoidance and minimization measures (AMMs) would need to be developed to avoid impacts to state fully protected bird and reptile species such as San Francisco Garter snake, black rail, least tern, and white-tailed kite. AMMs may include seasonal avoidance restrictions, biological monitoring during construction, and ESA fencing of suitable habitat.

There is a potential for sensitive birds and other migratory nesting birds, protected under the Migratory Bird Treaty Act, to be within or near the work area, nesting in trees or on the ground. Work conducted during the non-breeding period (September 1 to January 31) should not affect nesting. If work must occur between February 1 and August 31 in areas outside of the paved or disturbed highway and shoulders, and or areas adjacent to road-side trees, pre-construction nesting surveys should be considered during PS&E. Tree removal permits may be required for locally protected trees outside of the Caltrans right-of-way, should any require removal.

8.3 **Cultural Resources:** *Historic-era Built Environment*. The Caltrans inventory of state-owned bridges was consulted and all bridges except one within the project area are Category 5 (not eligible for listing in the National Register of Historic Places [NRHP] or California Register of Historical Resources [CRHR]). The San Mateo-Hayward Bridge (Bridge No. 35 0054, built 1967) that carries SR 92 is a Category 2 (determined Eligible for listing in the NRHP) under Criterion C/3 at the state level of significance.

A records search at the Northwest Information Center (NWIC) was conducted on June 25, 2019 (IC File No. 18-2485). The record search area extended from south of the Peninsula Avenue interchange to north of Ralston Avenue interchange on US 101 in in San Mateo County and the US 101/SR 92 connector structure intersection eastward to the San Mateo/Hayward Bridge. The record search buffer extended 0.25-mile from the center line of US 101 and SR 92 along the project area. The entire project area has been previously studied, in addition to the San Mateo-Hayward Bridge.

Within the project area in San Mateo County, 30 previously recorded historic-age built-environment resources were identified in the 0.25-mile records search buffer of the project area flanking US 101. Two of the 18 resources are no longer extant including the San Mateo Hotel (P-41-2146) which was found eligible for listing in the CRHR under Criteria 1 and 3 as a roadside auto court motel, and another roadside motel at 220 North Bayshore Boulevard (P-41-2106) that was found ineligible for listing in the NRHP or CRHR. Both were demolished for residential developments circa 2005-2006. Of the properties, eleven are post-World War II single-family residences, two of the properties are post-war multiple-family buildings, five are post-World War II commercial buildings, three are 1930s mixed-use buildings, and are seven 1920s-30s residential buildings. These resources were all found ineligible for listing in the NRHP or CRHR.

The project proposes potential right-of-way parcel acquisition of up to approximately 22 parcels on the east and west sides of US 101 in the City of San Mateo. This assumes that any right-of-way acquisition could require a full take; this assumption could be reduced if partial property acquisition is possible. Parcels containing historic-era buildings and structures will require evaluation of these resources in a Historical Resources Evaluation Report (HRER). Many of these parcels are Post-World War II builder' houses and housing tracts that may be exempted from evaluation as Property Type 7, per the Caltrans First Amended Programmatic Agreement. Sufficient historical research and reconnaissance survey will have to be conducted and reported in an HRER to determine that the tracts as a whole or portion of the tracts has no potential to meet NRHP criteria as a historic district, and none of the individual houses have the potential to meet NRHP criteria. These historic-age resources should be also discussed in the Historic Property Survey Report (HPSR).

A Finding of Effect (FOE) may be required if there are any effects to the NRHP-eligible San Mateo-Hayward Bridge or any other NRHP-eligible buildings/structures in the project's area of potential effects (APE). The HRER, HPSR, and FOE, if required, could likely be completed and approved within 18 months after receipt of the request for studies. The FOE addressing historic resources and any proposed mitigation measures must undergo a 15-day Caltrans Headquarter review and a 30-day SHPO review.

Archaeological Resources. The NWIC records search identified four prehistoric sites in San Mateo County within the 0.25-mile search buffer with two adjacent to and just outside of the project area. Site P-41-273/CA-SMA-321 has been extensively tested and documented as highly disturbed. The boundary of the site was updated in 2017 to encompass the untested portion of the site where surficial deposit was previously observed in 1990 and reduced in size. The current site boundary is smaller and mapped further southwest from US 101 than the original boundary. The State Historic Preservation Officer (SHPO) did not concur that this site was ineligible. Site P-41-308/CA-SMA-314 is a highly disturbed shellmound site, but intact portions of midden are believed to remain. The two other prehistoric shellmound sites, P-41-309 and P-41-37, are both highly disturbed. All four prehistoric sites are located within the records search buffer but are outside of the project area and they may not be affected by the project.

The archaeological resources should be studied and documented in an Archaeological Survey Report (ASR) and reported in the HPSR. The ASR could likely be completed and approved within 12 months after receipt of the request for studies.

8.4 **Visual/Aesthetics:** The project would construct an elevated direct connector between westbound SR 92 to northbound and southbound US 101. These ramp connectors would rise up from each freeway's center median to vertically clear all existing ramps. These new ramps would increase the visibility of the interchange from the surrounding area. US 101 and SR 92 are not designated Scenic Highways within the project limits.

A Visual Impact Assessment (VIA) will need to include visual simulations of the proposed structures, lighting, and signage. Because of the proposed elevated new ramps, noticeable visual changes are anticipated. For example, adjoining residences can currently see the existing overhead ramps, and the proposed project would add an additional set of elevated ramp structures. On SR 92, the proposed median ramps would require filling in the median where it crosses over Seal Slough. Currently, there is a gap between the eastbound and westbound SR 92 bridge structures, and the project would fill this space with a new bridge deck. From below the bridge (from a viewpoint on the Foster City Levee Pedway) the view of the overhead bridges would appear as a single bridge undercrossing.

For the visual analysis, multiple viewpoints should be selected from the surrounding areas, as well as viewpoints from the driver's perspective on the highways. The visual simulations will be needed for the VIA analysis, as well as to support any public meetings. Although no public outreach has yet been conducted for this project, it is reasonable to anticipate some public concern focused on the visibility of the proposed ramps.

There is some existing landscaping between the existing ramps at this interchange, consisting of groupings of mixed trees and shrubs but mostly mowed grasses and

open areas of gravel or exposed soil. Installation of the ramps would likely require removal of some of the trees and shrubs on the east side of US 101. Replacement landscaping should be anticipated in project planning.

8.5 **Hydrology and Floodplain**: According to the 2015 FEMA Flood Hazard Zone Map the project area is not within a 100-year floodplain except at Seal Slough (Zone AE), which represents a 1% annual chance of flooding. SR 92 crosses Seal Slough on an elevated structure, and the project would add additional pier structures in or near the slough. A Location Hydraulic Study will be necessary.

8.6 **Water Quality and Storm Water Runoff**: The City of San Mateo comprises four major drainage basins – the San Mateo Creek complex, the North San Mateo complex, the Foster City Lagoon complex, and the 3rd and Detroit watershed, each composed of numerous stream channels, culverts, and storm drainage piping systems. The project site is situated in both the 16th Ave and the 19th Ave Watershed, both of which drain to the Foster City Lagoon, whose water is then pumped into the Bay. There are several water bodies in the vicinity of the project site including the Seal Slough which is considered a federally impaired stream.

A Water Quality Study and a Storm Water Data Report will be required. Construction is expected to disturb more than one acre of soil, and therefore project construction will need to follow the Construction General Permit and Caltrans Standard Specifications. The Contractor will be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) prior to the start of construction. Stormwater discharges from the project during and post-construction will be regulated under the Caltrans Municipal Separate Storm Sewer Systems (MS4) Permit, NPDES No. CAS000003, SWRCB Order No. 2012-0011-DWQ, amended by Order No. 2014-0006-EXEC, Order No. 2014-0077-DWQ, and Order No. 2015-0036-EXEC. Post-construction stormwater treatment controls will be required under this permit as the proposed work will add more than one acre of new impervious surface. In addition, hydromodification requirements of the Caltrans MS4 Permit should be anticipated because more than one acre of net new impervious surface will be added by the proposed improvements and the surface water crossings within the project limits are likely waters of the United States. The permanent BMP strategy to address the project planning and design requirements of the Caltrans MS4 Permit includes implementation of design pollution prevention and stormwater treatment measures.

8.7 **Geology, Soils, Seismic and Topography**: No active or potentially active faults underlie this portion of the City of San Mateo based on published geologic maps. The project area is not located within an Alquist-Priola Fault Study Zone and surface evidence of faulting has not been observed. However, due to the proximity to the San Andreas Fault Zone, Hayward Fault Zone, and other active faults, the project may experience severe ground shaking during a seismic event. The project area is in a liquefaction zone which indicates the potential for permanent ground displacements.

New structures will require designs suitable to anticipated ground shaking and subsurface foundation requirements specific to this location. A Preliminary Geotechnical Report will be necessary during PA&ED.

8.7 **Paleontology:** Paleontological resources include fossil remains, as well as fossil localities and formations that have produced fossil material. There are no known paleontological resources in the City of San Mateo or Foster City. The interchange area east of US 101 is almost entirely underlain by geologic formations mapped as artificial fill, while some areas at US 101 just north and west of US are alluvial fan and fluvial deposits of Holocene age. Artificial fill is considered to have no potential for paleontological resources and Holocene age deposits are generally considered too "young" to likely contain significant potential for fossils. A Paleontological Identification Report (PIR) should be prepared using information on proposed depth of foundation requirements for the proposed piers.

8.8 **Hazardous Waste/Materials:** A preliminary desktop evaluation of potentially hazardous waste impacts of the project was completed. It included a review of the California Regional Water Quality Control Board (RWQCB) Geotracker online database and the California Department of Toxics Substances Control (DTSC) Envirostor online database for regulated contaminated sites. The sites listed on those regulatory databases include petroleum hydrocarbon releases associated with underground and above ground fuel storage tanks and releases of solvents or other volatile organic compounds associated with commercial and manufacturing business in the area, past or present. Results of the preliminary evaluation identified numerous hazardous waste sites that are either classified as open investigation/remediation sites or regulatory closed sites with residual contamination allowed to remain (low threat threshold impacted sites). The groundwater in the vicinity of US 101, especially where US 101 is nearest the bay, is shallow (approximately 2-5 ft below the ground surface) and the local groundwater gradient direction is towards the Bay, therefore up-gradient contaminated sites that have impacted the groundwater have the potential to impact the project site through groundwater migration towards US 101 and the Bay.

Excavation for large piers would be needed, which would likely extend to depths that encounter groundwater. Dewatering methods may be required during construction. Therefore, testing of groundwater and soils should be completed during PA&ED or PS&E in order to determine excavated soil and extracted groundwater disposal requirements.

US 101 is a heavily used roadway with thousands of automobiles and trucks using the roadway on a daily basis. There is a potential that surface soils adjacent to the roadway have been impacted by aerially deposited lead (ADL) from past use of leaded vehicle fuels. Excavated or graded soils should be tested for ADL. A work plan for ADL should be developed during PA&ED or PS&E.

8.9 **Air Quality Conformity:** The proposed project is located within the San Francisco Bay Area Air Basin (SFBAAB), which consists of all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties; the southern portion of Sonoma County; and the southwestern portion of Solano County. The SFBAAB is designated as a nonattainment area for the federal and state ozone standards and the state standards for particulate matter equal to or less than 10 microns in diameter (PM10) and equal to or less than 2.5 microns in diameter (PM2.5). The SFBAAB is currently a federal attainment/ maintenance area for carbon monoxide (CO), and transportation conformity requirements no longer apply for this pollutant. Federal and state standards have been met for nitrogen dioxide (NO2), sulfur dioxide (SO2), and lead.

Because of the proposed additional travel lanes, this project is not exempt from air quality conformity requirements. An Air Quality Impact Assessment would be required. The project will need to be included in the current Transportation Improvement Program (TIP) and Regional Transportation Improvement Program (RTIP). Consultation should be completed with the Metropolitan Transportation Commission (MTC) Air Quality Task Force to verify that the project is not a project of air quality concern.

8.10 **Noise and Vibration:** Noise sensitive receivers within the influence area (500 feet from the centerline) of the project include residential uses, schools, parks, sport fields, hotels, hospitals, places of worship, commercial uses and vacant lands.

The project would add new travel lanes and would change the vertical and horizontal alignment of the highway by adding the proposed new connector ramps. The project is therefore considered a “Type I” project under 23 Code of Federal Regulations (CFR) 772, and a Noise Study Report (NSR) and Noise Abatement Decision Report (NADR) is required. Conceptual plans have identified that segments of existing sound walls may need to be relocated in at least at two locations (on northbound US 101, on the north end of the US 101/SR 92 interchange and on southbound US 101 just south of the US 101/SR 92 interchange). Removal of existing sound walls would result in substantial temporary noise impacts until replacement walls can be installed, and temporary mitigation and additional public outreach efforts should be anticipated. Where the interchange would add the elevated flyover ramps, the noise measurements and modeling may need to extend to the second tier or row of homes, or further, in order to fully evaluate and consider the number of noise sensitive receptors potentially impacted by the project, and which receptors are considered with regards to the feasibility and reasonableness of noise abatement. The NSR should also address the construction phases of the project.

A Noise Abatement Decision Report (NADR) will be needed that summarizes the feasible abatement measures, and addresses their reasonableness.

8.11 **Greenhouse Gas:** This project does not qualify for a Categorical Exemption/Exclusion (CE/CE) and therefore a greenhouse gas (GHG) analysis will be required during the PA&ED phase. Traffic data will be required for this analysis.

8.12 **Sea Level Rise:** Sea Level Rise (SLR) impacts are analyzed for Caltrans projects. A Working Group of the California Ocean Protection Council's Science Advisory Team (OPC-SAT) released an updated 2018 document, the "State of California Sea-Level Rise Guidance," which synthesizes the best available science on sea-level rise projections and rates for California, based on increased understanding of the interactions of sea-level rise projections and polar ice sheet loss.

		Probabilistic Projections (in feet) (based on Kopp et al. 2014)					H++ scenario (Sweet et al. 2017) *Single scenario
		MEDIAN	LIKELY RANGE		1-IN-20 CHANCE	1-IN-200 CHANCE	
		50% probability sea-level rise meets or exceeds...	66% probability sea-level rise is between...		5% probability sea-level rise meets or exceeds...	0.5% probability sea-level rise meets or exceeds...	
				Low Risk Aversion		Medium - High Risk Aversion	Extreme Risk Aversion
High emissions	2030	0.4	0.3 -	0.5	0.6	0.8	1.0
	2040	0.6	0.5 -	0.8	1.0	1.3	1.8
	2050	0.9	0.6 -	1.1	1.4	1.9	2.7
Low emissions	2060	1.0	0.6 -	1.3	1.6	2.4	
High emissions	2060	1.1	0.8 -	1.5	1.8	2.6	3.9
Low emissions	2070	1.1	0.8 -	1.5	1.9	3.1	
High emissions	2070	1.4	1.0 -	1.9	2.4	3.5	5.2
Low emissions	2080	1.3	0.9 -	1.8	2.3	3.9	
High emissions	2080	1.7	1.2 -	2.4	3.0	4.5	6.6
Low emissions	2090	1.4	1.0 -	2.1	2.8	4.7	
High emissions	2090	2.1	1.4 -	2.9	3.6	5.6	8.3
Low emissions	2100	1.6	1.0 -	2.4	3.2	5.7	
High emissions	2100	2.5	1.6 -	3.4	4.4	6.9	10.2
Low emissions	2110*	1.7	1.2 -	2.5	3.4	6.3	
High emissions	2110*	2.6	1.9 -	3.5	4.5	7.3	11.9
Low emissions	2120	1.9	1.2 -	2.8	3.9	7.4	
High emissions	2120	3	2.2 -	4.1	5.2	8.6	14.2
Low emissions	2130	2.1	1.3 -	3.1	4.4	8.5	
High emissions	2130	3.3	2.4 -	4.6	6.0	10.0	16.6
Low emissions	2140	2.2	1.3 -	3.4	4.9	9.7	
High emissions	2140	3.7	2.6 -	5.2	6.8	11.4	19.1
Low emissions	2150	2.4	1.3 -	3.8	5.5	11.0	
High emissions	2150	4.1	2.8 -	5.8	5.7	13.0	21.9

The "Likely Range" for the year 2050 listed in the above table indicates a lower risk of sea level rise of 0.6 to 1.1 feet. By end of century (2100) the low risk rise ranges from 1.0 to 2.4 feet. Assuming continued high emissions of greenhouse gases, the 2018 State of California Sea-Level Rise Guidance estimates the probability of a 1-foot rise by 2050 is estimated at 31%, and by 2100 is 96%. The same high emissions scenario probability of a 2-foot rise by 2050 is estimated at less than 1% and by 2100 is 70%. The project areas is not within a 100-year floodplain except at Seal Slough and the Foster City Lagoon. The proposed placement of structures at and near Seal Slough should consider projected sea level

rise estimates.

8.13 **Cumulative Impacts**: Current transportation projects in or near the project include the US 101 Managed Lanes widening, a City of San Mateo pedestrian and bicycle overcrossing at E. Hillsdale Boulevard. There may also be housing and commercial development projects proposed in this area. The potential for cumulative impacts would need to be addressed during the PA&ED phase.

8.14 **Context Sensitive Solutions**: The Department of Transportation applies Context Sensitive Solutions (CSS) to achieve transportation goals in harmony with community goals and natural environments. These solutions are reached through a collaborative interdisciplinary approach involving all stakeholders, and these efforts will be pursued during PA&ED. This project involves minimal changes to lane and ramp alignment, within the existing developed freeway and highway structures and therefore CSS would have limited applicability.

9. Summary Statement for PSR-PDS

This project is anticipated to require an Environmental Impact Report (EIR) under the California Environmental Quality Act (CEQA) and an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA). The project has the potential to be processed as a "Routine EA" because the alternatives are not complex (they would be built within the existing median of the highways, but do require at least partial property acquisition at two locations), and they should not involve complex endangered species consultation or high mitigation costs. Further work will be needed to verify whether a "Complex EA" will be required. Factors for consideration for a Routine versus Complex EA for this project may include, but not be limited to, project controversy over potentially significant environmental impacts, substantial mitigation, or if the project will result in an unavoidable Section 4(f) use determination.

The project will construct new elevated direct connector ramps within the State right-of-way, that will be visible to nearby properties including residences. The existing interchange has ramps at two elevations, and this project would add a third layer of direct connector ramps. These new ramps will be new HOV lane connectors, adding new capacity within the interchange. An analysis of vehicle miles traveled (VMT) will be necessary to compare the project's build and no build alternatives, and existing conditions, to determine impacts consistent with CEQA VMT requirements. An EIR is identified to address the potential for significant visual effects and mitigation, VMT associated impacts, and any associated controversy. If technical studies and scoping do not identify these issues as significant or controversial, then the CEQA document could be a Negative Declaration or Mitigated Negative Declaration.

Right of Way Impacts and Section 4(f). The project would involve at least partial property acquisitions from single family residential parcels in two quadrants of the US 101/SR 92 interchange, where the eastbound ramps connecting to north and southbound US 101 will encroach on the rear yards of residential properties. It may be possible to maintain the existing homes in place if acquisition can be accomplished by maintaining

the lots in compliance with local zoning lot set back standards. Otherwise, full property acquisitions should be assumed until right-of-way negotiations take place as part of the PS&E phase.

At the Kehoe Avenue northbound off- and on-ramps, widening or realignment of northbound US 101 may encroach into the utility easement that extends along the rear yards of 19 parcels north and south of Kehoe Avenue. At one of these parcels, the potential realignment of the northbound off-ramp to Kehoe Avenue may require a full acquisition of a single-family parcel, and relocation of this residence.

A sliver acquisition may be required at the City of San Mateo Washington Playground, a small park in the northeast quadrant of the interchange. This partial acquisition would impact the westerly edge of the park to enable relocation of an existing sound wall, but it is not anticipated that the continued use of the park would be affected. Construction of the project may require temporary closure of the San Francisco Bay Trail where it passes underneath the San Mateo-Hayward Bridge. However, no acquisition is anticipated at this location. Similarly, a temporary trail closure may be needed at the Foster City Levee Pedway located on the east side of Seal Slough (a recreational multi-use trail) during installation of additional bridge decking above the trail. These actions would require review under Section 4(f).

Bay Conservation and Development Commission (BCDC). BCDC jurisdiction does not appear to include the Seal Slough or the Foster City Lagoon as they are not subject to tidal influence. BCDC jurisdiction does include the Bay Shoreline at and beneath the western abutment of the San Mateo-Hayward Bridge. Work on or below the bridge would require a BCDC permit.

Biological Resources. The project area is highly urbanized but does include creeks and drainages. The need for any widening above Borel Creek where it is crossed by US 101 will need to be determined. On SR 92, widening of the structure above Seal Slough would be necessary, and would involve placement of new bents in and/or near this channel. In addition, there are ephemeral jurisdictional drainages within the quadrants of the interchange which may be affected by construction. A wetland delineation, Natural Environmental Study (NES), and Biological Assessment (BA) will be required, and mitigation may be necessary. Consultation with US Fish and Wildlife Service (USFWS) will be required. Consultation with the National Marine Fisheries Service (NMFS) will be required regarding work within Seal Slough, and with the California Department of Fish and Wildlife for work within non-tidal waters. Pre-construction bird nesting surveys will be needed if vegetation removal is necessary between February 1 and August 31.

Cultural Resources. With the exception of the San Mateo-Hayward Bridge, the review of cultural resources records did not reveal properties eligible for the National Register of Historic Places (NRHP) or California Register of Historic Places (CRHR). Proposed work would not extend onto the San Mateo-Hayward Bridge, but work within the median and lighting may be required just to the west of the bridge.

These changes would need further evaluation during PA&ED to determine if a Finding of Effect is required. The project would involve at least partial acquisition of residential properties at two locations, and the structures on those properties will require evaluation for eligibility; all are post-World War II housing. Four sites were identified in the archaeological resources records search, but all are located outside of the project area. Anticipated cultural resources reporting would involve at least a Historic Resources Evaluation Report (HRER), Archaeological Survey Report (ASR), and a Historic Properties Survey Report (HPSR).

Noise. Segments of existing noise walls in the northeast and southwest quadrants of the US 101/SR 92 interchange would require removal and reconstruction to accommodate freeway widening and ramp realignments. The project would also introduce two new overhead connector ramp structures that will change the existing noise environment. The potential realignment of the US 101 northbound lanes near Kehoe Avenue, and realignment of the off- and on-ramps may also require relocation of a portion of the soundwalls on the northbound side of the freeway. A Noise Survey Report (NSR) and Noise Abatement Decision Report (NADR) will be required. Public notification and outreach should be planned to provide affected residences advanced notification, and community meetings should be planned to provide updates and information.

Air Quality. As the project would involve new through lanes, an Air Quality Impact report will be required, along with consultation with the Bay Area Air Quality Management District (BAAQMD) Task Force. The Air Quality Impact report will evaluate greenhouse gas emissions against current significance criteria.

Water Quality. Water quality studies will be needed. This project will result in additional paved surfaces and runoff that will require treatment and permits. Assessment of whether treatment can be achieved within the right-of-way should be completed early during the PA&ED phase.

Sea Level Rise and Floodplains. Although the project would not be within a 100-year floodplain, it would be adjacent to Seal Slough, the Foster City Lagoon, and the nearby San Francisco Bay. In 2018, Foster City passed Measure P to address Sea Level Rise (SLR). In addition, San Mateo County completed a SLR Vulnerability Study the same year. This issue will require an SLR assessment, and coordination with the County and Foster City during the PA&ED phase.

Approvals during the PA&ED phase will be required, and include:

- Federal Highway Administration (FHWA) for concurrence with the project's conformity to the Federal Clean Air Act and other requirements.
- US Fish & Wildlife Service (USFWS) and possibly National Marine Fisheries Service (NMFS) for Section 7 consultation for threatened and endangered species.
- State Historic Preservation Officer (SHPO) for concurrence on the findings for historic resources and Section 106 requirements.

- US Army Corps of Engineers (USACE) for concurrence on the delineation of wetlands and other waters of the United States.
- Bay Area Air Quality Conformity Task Force for concurrence on whether or not this is a Project of Air Quality Concern.

Regulatory permits will be required during PS&E. These may include:

- Section 404 permit from the US Army Corps of Engineers
- Section 401 Water Quality Certification or Waiver from the SF Regional Water Quality Control Board
- California Department of Fish and Wildlife: 1602 Lake and Streambed Alteration Notification for affects to non-tidal channels and water bodies
- San Francisco Bay Conservation and Development Commission: Permit for work within 100-feet of the Bay shoreline at and near the San Mateo-Hayward bridge

Caltrans will act as the lead agency for CEQA/NEPA.

10. Disclaimer

This Preliminary Environmental Analysis Report (PEAR) provides information to support programming of the proposed project. It is not an environmental determination or document. Preliminary analysis, determinations, and estimates of mitigation costs are based on the project description provided in the Project Study Report (PSR). The estimates and conclusions in the PEAR are approximate and are based on cursory analyses of probable effects. A reevaluation of the PEAR will be needed for changes in project scope or alternatives, or in environmental laws, regulations, or guidelines.

11. List of Preparers

Cultural Resources specialist Karin Beck	Date: 3-1-2020
Biologist Galen Peraccca	Date: 11-8-2019
Community Impacts specialist Charlotte Hummer	Date: 11-8-2019
Noise and Vibration specialist Jeff Zimmerman	Date: 11-8-2019
Air Quality specialist Jeff Zimmerman	Date: 11-8-2019
Paleontology specialist/liaison Jeff Zimmerman	Date: 11-8-2019
Water Quality specialist Charlotte Hummer	Date: 11-8-2019
Hydrology and Floodplain specialist Charlotte Hummer	Date: 11-8-2019
Hazardous Waste/Materials specialist Charlotte Hummer	Date: 11-8-2019
Visual/Aesthetics specialist	Date: 11-8-2019

Jeff Zimmerman	
Energy and Climate Change specialist Jeff Zimmerman	Date: 11-8-2019
Other:	Date:
PEAR Preparer (Name and Title) Jeff Zimmerman, Senior Project Manager	Date: 8-3-2020

12. Review and Approval

I confirm that environmental cost, scope, and schedule have been satisfactorily completed and that the PEAR meets all Caltrans requirements. Also, if the project is scoped as a routine EA, complex EA, or EIS, I verify that the HQ DEA Coordinator has concurred in the Class of Action.

Tom Rosevear
Environmental Branch Chief

Date: August 20, 2020

M. Suleiman
Project Manager

Date: 8/20/2020

REQUIRED ATTACHMENTS:

Attachment A: PEAR Environmental Studies Checklist
Attachment B: Estimated Resources by WBS Code
Attachment C: Schedule (Gantt Chart)
Attachment D: PEAR Environmental Commitments Cost Estimate (not included since this is for a PSR-PDS)

Attachment A: PEAR Environmental Studies Checklist (Direct Connector/Long Term Improvements)

Rev. 08/2018

Environmental Studies for PA&ED Checklist					
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
Land Use	☐	☐	☒	**L**	Address in CIA
Wild and Scenic River Consistency	☒	☐	☐	**L**	
Coastal Management Plan	☒	☐	☐	**L**	See BCDC below
Growth	☐	☐	☒	**L**	Address in CIA
Farmlands/Timberlands	☒	☐	☐	**L**	
Community Impacts	☒	☐	☐	**M**	
Community Character and Cohesion	☐	☐	☒	**L**	Address in CIA
Relocations	☐	☐	☒	**M**	Partial property acquisition; verify no full relocations
Environmental Justice	☐	☐	☒	**L**	Address in CIA
Utilities/Emergency Services	☒	☐	☐	**L**	
Visual/Aesthetics	☐	☐	☒	**H**	
Cultural Resources:					
Archaeological Survey Report	☐	☐	☒	**L**	
Historic Resources Evaluation Report	☐	☐	☒	**L**	
Historic Property Survey Report	☐	☐	☒	**L**	
Historic Resource Compliance Report	☒	☐	☐	**L**	
Section 106 / PRC 5024 & 5024.5	☐	☐	☒	**L**	
Native American Coordination	☐	☐	☒	**L**	
Finding of Effect	☒	☐	☐	**L**	
Data Recovery Plan	☒	☐	☐	**L**	
Memorandum of Agreement	☒	☐	☐	**L**	
Other:	☐	☐	☐	**L**	
Hydrology and Floodplain	☐	☒	☐	**L**	
Water Quality and Stormwater Runoff	☐	☐	☒	**L**	
Geology, Soils, Seismic and Topography	☐	☐	☒	**L**	
Paleontology					
PER	☐	☐	☒	**L**	
PMP	☐	☐	☒	**L**	
Hazardous Waste/Materials:					
ISA (Additional)	☐	☐	☒	**L**	Update ISA based on final plans
PSI	☐	☒	☐	**L**	PSI for testing at excavation locations
Other:	☒	☐	☐	**L**	
Air Quality	☐	☐	☒	**L**	
Noise and Vibration	☐	☐	☒	**M**	
Energy	☐	☐	☒	**L**	Energy report if EIR is prepared
Climate Change and Sea Level Rise	☐	☐	☒	**M**	
Biological Environment					
Fish Passage	☒	☐	☐	**L**	

Environmental Studies for PA&ED Checklist					
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
Wildlife Connectivity	☒	☐	☐	**L**	
Natural Environment Study	☐	☒	☐	**L**	Memo or Minimal Impact (MI) NES
Biological Assessment Section 7:					
Formal	☒	☐	☐	**L**	
Informal	☒	☐	☐	**L**	
No effect	☐	☒	☐	**L**	Or document in MI NES/memo
Section 10	☒	☐	☐	**L**	
USFWS Consultation	☐	☐	☒	**M**	
NMFS Consultation	☐	☐	☒	**M**	
Species of Concern (CNPS, USFS, BLM, S, F)	☒	☐	☐	**L**	
Wetlands & Other Waters/Delineation	☐	☐	☒	**M**	
404(b)(1) Alternatives Analysis	☒	☐	☐	**L**	
Invasive Species	☒	☐	☐	**L**	
HMMP	☒	☐	☐	**L**	
CDFW Consistency Determination	☒	☐	☐	**L**	
2081	☒	☐	☐	**L**	
Other:	☐	☐	☐	**L**	
Cumulative Impacts	☐	☐	☒	**L**	
Context Sensitive Solutions	☒	☐	☐	**L**	
Section 4(f) Evaluation	☐	☐	☒	**M**	Fiesta Meadow Park, Washington Playground, and Foster City Levee Pedway/Bikeway are near project or underneath structures. Temporary impacts may be necessary. Permanent impacts need to be determined.
Permits:					
401 Certification Coordination	☐	☐	☒	**M**	
404 Permit Coordination, IP, NWP, or LOP	☐	☐	☒	**M**	
1602 Agreement Coordination	☐	☐	☒	**M**	
Local Coastal Development Permit Coordination	☒	☐	☐	**L**	
State Coastal Development Permit Coordination	☒	☐	☐	**L**	
NPDES Coordination	☐	☐	☒	**L**	If more than 1 acre soil disturbance, Construction General Permit applies & SWPPP may be required.
TRPA	☒	☐	☐	**L**	

Environmental Studies for PA&ED Checklist					
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
BCDC	☐	☒	☐	**L**	Work appears to be outside of BCDC but should be verified.

ATTACHMENT B - Resources by WBS Code

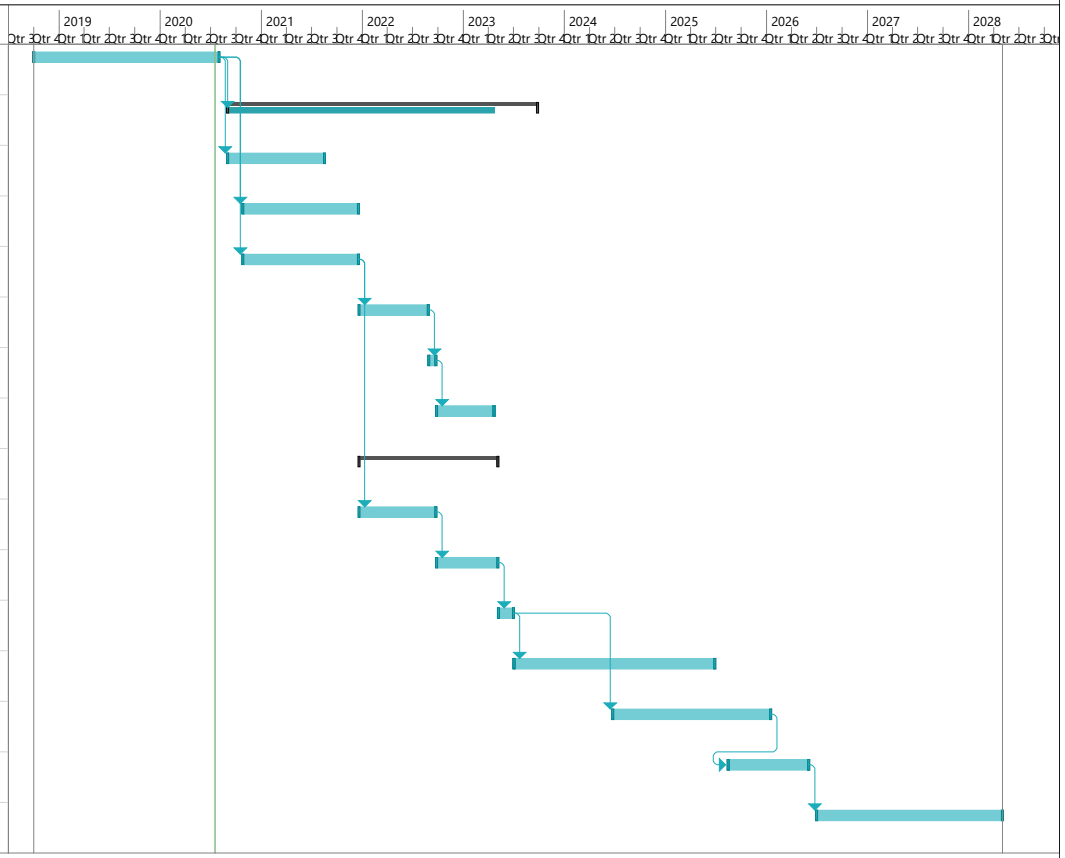
Note: Hours are for Caltrans quality assurance only and not for preparation of the studies

EA:	**04-2Q790K**
Description:	**US 101/State Route 92 Direct Connector Project**

Assigned Unit	Senior	Generalist
Perform Preliminary Engineering Studies and Prepare Draft Project Report		
160.05 - Updated Project Information	32	50
160.15.20 – Draft Project Report	50	100
Total Prelim Eng Studies	**82**	**150**
Perform Environmental Studies and Prepare Draft Environmental Document		
165.05.05 – Project Information Review	16	40
165.10.15 – CIA, Land Use & Growth	16	20
165.10.20 - Visual Impact Assessment and SRE	20	50
165.10.25 – Noise Study	30	50
165.10.30 – Air Quality Study	20	30
165.10.35 – Water Quality Studies	8	16
165.10.40 – Energy/Climate Change Studies	8	16
165.10.60 – Location Hydraulic and Floodplain Study Reports	8	16
165.10.75 – Envir Commitments Record	8	24
165.10.85 - Hazardous Waste Initial Site Investigations	8	16
165.15.10 – Wetlands Study	8	16
165.15.15 – Resource Agency Coord (BCDC)	8	16
165.15.20 – NES Report	8	24
165.20.05.05 – APE Map	8	16
165.20.05.10 – NA Consultation	8	8
165.20.05.25 – ASR	8	16
165.20.20.15 – HRER	8	24
165.20.25.15 – HPSR	8	16
165.20.25.99 – Other Cult Res Consultation	8	24
165.25.05 – Draft ED Analysis	20	40
165.25.20 – Env Quality Control & Other Reviews	40	80
Assigned Unit	**Senior**	**Generalist**
165.30 – NEPA Delegation	20	40
Total Env Studies & Prep DED	**294**	**598**
Permits, Agreements, and Route Adoptions during PA&ED Cmpnt		
170.05 - Required Permits (list)		
170.10.50 - RWQCB 401 Permit	16	30
170.10.60 - Updated ECR	16	30
Total Permits, Agreements & Route Adoptions	**32**	**60**
Prepare and Approve Project Report and Final Environmental Document		
180.05.10 – Approved Project Rep	16	32
180.05.15 – Updated Stormwater Data Report	8	16
180.15.20 – Env Commitments Record	8	16
Total App PR & FED	**32**	**64**
Total Project Hours	**440**	**872**

Attachment C - US 101/State Route 92 Interchange Ramp Connector - EA 2Q790

ID	Task Name	Duration	Start	Finish
1	**PID Preparation & Approval**	24 mons	10/1/18	7/31/20
2	**Preliminary Engineering, Traffic, Environmental**	**40 mons**	**9/1/20**	**9/25/23**
3	Preliminary Engineering	250 days	9/1/20	8/16/21
4	Traffic Operations Analysis	300 days	10/26/20	12/17/21
5	Environmental Technical Studies	300 days	10/26/20	12/17/21
6	Draft Environmental Document (DED)	180 days	12/20/21	8/26/22
7	Circulate DED	20 days	8/29/22	9/23/22
8	Final Environmental Document (FED)	150 days	9/26/22	4/21/23
9	**Project Report**	**360 days**	**12/20/21**	**5/5/23**
10	Draft Project Report	200 days	12/20/21	9/23/22
11	Final Project Report	160 days	9/26/22	5/5/23
12	**PA&ED Approval**	40 days	5/8/23	6/30/23
13	**PS&E**	520 days	7/3/23	6/27/25
14	**Right of Way**	409 days	6/24/24	1/15/26
15	**RTL, Advertisement, Award, Contracting**	207 days	8/15/25	6/1/26
16	**Construction**	24 mons	7/1/26	5/2/28



Project: 101-92 LongTerm Sche
Date: 7/17/20

Task
Split
Milestone
Summary
Project Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline
Progress
Manual Progress

Attachment E

Traffic Engineering Performance Assessment (TEPA)

US 101/ SR 92 DIRECT CONNECTOR PROJECT

Traffic Engineering Performance Assessment (TEPA) Report

Introduction

The US 101 / SR 92 interchange is a major facility that serves substantial regional traffic as well as local street connections. Overall, there is noticeable delay and congestion within the interchange area caused by heavy traffic volumes and inadequate capacity. The US 101 / SR 92 interchange experiences directional peak period traffic congestion. The westbound SR 92 to northbound and southbound US 101 experiences congestion in the morning commute hours and the northbound and southbound US 101 to eastbound SR 92 experiences congestion in the afternoon commute hours. Specific major congestion points include the following within the interchange area.

1. Heavy traffic volumes from San Mateo-Hayward Bridge to northbound and southbound US 101 through westbound SR 92 creates significant delay during the AM peak period.

2. Similarly, in the PM peak period, heavy traffic volumes from northbound and southbound US 101 destined to the San Mateo-Hayward Bridge through eastbound SR 92 creates substantial delay during the PM peak period.

The US 101 / SR 92 Direct Connector Project ("the project") seeks to improve operational efficiency for multi-occupant vehicles and express lane users traveling between the US 101 freeway and the SR 92 freeway east of US 101, increase person throughput, and encourage carpooling and transit use.

Two build alternatives that satisfy the purpose of the project are proposed. Alternative 1 provides a morning commute benefit by providing a direct connector to the express lanes from westbound SR 92 to northbound and southbound US 101. Alternative 2 provides the same morning commute benefit, but also provides an afternoon commute benefit by reversing the direction of the direct connector in the afternoon.

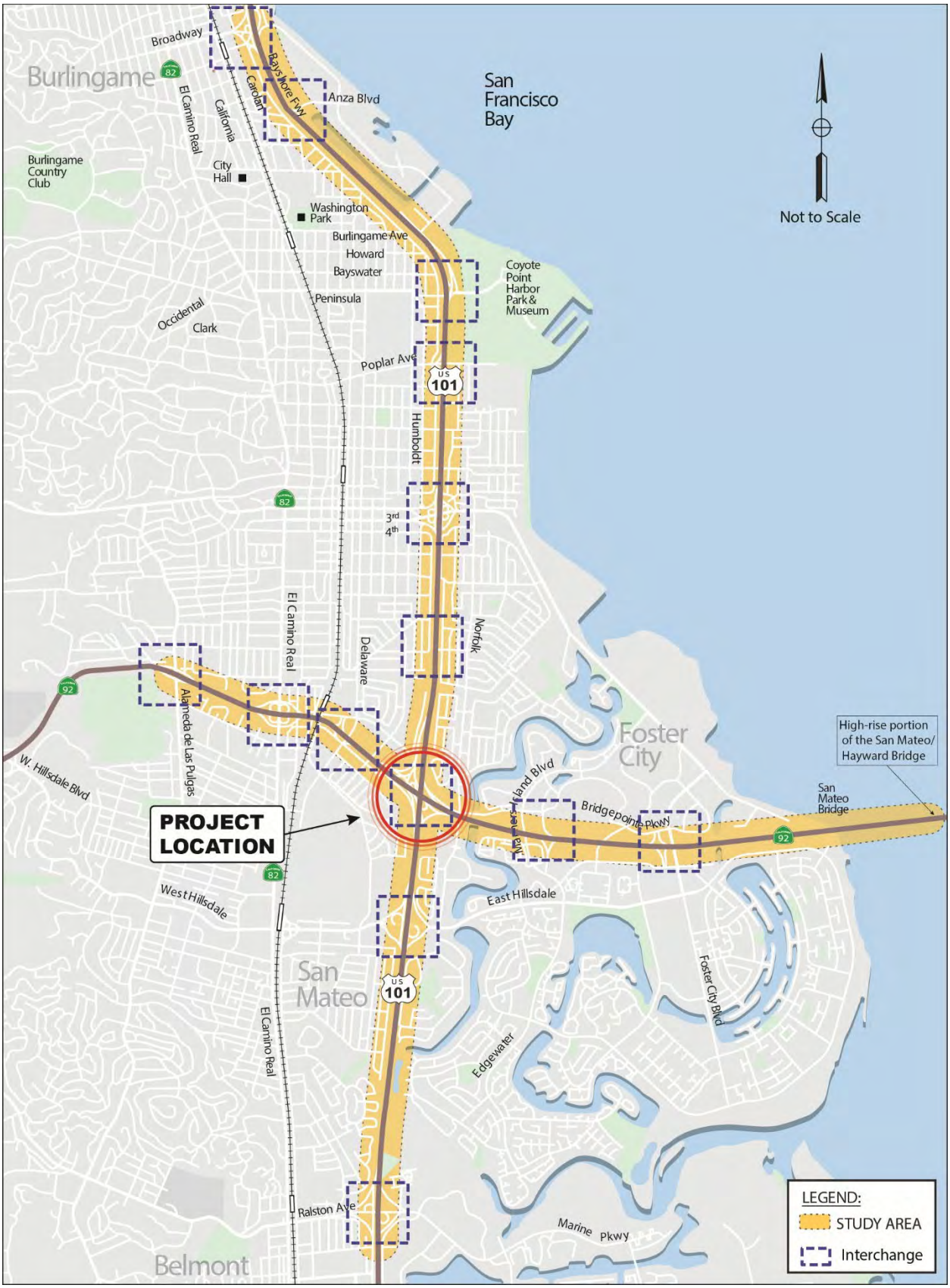
Report Purpose

This report will serve as a Traffic Engineering Performance Assessment (TEPA) required for the Project Study Report-Project Development Support (PSR-PDS). This TEPA was prepared using readily-available information, applying qualitative level analysis and evaluation techniques to identify the potential benefits and deficiencies of the proposed project to establish a potential scope of work needed for traffic analysis during the Project Approval and Environmental Document (PA&ED) phase. Detailed traffic studies and analysis will be completed during the PA&ED phase to demonstrate how each alternative meets the project's purpose and need.

Traffic Study Area

The project study limits for traffic operations analysis included all ramps and mainline along US 101, from Ralston Avenue Interchange to Broadway Interchange and SR 92 from Alameda de las Pulgas Interchange to the high-rise portion of the San Mateo / Hayward Bridge. **Figure 1** below shows the project location and study limits.

Figure 1: Project Location and Study Area



Data Sources and Reference Documents

The following data sources and reference documents were used in the preparation of this TEPA.

- Data collected / Forecasted for the San Mateo US101 Managed Lanes Project, 2018
- 2018 INRIX data provided by Caltrans Highway Operations
- Recent collision data summaries provided by Caltrans TASAS
- US 101 / SR 92 Interchange Preliminary Planning Study (PPS), 2016

Existing Conditions

This section describes the current operating conditions of the traffic study area using readily available data.

Ramp Metering

Currently, no ramps are metered within the study area along SR 92.

The following are the on-ramps within the study area that are metered along US 101.

Northbound US 101

1. On ramp from EB Ralston Ave
2. On ramp from WB Ralston Ave
3. On ramp from EB Hillsdale Blvd
4. On ramp from WB Hillsdale Blvd
5. On ramp from WB SR 92
6. On ramp from Fashion Island Blvd
7. On ramp from Kehoe Ave
8. On ramp from E 4th Ave
9. On ramp from E 3rd Ave
10. On ramp from Peninsula Ave/ Airport Blvd
11. On ramp from Anza Blvd
12. On ramp from Old Bayshore Hwy/ Broadway

Southbound US 101

1. On ramp from Broadway
2. On ramp from Poplar Ave
3. On ramp from E 3rd Ave
4. On ramp from E 4th Ave
5. On ramp from Fashion Island Blvd
6. On ramp from EB SR 92
7. On ramp from WB Hillsdale Blvd
8. On ramp from EB Hillsdale Blvd

Lane Geometry and Traffic Volumes

SR 92 is 2 lanes in either direction west of US 101 and 3 lanes in either direction east of US 101; and US 101 is 4 lanes in either direction within the study area.

The geometry of SR 92 and US 101 is presented in the **Attachment**.

Traffic data from the San Mateo US 101 Managed Lanes Project and SR 92 Interchange PPS study is provided below in **Table 1** to understand the usage and capacity of the study locations.

Table 1: Existing Counts

US 101 NB

Description	Year (AM/PM)	AM				PM			
		6-7	7-8	8-9	9-10	3-4	4-5	5-6	6-7
NB OFF TO RALSTON AVE.	2013	386	793	1,204	1,310	619	563	573	567
NB ON FR EB RALSTON AVE.	2013	277	555	625	557	686	694	799	666
NB ON FR WB RALSTON AVE.	2013/ 2015	297	502	450	468	800	1300	1700	1500
NB OFF TO HILLSDALE BL	2009	319	824	1,288	1,193	1,375	1,510	1,723	1,660
NB ON FR EB HILLSDALE	2013	429	684	552	470	595	566	512	472
NB ON FR WB HILLSDALE	2013	143	325	604	622	464	409	375	372
NB OFF TO RTE 92	2009	1,060	1,847	2,171	2,209	2,452	2,461	2,176	2,226
NB OFF TO EB 92	2009	609	943	1,157	1,166	1,239	1,306	1,136	1,172
NB OFF TO 92 WB	2009	450	904	1,014	1,043	1,213	1,155	1,040	1,054
NB ON FROM EB 92	2012	494	739	647	658	906	878	749	731
NB ON FROM WB 92	2010	2,381	2,876	2,617	2,312	1,630	1,867	2,197	1,838
NB ON FR FASHION ISLAND BLVD	2013	256	615	581	349	424	568	668	460
NB OFF TO KEHOE AVE.	2013/ 2015	192	515	434	193	162	174	147	140
NB ON FR KEHOE AVE.	2013/ 2015	22	59	57	74	270	327	420	398
NB OFF TO E.3RD\4TH AVE.	2013	187	545	1,187	1,211	1,010	964	930	1,003
SEG NB OFF TO EB 3RD AVE.	2013	32	79	104	89	206	221	200	205
SEG NB ON FR EB 3RD AVE.	2013	396	1,086	1,042	611	559	623	794	670
SEG NB OFF TO WB 3RD AVE.	2013	155	467	1,083	1,122	804	741	743	839
NB ON FR WB E.3RD AVE.	2013	277	693	747	354	307	418	628	387
NB ON FR E.3RD\4TH AVE.	2013	504	1,452	1,558	716	601	767	1,102	790
SAN MATEO- THIRD AVENUE	2013	7,523	9,122	8,524	7,770	7,995	8,594	8,567	8,077
NB OFF TO DORE AVE.	2013/ 2015	74	153	195	143	246	263	301	261
NB OFF TO PENINSULA AVE.	2013/ 2015	303	699	698	648	645	569	598	563
NB ON FR PENINSULA AVE.	2013/ 2015	460	884	868	517	495	581	557	361
NB OFF TO ANZA BLVD	2013	64	98	102	113	71	74	80	66
NB ON FR ANZA BLVD	2013	68	108	125	113	198	253	298	213
NB OFF TO BROADWAY	2015	840	1110	1270	1190	1010	1025	1091	1077
NB ON FR BROADWAY	2013	521	914	1034	781	777	807	880	707

US 101 SB

Description	Year (AM/PM)	AM				PM			
		6-7	7-8	8-9	9-10	3-4	4-5	5-6	6-7
SB OFF TO WB BROADWAY	2013	167	344	409	422	445	452	461	520
SB OFF TO EB BROADWAY	2013	229	503	702	560	496	553	679	616
SB ON FR WB BROADWAY	2013	93	213	383	186	375	447	486	396
SB ON FR EB BROADWAY	2013	290	513	470	481	754	680	675	512
SB OFF TO POPLAR AVE.	2015/ 2013	201	577	785	625	547	584	632	506
SB ON FR POPLAR AVE.	2015	559	684	706	650	800	700	600	550
SAN MATEO- THIRD AVENUE	2013	6,170	8,107	7,658	7,341	8,491	8,526	8,363	7,850
SB OFF TO 3RD\4TH AVE.	2013	439	1,199	1,599	1,271	879	1,002	1,201	1,056
SEG SB OFF TO WB 3RD AVE.	2013	263	456	544	467	466	509	555	582
SEG SB ON FR WB 3RD AVE.	2013	311	854	841	794	508	497	534	470
SEG SB OFF TO EB 4TH ST.	2013	176	743	1,056	804	413	493	646	474
SEG SB ON FR 4TH AVE.	2013	321	644	674	636	879	848	819	707
SB ON FR 3RD\4TH AVE.	2013	634	1,507	1,560	1,451	1,390	1,350	1,349	1,170
SB OFF TO WB RTE 92	2009	462	996	966	884	895	838	791	788
SB OFF TO EB 92/ FASHION ISLAND BLVD	2013	1,359	2,002	2,367	2,111	2,760	2,960	3,029	2,606
SEG SB OFF TO FASHION IS.	2013	199	347	424	372	288	312	348	312
SEG SB OFF TO EB RTE 92	2013	1,160	1,655	1,943	1,739	2,472	2,647	2,681	2,294
SB ON FROM WB 92	2013	1,188	939	737	803	992	1,203	1,482	1,131
SB ON FR FASHION ISLAND BLVD.	2013	229	635	652	456	322	386	451	358
SB ON FROM EB 92	2013	637	1,159	1,189	1,189	1,074	1,114	1,080	896
SEG OFF TO HILLSDALE	2013	371	336	426	569	1,072	1,105	1,377	1,252
SB ON FR WB HILLSDALE BLVD	2013	352	916	1,153	1,132	535	620	812	684
SB ON FR E HILLSDALE BL	2010	624	1,464	1,783	1,496	1,014	1,064	1,282	1,117
SB OFF TO RALSTON AVE.	2010	595	1,130	1,406	1,333	1,128	1,165	1,377	1,227
SB ON FR RALSTON AVE.	2013	727	1,212	1,146	975	1,082	1,414	1,492	1,285

SR 92 EB

Description	Year	AM				PM			
		6-7	7-8	8-9	9-10	3-4	4-5	5-6	6-7
EB OFF TO ALAMEDA DE LAS PULGAS	2012	60	213	291	205	214	232	316	249
EB ON FR TO ALAMEDA DE LAS PULGAS	2012	308	568	726	499	591	545	534	398
EB OFF TO SB RTE 82	2012	52	134	216	189	193	221	246	232
EB ON FR SB RTE 82	2012	331	623	752	660	866	851	978	790
EB OFF TO NB RTE 82	2012	145	438	500	488	479	476	479	467
EB ON FR NB OFF RTE 82	2012	163	371	400	326	608	618	705	591
EB OFF TO S. DELAWARE ST.- SM	2012	191	577	714	609	655	681	667	564
EB ON FR SB DELWARE ST	2012	218	442	459	451	607	707	689	596
EB OFF TO SB 101	2013	637	1,159	1,189	1,189	1,074	1,114	1,080	896
EB MAINLINE, JCT. RTE. 101	2002	2,704	4,674	5,644	4,467	5,384	5,269	5,359	4,803
EB OFF TO NB 101	2012	494	739	647	658	906	878	749	731
EB ON FR SB 101	2013	1,160	1,655	1,943	1,739	2,472	2,647	2,681	2,294
EB ON FR NB 101	2009	609	943	1,157	1,166	1,239	1,306	1,136	1,172
EB OFF TO MARINERS BLVD	2012	403	967	1,587	1,365	924	983	1,008	1,060
EB ON FR MARINERS BLVD.	2012	73	139	154	102	211	332	478	319
EB OFF TO FOSTER CITY BLVD.	2012	507	1,188	1,674	1,379	1,123	1,105	1,156	1,253
EB ON FR FOSTER CITY BLVD.	2012	125	239	252	160	430	678	943	626
EB MAINLINE, FOSTER CITY BOULEVARD	2015	808	1,568	2,169	2,211	4,127	4,852	4,855	4,587

SR 92 WB

Description	Year	AM				PM			
		6-7	7-8	8-9	9-10	3-4	4-5	5-6	6-7
WB MAINLINE, FOSTER CITY BOULEVARD	2015	2,836	4,836	4,755	4,741	2,202	2,255	2,565	2,767
WB OFF TO FOSTER CITY BLVD.	2012	142	222	239	282	317	307	266	257
WB ON FR FOSTER CITY BLVD.	2012	524	855	938	919	1,118	1,428	1,630	1,301
WB OFF TO WEST CAPE DR.	2012	122	284	370	348	97	109	135	159
WB ON FR WEST CAPE DR.	2012	227	569	788	868	791	990	1,191	1,028
WB OFF TO NB 101	2010	2,381	2,876	2,617	2,312	1,630	1,867	2,197	1,838
WB MAINLINE, SAN MATEO- JCT. RTE. 101	2015	5,107	4,859	4,703	5,017	4,165	4,912	5,524	4,526
WB OFF TO SB 101	2013	1,188	939	737	803	992	1,203	1,482	1,131
WB ON FR NB 101	2009	450	904	1,014	1,043	1,213	1,155	1,040	1,054
WB ON FR SB 101	2009	462	996	966	884	895	838	791	788
WB OFF TO S DELAWARE ST	2012	1,087	1,020	946	795	687	745	602	501
WB ON FR S DELAWARE ST	2012	138	504	474	376	578	665	693	538
WB OFF TO NB RTE 82	2012	312	578	700	760	647	613	571	607
WB ON FR NB RTE 82	2012	40	138	134	101	178	217	237	197
WB OFF TO SB RTE 82	2012	189	520	463	348	488	450	447	446
WB ON FR SB RTE 82	2012	150	453	470	331	410	474	546	457
WB OFF TO ALAMEDA DE LAS PULGAS	2012	554	601	470	466	688	708	644	500
WB ON FR TO ALAMEDA DE LAS PULGAS	2012	101	379	472	307	412	470	563	380

Field Conditions

AM Peak

US 101

A northbound mainline bottleneck was observed between 3rd Avenue on-ramp and Peninsula Avenue off-ramp. The queue from this bottleneck extends to the Hillsdale Boulevard Interchange.

A southbound bottleneck occurs between the westbound Hillsdale Boulevard on-ramp and the eastbound Hillsdale Boulevard on-ramp. This is a major bottleneck caused by mainline demand exceeding capacity, and heavy traffic volumes from the westbound Hillsdale loop on-ramp merging with the freeway. The queue extends beyond Peninsula Avenue almost to Broadway interchange. A secondary bottleneck is observed between the eastbound SR 92 on-ramp and Hillsdale Boulevard off-ramp within this queue.

SR 92

Mainline congestion on the right most lanes was observed during the AM peak period on eastbound and westbound SR 92 at the US 101 interchange. The eastbound SR 92 queue extends from the southbound US 101 ramp to beyond Alameda de las Pulgas. In the westbound direction, there is a bottleneck that develops between S Delaware Street on-ramp and El Camino Real off-ramp, and the queue from this bottleneck extends back to the connector from northbound US 101. The westbound SR 92 off-ramp queue extends from the southbound/northbound US 101 ramps and the queue spills back to Foster City Boulevard Interchange.

Ramps / Connectors

Significant delay was observed on the eastbound SR 92 connector to southbound US 101; westbound SR 92 to northbound US 101 connector; westbound SR 92 to the southbound US 101 loop ramp; northbound US 101 connector to westbound 92 during AM peak periods.

PM Peak

US 101

Mainline congestion was observed along the northbound and southbound US 101 mainline lanes starting at the SR 92 interchange. The bottleneck on eastbound SR 92 is caused by inadequate capacity on the mainline. This bottleneck causes the northbound US 101 ramp queues to extend beyond the Ralston Avenue interchange, and the southbound 101 queues to extend beyond the 3rd Avenue interchange.

Also, in the southbound direction a bottleneck is observed between Poplar Avenue off-ramp and Poplar Avenue on-ramp. This bottleneck is caused by the mainline demand exceeding the capacity. The queue from this bottleneck extends to Broadway Avenue interchange.

SR 92

The SR 92 eastbound bottleneck occurs at the US 101 northbound / southbound merge and lane drops. Due to this bottleneck, the congestion within the mainline SR 92 lanes congestion extends beyond Alameda de las Pulgas. A bottleneck occurs at the mainline lane drop east of Foster City Boulevard interchange and the queue from this bottleneck extends back to US 101/SR 92 interchange and merge with the bottleneck at the US 101 ramps merge/lane drops. Another major bottleneck starts from inclined part of the San Mateo-Hayward bridge, and at around 5 PM merges with the bottleneck upstream at Foster City Boulevard.

Ramps / Connectors

Significant delay was observed on the northbound US 101 connector to eastbound SR 92 connector; southbound US 101 connector to eastbound SR 92 during the PM peak periods.

These observations were in line with the INRIX data provided by Caltrans Highway Operations. The detailed summaries of INRIX data for US 101 and SR 92 are provided in the A**ttachment**.

The queues and congestion described above are presented in **Figures 2a and 2b** below.

Figure 2a: AM Peak Period Bottleneck Locations

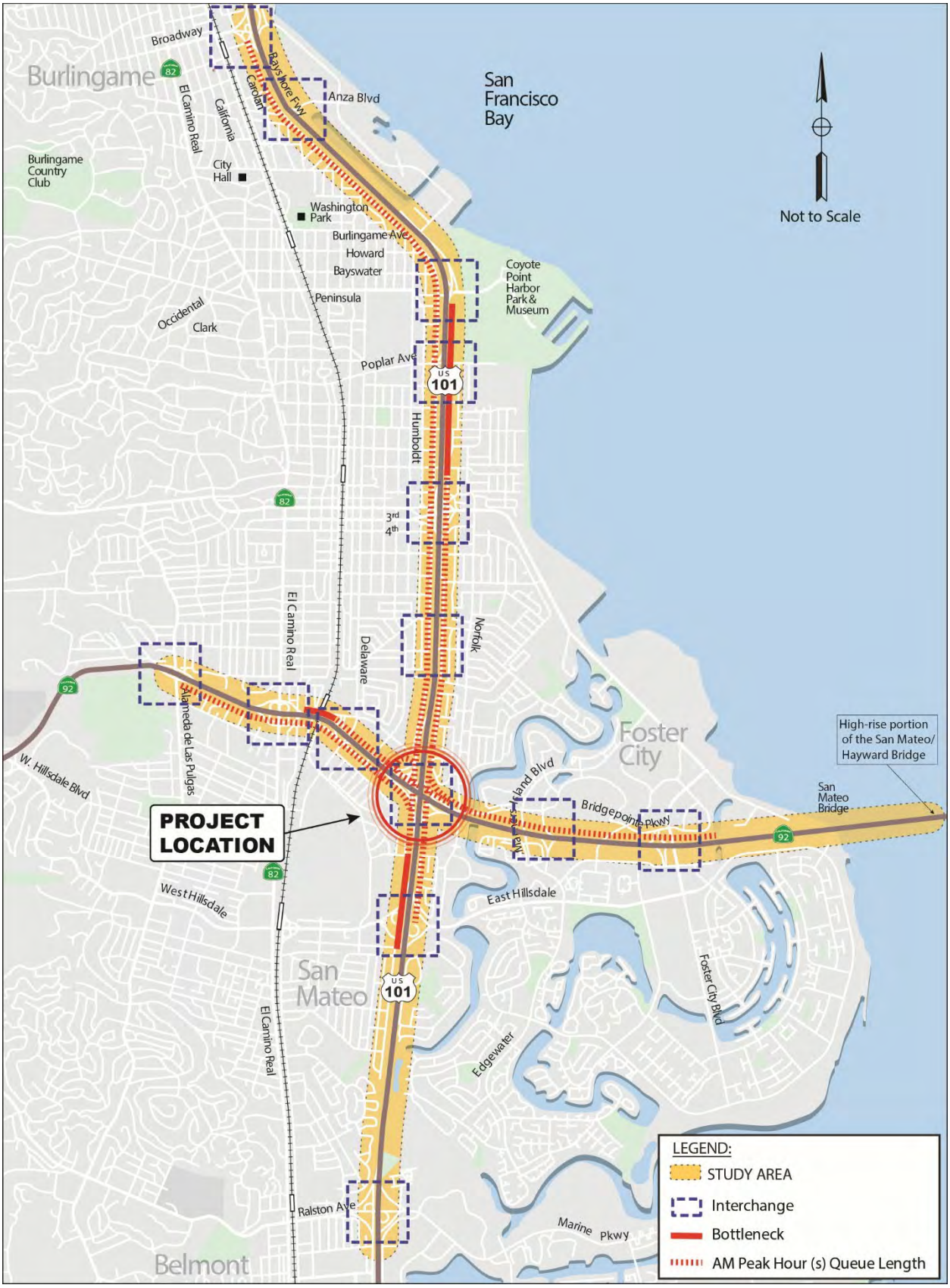
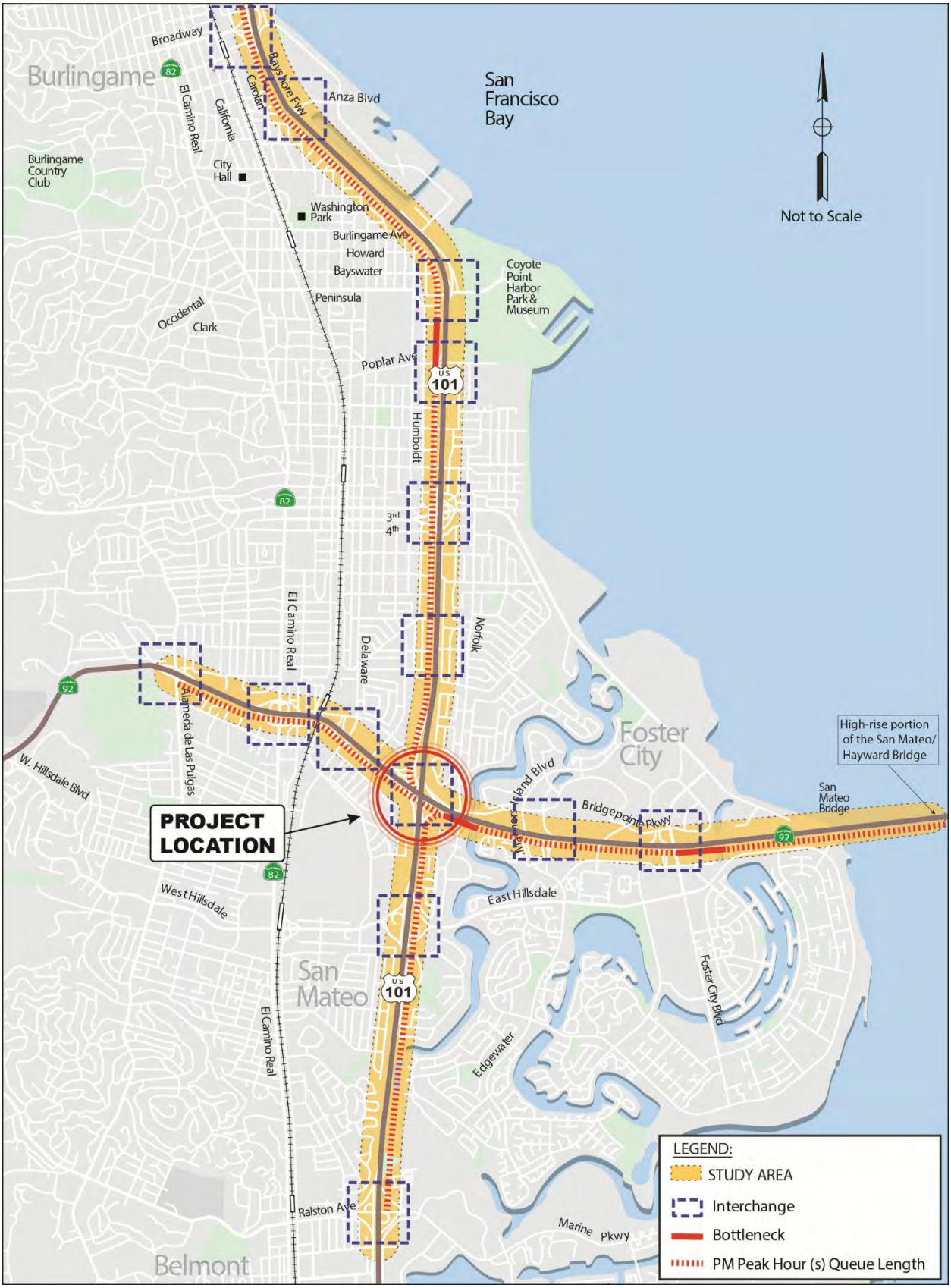


Figure 2b: PM Peak Period Bottleneck Locations



Collision Data

Collision data for a 3-year period (between January 1, 2015 and December 31, 2017) from the Caltrans Traffic Accident Surveillance and Analysis System (TASAS) is provided below for US 101 and SR 92 within the project study limits. **Table 2** shows the accident data for northbound and southbound US 101 from Hillsdale Boulevard to 3rd Avenue. **Table 3** shows the accident data for eastbound and westbound SR 92 from El Camino Real to Foster City Boulevard. **Table 4** shows the accident data for Mainline US 101 and SR 92. Overall, both US 101 and SR 92 had mainline accident rates that were below the statewide average for a similar facility. However, bold text in these tables indicates specific ramp locations where accident rates exceed the Statewide Average.

Table 2: Caltrans 3-year Accident History for US 101 Ramps

Location Description	No. of accidents				Accident Rates					
					Actual			Statewide Average		
	Tot	Fat	Inj	F+I	Fat	F+I	Tot	Fat	F+I	Tot
04 SM 101 010.914 101/NB OFF TO NB/HILLSDALE	5	0	0	0	0.000	0.00	0.25	0.002	0.08	0.25
04 SM 101 011.025 101/SEG NB OFF TO HILLSDALE	12	0	2	2	0.000	0.16	**0.96**	0.003	0.24	0.69
04 SM 101 011.026 101/SEG NB OFF TO NB 101	0	0	0	0	0.000	0.00	0.00	0.003	0.15	0.45
04 SM 101 011.031 101/SBON FR E HILLSDALE BLV	5	0	2	2	0.000	0.12	0.29	0.002	0.21	0.60
04 SM 101 011.063 101/SB ON FR SB/WB HILLSDALE	2	0	1	1	0.000	**0.07**	0.15	0.001	0.06	0.20
04 SM 101 011.064 101/SEG SBON FRWB HILLSDALE	2	0	0	0	0.000	0.00	0.18	0.003	0.23	0.71
04 SM 101 011.170 101/SEG NBON FREB HILLSDALE	4	0	2	2	0.000	0.20	0.40	0.003	0.23	0.71
04 SM 101 011.171 101/NBON FR NB/EB HILSDALE	3	0	2	2	0.000	**0.15**	**0.22**	0.001	0.06	0.20
04 SM 101 011.282 101/SEG SBOFF TOEB HILSDALE	0	0	0	0	0.000	0.00	0.00	0.003	0.24	0.69
04 SM 101 011.283 101/SEG SB OFF TO FRANKLIN	3	0	1	1	0.000	**0.34**	**1.01**	0.003	0.24	0.69
04 SM 101 011.284 101/SEG SB OFF TO SB 101	0	0	0	0	0.000	0.00	0.00	0.003	0.15	0.45
04 SM 101 011.354 101/NB ON FR WB E HILLSDALE	3	0	1	1	0.000	0.12	0.36	0.002	0.21	0.60
04 SM 101 011.411 101/SBOFF TO SB/HILSDALE/FRKLN	6	0	4	4	0.000	**0.24**	**0.36**	0.002	0.08	0.25
04 SM 101 011.584 101/NB OFF TO RTE 92	12	0	3	3	0.000	**0.09**	**0.34**	0.002	0.08	0.25
04 SM 101 011.814 101/SB ON FR FASHION ISL BV	0	0	0	0	0.000	0.00	0.00	0.002	0.21	0.60
04 SM 101 012.034 101/NB ON FR FASHION ISL BV	5	0	2	2	0.000	**0.40**	**1.00**	0.002	0.21	0.60
04 SM 101 012.108 101/SEG SB OFF TO FI BLVD	2	0	1	1	0.000	0.20	0.40	0.004	0.32	0.92
04 SM 101 012.218 101/SEG SB OFF TO EB RTE 92	12	0	3	3	0.000	0.08	**0.32**	0.002	0.08	0.25
04 SM 101 012.325 101/SB OFF TO RTE 92	8	0	2	2	0.000	0.04	0.15	0.002	0.08	0.25
04 SM 101 012.616 101/NB OFF TO KEHOE AVE	1	0	0	0	0.000	0.00	0.29	0.003	0.18	0.50
04 SM 101 012.724 101/NB ON FR KEHOE AVE	1	0	0	0	0.000	0.00	**0.36**	0.002	0.12	0.33
04 SM 101 013.311 101/SB ON FR E 3RD/4TH	0	0	0	0	0.000	0.00	0.00	0.001	0.06	0.20
04 SM 101 013.324 101/NBOFF TO E 3RD/4TH AVE	0	0	0	0	0.000	0.00	0.00	0.002	0.08	0.25
04 SM 101 013.361 101/SEG SB ON FR E 4TH AVE	5	0	2	2	0.000	0.16	0.39	0.003	0.19	0.56
04 SM 101 013.362 101/SEG SBON FR WB E 3RD AV	4	0	1	1	0.000	0.13	0.51	0.003	0.23	0.71
04 SM 101 013.384 101/SEG NBOFF TOWB E 3RD AV	5	0	1	1	0.000	0.07	0.36	0.004	0.30	0.93
04 SM 101 013.385 101/SEG NBOFF TOEB E 3RD AV	3	1	1	2	**0.338**	**0.68**	**1.01**	0.003	0.24	0.69

Table 3: Caltrans 3-year Accident History for SR 92 Ramps

Location Description	No. of accidents				Accident Rates					
					Actual			Statewide Average		
	Tot	Fat	Inj	F+I	Fat	F+I	Tot	Fat	F+I	Tot
04 SM 092 R011.061 092/WB ON FR SB RTE 82	1	0	0	0	0.000	0.00	0.17	0.002	0.11	0.32
04 SM 092 R011.074 092/EB OFF TO SB RTE 82	7	0	2	2	0.000	**0.70**	**2.46**	0.003	0.12	0.37
04 SM 092 R011.171 092/WB OFF TO SB RTE 82	1	0	1	1	0.000	0.13	0.13	0.004	0.21	0.70
04 SM 092 R011.174 092/EB ON FR SB RTE 82	0	0	0	0	0.000	0.00	0.00	0.003	0.18	0.61
04 SM 092 R011.251 092/WB ON FR NB RTE 82	0	0	0	0	0.000	0.00	0.00	0.003	0.18	0.61
04 SM 092 R011.264 092/EB OFF TO NB RTE 82	1	0	0	0	0.000	0.00	0.17	0.004	0.21	0.70
04 SM 092 R011.321 092/WB OFF TO NB RTE 82	17	0	5	5	0.000	**0.48**	**1.62**	0.003	0.12	0.37
04 SM 092 R011.334 092/EB ON FR NB OFF RTE 82	4	0	1	1	0.000	**0.12**	**0.49**	0.002	0.11	0.32
04 SM 092 R011.464 092/EB OFF TO S DELAWARE ST	1	0	1	1	0.000	0.12	0.12	0.004	0.32	0.92
04 SM 092 R011.471 092/WB ON FR S DELAWARE ST	2	0	0	0	0.000	0.00	0.27	0.001	0.14	0.48
04 SM 092 R011.591 092/WB OFF TO S DELAWARE ST	0	0	0	0	0.000	0.00	0.00	0.004	0.30	0.93
04 SM 092 R011.742 092/EB ON FRM S DELAWARE ST	2	0	0	0	0.000	0.00	0.21	0.002	0.21	0.60
04 SM 092 R011.924 092/WB ON FR SB 101	4	0	4	4	0.000	**0.28**	0.28	0.002	0.11	0.32
04 SM 092 R011.962 092/WB ON FR NB 101	2	0	1	1	0.000	0.05	0.11	0.002	0.13	0.39
04 SM 092 R011.964 092/EB OFF TO SB 101	5	0	3	3	0.000	**0.17**	0.29	0.003	0.12	0.37
04 SM 092 R012.103 092/WB OFF TO SB 101	4	0	1	1	0.000	0.05	0.21	0.004	0.21	0.70
04 SM 092 R012.175 092/EB OFF TO NB 101	4	1	3	4	**0.075**	**0.30**	0.30	0.004	0.21	0.70
04 SM 092 R012.302 092/WB OFF TO NB 101	4	0	0	0	0.000	0.00	0.12	0.003	0.12	0.37
04 SM 092 R012.366 092/EB ON FR NB 101	10	1	2	3	**0.047**	**0.14**	**0.47**	0.002	0.13	0.39
04 SM 092 R012.367 092/EB ON FR SB 101	13	0	3	3	0.000	0.08	**0.34**	0.002	0.11	0.32
04 SM 092 R012.801 092/EB OFF TO MARINERS BLVD	4	0	0	0	0.000	0.00	0.24	0.002	0.23	0.78
04 SM 092 R012.822 092/WB ON FR W CAPE DR	0	0	0	0	0.000	0.00	0.00	0.001	0.14	0.48
04 SM 092 R012.950 092/EB ON FR MARINERS IS BL	0	0	0	0	0.000	0.00	0.00	0.001	0.14	0.48
04 SM 092 R012.960 092/WB OFF TO WEST CAPE DR	2	0	0	0	0.000	0.00	**0.79**	0.002	0.23	0.78
04 SM 092 R013.411 092/WB ON FR FOSTER CITY BL	4	0	0	0	0.000	0.00	0.21	0.001	0.14	0.48
04 SM 092 R013.454 092/EB OFF TO FOST CITY BL	4	0	2	2	0.000	0.11	0.21	0.002	0.23	0.78

Table 4: Caltrans 3-year Accident History for US 101 and SR 92 Mainlines

Route/ Direction	No. of accidents				Accident Rates					
					Actual			Statewide Average		
	Tot	Fat	Inj	F+I	Fat	F+I	Tot	Fat	F+I	Tot
NB US 101	313	1	91	92	0.003	0.26	0.88	0.004	0.36	1.15
SB US 101	319	1	114	115	0.003	0.32	0.90	0.004	0.36	1.15
EB SR 92	176	0	55	55	0.000	0.32	1.03	0.006	0.36	1.08
WB SR 92	169	1	55	56	0.006	0.33	0.99	0.006	0.36	1.08

Alternatives

No Build Alternative

Under the No Build Alternative, the existing transportation facilities within the project area would remain unchanged, except for planned and programmed improvements. These include:

- The US 101 Managed Lanes Project, between northern Santa Clara County and the City of South San Francisco, is anticipated to be open to traffic in Year 2022. That project will convert an existing HOV lane in each direction to express lane use in the southern portion of the project (south of Whipple Avenue in Redwood City) and will add new express lanes in each direction north of Whipple Avenue.
- The City of San Mateo is planning to construct a new pedestrian and bicycle overcrossing at the US 101 / E. Hillsdale Boulevard interchange. This project would not affect any existing traffic lanes.
- Foster City has implemented a Traffic Relief Pilot Program that prohibits left turns and U-turns from E. Hillsdale Boulevard onto Edgewater Boulevard, and onto Shell Boulevard during the weekday peak hour.

The US 101/SR 92 Interchange Area Improvements Project proposed to improve the local access from US 101 and to provide operational improvements at the US 101/SR 92 interchange ramps. The improvements focus on addressing existing deficiencies and are noncomplex improvements with relatively low implementation costs. No right-of-way acquisition is anticipated. The four improvements can be implemented independently or together. The following improvements are being considered:

- Westbound SR 92 to southbound US 101 loop ramp and structure widening improvements
- Northbound and southbound US 101 to eastbound SR 92 merging and restriping improvements
- Southbound US 101 Fashion Island Blvd off-ramp improvements
- Northbound US 101 at Hillsdale Blvd off-ramp and intersection modification and widening improvements

This project improvements will be considered accordingly in the no build opening and design years.

Build Alternatives

The alternatives outlined below constitute two alternatives which satisfy the purpose and need of the project. The outlined alternatives are for the purpose of establishing project factors that will be studied and evaluated in the next phase of the Project.

Alternative 1: Managed Lane Direct Connector from Westbound SR 92 to US 101

This alternative would construct a managed lane direct connector from the median of westbound SR 92 to the northbound and southbound US 101 median express lanes. The managed lane direct connector would begin on westbound SR 92 approximately 800 feet west of Mariner Island Blvd. Improvements to westbound SR 92 extend 1300 feet west of the Vintage Park Drive Overcrossing. At that location, a managed lane would be added to the left of the three (3) existing general-purpose lanes on SR 92. The managed lane would diverge from the general-purpose lanes at the Mariners Island Overcrossing and would climb on an elevated structure above the adjacent SR 92 lanes along the median of SR 92. Once adequate vertical clearance is achieved, the structure would branch into two lanes, one to the north and one to the south. The northbound and southbound connectors would cross over the existing freeway to freeway connector ramps and would cross northbound US 101 before descending within the median of US 101 and merge with the northbound and southbound median express lanes. The northbound connector ramp would be constructed as a single lane ramp with 5- and 10- foot shoulders. To provide optimum stopping sight distance on the curved portion of the ramp, the southbound single lane US 101 connector ramp would be constructed with an 18-foot left shoulder and 6-foot right shoulder.

The US 101 mainline would be widened to the east and west to accommodate the managed lane direct connector. On-ramp and off-ramp gores would be modified to accommodate the widening; however, significant ramp realignment is not anticipated except at the Kehoe Avenue ramps. Reconstruction of the NB US 101 Kehoe Avenue on- and off-ramps will be necessary to accommodate the Direct Connector improvements.

The westbound SR 92 improvements are proposed to extend to Vintage Park Drive. Improvements include minor modifications at Bakers Way off-ramp. Currently, there are 3 lanes on WB 92. A 4th westbound lane will be needed to add the managed lane. The Mariner Island Boulevard Overcrossing will span the improvements proposed and no modifications are anticipated. The specific layout of the start of the westbound managed lane will be studied further as part of the PA&ED phase, including determining the optimal location for beginning the improvements on westbound SR 92.

The proposed managed lane direct connector ramps would vertically clear all existing connector ramps and SR 92 and US 101 mainlines.

Improvements along northbound US 101 would extend from SR 92 to 1000 feet north of Kehoe Avenue. The limits along southbound US 101 would extend from SR 92 to approximately 1,500 feet south of the Hillsdale Boulevard Overcrossing.

Construction staging and lane closure requirements for this alternative appear consistent with typical major freeway interchange projects. Consideration of staging and traffic management will be considered during PA&ED phases and further developed during PS&E.

This alternative would perpetuate and maintain existing Transportation Management System (TMS) elements such as closed-circuit television (CCTV), vehicle detection systems, changeable message signs (CMS), variable message signs (VMS) for Highway Advisory Radio (HAR), fiber communication network/hubs, and/or ramp meters. Additional TMS features would be included

as determined appropriate and consistent with TMS system plans during the PA&ED and PS&E phases of the project.

The proposed San Mateo US 101 Managed Lanes Project will construct a CHP enforcement area in the median of US 101 1 mile south of this project. Currently SR 92 does not have any CHP enforcement areas nor are any currently proposed under this alternative.

Alternative 2: Reversible US 101 / SR 92 Managed Lane Direct Connector

This alternative would construct reversible managed lane median direct connector ramps between US 101 and SR 92. In the AM peak period, the reversible managed lane direct connector ramps would be open to SR 92 westbound traffic to provide access to the northbound and southbound US 101 median express lane. During the PM peak period, the traffic on the direct connector ramps would operate in reverse, providing access from the northbound and southbound US 101 express lanes to eastbound SR 92.

In the AM peak period the median reversible managed lane direct connector would begin on westbound SR 92 800 feet west of Mariner Island Blvd. Improvements to westbound SR 92 extend 1300 feet west of the Vintage Park Drive Overcrossing. At that location, a managed lane would open to the left of the three (3) existing general-purpose lanes on SR 92. The managed lane would diverge from the other general-purpose lanes at the Mariners Island Overcrossing and enter the reversible managed lane direct connector ramp at a gate. Once beyond the gate, the managed lane would climb on an elevated structure above the adjacent SR 92 lanes along the median of SR 92 and would branch to two lanes, one to the north and one to the south once adequate vertical clearance is achieved to allow elevating over SR 92. The northbound and southbound connectors would cross over the existing freeway-to-freeway connector ramps and would cross northbound US 101 before descending within the median of US 101 and merging with the northbound and southbound median express lanes. The northbound connector ramp would be constructed as a single lane ramp with 5-foot left shoulder and 10-foot right shoulder. To provide optimum stopping sight distance on the curved portion of the ramp, the southbound single lane US 101 connector ramp would be constructed with an 18-foot left shoulder and 5-foot right shoulder.

In the PM peak period, the median reversible managed lane direct connector would operate in reverse. North of SR 92 the reversible managed lane direct connector would begin by opening a second HOV lane in the median of southbound US 101 just south of Kehoe Avenue. Vehicles would enter the reversible managed lane direct connector at a gate located approximately 1,900 feet north of SR 92 at which point vehicles would travel along the reversible managed lane direct connector towards eastbound SR 92. South of SR 92 the reversible managed lane direct connector would begin by opening a second median HOV lane in the median of northbound US 101 approximately 600 feet north of Hillsdale Boulevard. Vehicles would enter the reversible managed lane direct connector at a gate located approximately 1,900 feet south of SR 92 at which point vehicles would travel along the reversible managed lane direct connector towards eastbound SR 92. The southbound to eastbound and northbound to eastbound direct connectors would merge into a single lane east of US 101 and then descend into the median of eastbound SR 92.

Since the PM peak period traffic would be using the same managed lane direct connector ramp structures as the AM peak period traffic (but in reverse), in the PM peak period the southbound to eastbound connector ramp would operate as a single lane ramp with a 10-foot left shoulder and 5-foot right shoulder. The northbound to eastbound connector ramp would operate as a single lane ramp with an 18-foot right shoulder and 5-foot left shoulder.

The US 101 mainline would be widened to the east and west to accommodate the managed lane direct connector where they connect in the center median of US 101. On-ramp and off-ramp gores would be modified to accommodate the widening; however, significant ramp realignment is not anticipated. Improvements along northbound US 101 would extend from SR 92 to 1000 feet north of Kehoe Avenue. Reconstruction at the NB US 101 exit at Kehoe Ave will be necessary to accommodate the Direct Connector improvements. The limits along southbound US 101 would extend from SR 92 to approximately 1,500 feet south of the Hillsdale Boulevard Overcrossing.

The westbound SR 92 improvements will add a managed lane as the 4th lane to the existing 3-lane westbound SR 92. The westbound managed lane would operate in the AM peak-period and would extend westward from approximately 1200 feet west of the Vintage Park Drive Overcrossing. Improvements include minor modifications at Bakers Way off-ramp. The Mariner Island Boulevard Overcrossing will span the improvements proposed and no modifications to the structure are anticipated. Extending the westbound managed lane further east to the Foster City Boulevard overcrossing would require additional widening along westbound SR 92 from Vintage Park Drive to the Foster City Boulevard Overcrossing and realigning the westbound Foster City interchange ramps. The extension of the westbound managed lane to Foster City Boulevard is not included herein but determining the optimal location for beginning the improvements on westbound SR 92 will be studied as part of the PA&ED phase. The project benefit would be improved by extending the lane back to Foster City Boulevard on westbound SR 92. However, the current base geometry does not permit a level of design that would adequately determine the impacts. During PA&ED, the first order of work will be to obtain detailed topography which will provide more certainty in determining the geometry of existing lanes, and proposed improvements. The westbound SR 92 managed lane is proposed as a 12-foot wide lane with a 3-foot left shoulder. The managed lane diverges from the general purpose lanes at Mariner Island Boulevard.

Improvements to eastbound SR 92 extend from US 101 to the San Mateo-Hayward Bridge. The eastbound SR 92 improvements would include widening eastbound SR 92 to accommodate a 4th eastbound lane to be operated as a managed lane. The new managed lane would converge with the general purpose eastbound SR 92 lanes approximately 400 feet west of the Mariners Island Overcrossing and extend to a point approximately 900 feet west of the Foster City Overcrossing. At that point, the managed lane ends and it continues as a general purpose lane eastbound. Improvements along eastbound SR 92 include the realignment of the Foster City Boulevard on-ramp to accommodate the 4th eastbound lane. The Foster City Boulevard on-ramp will be reconstructed as a standard ramp, including the 1000-foot auxiliary lane which will be dropped via a standard 50:1 merge taper. Eastbound SR 92 will be reduced to 3 lanes by dropping the outside eastbound lane west of the San Mateo Hayward Bridge. The outside lane drop from 4 to 3 lanes will be a standard lane drop with standard signage and standard lane drop taper. The

ending of the eastbound managed lane will be studied in more detail during the PA&ED phase of the project to determine the exact location of the lane drop.

The operation of the peak-period managed lanes on SR 92 (westbound in the AM and eastbound in the PM) would be operated through overhead changeable lane signage indicating when the managed lane is opened or closed to traffic with green arrows or red X's, respectively. The managed lane in both directions along SR 92 would be 12 feet wide and would have a 0- to 3-foot left shoulder. When not in operation, the managed lane would be closed to traffic and would exist as a 12-foot inside buffer between operating traffic and the median barrier.

A potential CHP enforcement area along SR 92 has been identified for this Alternative. As depicted, the CHP enforcement area would be generally centered near Vintage Park Drive and the cost for the CHP enforcement area is included in the project cost estimate. Final determination of inclusion, location and features of the CHP enforcement area will be studied during PA&ED.

Openings to the reversible managed lane in all directions would be regulated at three (3) gate locations to control the direction of traffic flow: one in the median of SR 92 west of the Mariners Island Boulevard Overcrossing, one in the median of US 101 approximately 1,900 feet north of SR 92, and one in the median of US 101 approximately 1,900 feet south of SR 92. In the approach direction of the managed lane direct connector entrance gates, a 1,000-foot-long auxiliary lane would be provided parallel to the general-purpose lanes on SR 92 and the express lanes on US 101 to facilitate safe lane changes. The managed lane direct connector reversible access openings would be controlled by an automatic gating system combined with automated channelizers that would rise out of the roadway pavement. On approach of the non-operating direction, the gating system would close the managed lane direct connector opening and the automated channelizers would close the auxiliary lanes in advance of the gates. The exact type gating system has not been determined, but the gating system may use a series of swing arm gates, a physical wire gate, or some other system. Further study and determination of the gating system to be used will be studied during PA&ED. Consideration for prevention of wrong-way movement will be given during the PA&ED studies.

Depending upon how the part-time managed lane along SR 92 is ultimately classified, legislative action or a pilot project may be required. Current California Statue prohibits using freeway shoulders for any purposes other than emergencies. If the managed lane is ultimately determined to be a "shoulder," implementing Alternative 2 would require legislative action to amend the California Vehicle Code to permit the operation of the managed lane concept. An alternative to legislative action would be to proceed with the managed lane concept as a pilot project. Pilot projects implement innovative or novel design elements which are otherwise not permitted by Caltrans, but which show significant promise for improved operations, reduced cost, or reduced environmental footprint. Pilot projects are implemented with an evaluation period during which improvements are judged against specific performance measures to determine the effectiveness and safety of the pilot improvements. Pilot project study periods are typically three to five years. At the end of the pilot study period, the efficacy of the improvements would be evaluated for permanent approval or removal if not meeting stated performance criteria. Should the managed lane not meet the performance criteria, the part-time managed lane use improvements would be

removed. Should the improvements be shown to be effective and be determined to be a "shoulder," legislation would then be enacted allowing the operation of the managed lane.

The reversible lane option will require regular ongoing maintenance and operations of the gating systems and managed lanes. It is estimated that the effort will require two crews and two trucks along with supervision to operate the reversible lanes. Depending upon the final selection of reversible lane features and design, the annual operations and maintenance cost is estimated to be between $1.0 - $1.5M per year. The annual operations and maintenance cost are not factored into the Construction Capital or support costs for this alternative and would be in addition thereto.

Construction staging and lane closure requirements for this alternative appear consistent with typical major freeway interchange projects. Consideration of staging and traffic management will be considered during PA&ED phases and further developed during PS&E.

This alternative would perpetuate and maintain existing Transportation Management System (TMS) elements such as closed circuit television (CCTV), vehicle detection systems changeable message signs (CMS), variable message signs (VMS) for Highway Advisory Radio (HAR), fiber communication network/hubs, and/or ramp meters. Additional TMS features would be included as determined appropriate and consistent with TMS system plans during the PA&ED and PS&E phases of the project.

Alternative 2 Design Variation

Given the potential risks associated with the managed lane concept, including the requirement for legislative action or approval of significant non-standard features, a variation for Alternative 2 would terminate the eastbound SR 92 managed lane east of the Mariners Island Boulevard Overcrossing. The eastbound SR 92 managed lane would continue as a mixed flow lane west of Vintage Park Drive Overcrossing and the outside mixed flow lane would be terminated with a standard lane drop taper and associated standard signage.

The detailed drawings of these alternatives are presented in **Attachment**.

2040 No Build Conditions

Traffic Demand Estimates

The design year for the proposed project is Year 2045. However, since this TEPA is prepared from readily available data, Year 2040 information from US 101 ML and SR 92 PPS study is used in this section and provided below in **Table 5**. 2045 volumes will be developed during PA&ED.

Table 5: Projected Year 2040 Unconstrained Demands

Northbound US 101

Description	AM				PM			
	6-7	7-8	8-9	9-10	3-4	4-5	5-6	6-7
NB OFF TO RALSTON AVE.	486	999	1,517	1,651	571	624	625	613
NB ON FR EB RALSTON AVE.	332	665	749	667	898	911	965	854
NB ON FR WB RALSTON AVE.	360	608	545	567	1,174	1,387	1,952	1,680
NB OFF TO HILLSDALE BL	500	1,447	2,017	1,947	2,108	2,290	2,406	2,290
NB ON FR EB HILLSDALE	560	1,024	722	614	917	876	716	812
NB ON FR WB HILLSDALE	146	332	618	687	519	458	379	463
NB OFF TO RTE 92	1,183	2,284	2,422	2,241	3,025	3,095	2,757	2,757
NB ON FROM EB 92	471	802	745	783	932	839	768	713
NB ON FROM WB 92	2,764	3,688	3,039	2,684	2,063	2,363	2,780	2,326
NB ON FR FASHION ISLAND BLVD	262	631	596	358	424	568	668	460
NB OFF TO KEHOE AVE.	222	596	503	223	406	435	368	351
NB ON FR KEHOE AVE.	46	123	119	154	442	536	687	652
NB OFF TO E.3RD\4TH AVE.	207	714	1,425	1,341	1,182	1,241	1,199	1,293
NB ON FR 3RD/4TH AVE	605	1,741	1,869	859	1,216	1,458	1,994	1,482
NB OFF TO DORE AVE.	83	172	219	160	305	326	375	321
NB OFF TO PENINSULA AVE.	336	996	884	718	770	684	716	678
NB ON FR PENINSULA AVE.	486	933	916	546	564	662	634	411
NB OFF TO ANZA BLVD	120	184	192	212	246	257	277	229
NB ON FR ANZA BLVD	69	110	127	115	241	307	362	259
NB OFF TO BROADWAY	840	1110	1270	1190	1161	1256	1554	1256
NB ON FR BROADWAY	524	920	1041	787	789	819	894	717

Southbound US 101

Description	AM				PM			
	6-7	7-8	8-9	9-10	3-4	4-5	5-6	6-7
SB OFF TO WB BROADWAY	357	697	829	856	647	657	670	755
SB OFF TO EB BROADWAY	406	851	1188	948	676	754	925	840
SB ON FR WB BROADWAY	434	1046	1877	911	485	578	629	512
SB ON FR EB BROADWAY	290	538	503	500	839	756	751	569
SB OFF TO POPLAR AVE.	207	593	807	643	685	746	752	585
SB ON FR POPLAR AVE.	562	688	710	623	800	700	600	550
SEG SB OFF TO WB 3RD AVE.	468	812	967	831	911	993	1,013	1,010
SEG SB OFF TO EB 4TH AVE	230	970	1,379	1,050	486	580	710	494
SEG SB ON FR WB 3RD AVE.	331	938	924	847	603	589	633	616
SEG SB ON FR 4TH AVE.	323	647	677	639	908	876	846	730
SB OFF TO WB SR-92	545	1,130	1,096	993	1,077	1,048	952	883
SEG SB OFF TO FASHION IS.	404	666	704	617	454	437	459	484
SEG SB OFF TO EB RTE 92	1,301	1,893	2,118	1,800	2,825	3,055	2,888	2,395
SB ON FROM WB 92	1,597	1,463	1,253	1,244	1,259	1,527	1,880	1,435
SB ON FR FASHION ISLAND BLVD.	495	1,042	875	611	505	490	515	452
SB ON FROM EB 92	775	1,480	1,518	1,488	1,196	1,463	1,425	1,220
SEG OFF TO HILLSDALE	842	762	939	1,231	1,357	1,398	1,629	1,406
SB ON FR WB HILLSDALE BLVD	550	1,058	1,350	1,324	598	691	807	677
SB ON FR E HILLSDALE BLVD	349	644	847	711	880	908	781	691
SB OFF TO RALSTON AVE.	806	1,293	1,517	1,439	984	1,081	1,246	1,070
SB ON FR RALSTON AVE.	720	1,260	1,191	1,064	1,213	1,602	1,698	1,455

SR 92 EB

Description	AM				PM			
	6-7	7-8	8-9	9-10	3-4	4-5	5-6	6-7
EB OFF TO ALAMEDA DE LAS PULGAS	77	272	372	262	574	623	848	668
EB ON FR TO ALAMEDA DE LAS PULGAS	416	768	982	675	1014	935	916	683
EB OFF TO RTE 82	445	1,292	1,617	1,529	767	795	827	797
EB ON FR SB RTE 82	435	820	989	868	900	885	1,017	821
EB ON FR NB OFF RTE 82	418	950	1,025	835	1,172	1,191	1,359	1,139
EB OFF TO S. DELAWARE ST.- SM	300	905	1,120	955	1,081	1,124	1,101	931
EB ON FR SB DELWARE ST	358	725	753	740	716	834	813	703
EB OFF TO SB 101	775	1,480	1,518	1,488	1,196	1,463	1,425	1,220
EB OFF TO NB 101	471	802	745	783	932	839	768	713
EB ON FR SB 101	1,301	1,893	2,118	1,800	2,825	3,055	2,888	2,395
EB ON FR NB 101	544	869	1,064	1,047	1,569	1,642	1,408	1,506
EB OFF TO MARINERS BLVD	381	915	1,501	1,291	1,028	1,094	1,122	1,179
EB ON FR MARINERS BLVD.	128	244	271	179	193	304	437	292
EB OFF TO FOSTER CITY BLVD.	493	1,156	1,629	1,342	1,257	1,237	1,294	1,402
EB ON FR FOSTER CITY BLVD.	178	341	360	228	729	1,149	1,599	1,061
EB MAINLINE, FOSTER CITY BOULEVARD	2,330	3,745	3,668	3,158	5,679	6,876	7,331	5,414

SR 92 WB

Description	AM				PM			
	6-7	7-8	8-9	9-10	3-4	4-5	5-6	6-7
WB MAINLINE, FOSTER CITY BOULEVARD	6,092	6,053	4,975	4,828	4,189	4,382	4,046	3,961
WB OFF TO FOSTER CITY BLVD.	408	638	687	811	468	453	393	379
WB ON FR FOSTER CITY BLVD.	527	860	943	924	1,067	1,363	1,556	1,242
WB OFF TO WEST CAPE DR.	137	319	416	391	88	99	122	144
WB ON FR WEST CAPE DR.	324	813	1,126	1,241	730	913	1,099	948
WB OFF TO NB 101	2,764	3,688	3,039	2,684	2,063	2,363	2,780	2,326
WB OFF TO SB 101	1,597	1,463	1,253	1,244	1,259	1,527	1,880	1,435
WB ON FR NB 101	639	1,415	1,358	1,194	1,456	1,453	1,349	1,251
WB ON FR SB 101	545	1,130	1,096	993	1,077	1,048	952	883
WB OFF TO S DELAWARE ST	1,250	1,173	1,088	914	993	1,076	870	724
WB ON FR S DELAWARE ST	196	715	673	534	617	710	739	574
WB OFF TO RTE 82	601	1,316	1,394	1,328	1,176	1,101	1,054	1,091
WB ON FR NB RTE 82	55	191	185	140	50	61	67	56
WB ON FR SB RTE 82	149	449	466	328	462	534	615	515
WB OFF TO ALAMEDA DE LAS PULGAS	656	711	556	552	966	994	904	702
WB ON FR TO ALAMEDA DE LAS PULGAS	246	924	1151	749	1116	1273	1525	1029

Recommended Scope for PA&ED

The purpose of the TEPA process is to develop an initial traffic scope of work for a more detailed traffic analyses to be completed during the PA&ED phase. The following are identified as the scope of future traffic engineering studies based on recommendations received from Caltrans:

Project Study Limits: The project study limits for traffic operations analysis will include all ramps and mainline along US 101 from Ralston Avenue Interchange to Broadway Interchange, and SR 92 from Alameda de las Pulgas Interchange to the high-rise portion of the San Mateo/Hayward Bridge. The study will also include the following intersections:

- Eastbound SR 92 Ramps and Alameda de las Pulgas
- Westbound SR 92 Ramps and Alameda de las Pulgas
- Eastbound SR 92 Ramps and El Camino Real
- Westbound SR 92 Ramps and El Camino Real
- Eastbound SR 92 Ramps and Delaware Street
- Westbound SR 92 Ramps and Delaware Street
- Eastbound SR 92 Ramps and Mariners Island Boulevard
- Westbound SR 92 Ramps and Cape Drive
- Eastbound SR 92 Ramps and Foster City Boulevard
- Westbound SR 92 Ramps and Foster City Boulevard
- Northbound US 101 off ramp and Ralston Avenue
- Southbound US 101 off ramp and Ralston Avenue
- Northbound US 101 off ramp and East Hillsdale Boulevard
- Southbound US 101 off ramp and Fashion Island Boulevard
- Northbound US 101 Ramps and Kehoe Avenue
- Northbound US 101 off ramp and Dore Avenue
- Southbound US 101 Ramps and Poplar Avenue
- Northbound US 101 Ramps and Peninsula Avenue
- Northbound US 101 Ramps and Anza Boulevard
- Northbound US 101 Ramps and Old Bayshore Highway/Broadway
- Southbound US 101 Ramps and Broadway

The Study limits will be assessed again if required and finalized during the PA&ED phase.

Traffic Data Collection: The mainline and ramp data will be collected from Caltrans census or PeMS data. If the data is more than 3 years old, consultant will work with Caltrans, SMCTA, C/CAG and Local agencies to obtain new counts or make necessary adjustments to current conditions. Latest existing mainline and ramp data may need to be collected manually. For the intersections, local agencies will be contacted to obtain the most current turning movements that includes vehicle, pedestrian and bicycle traffic counts for the weekday conditions. New peak hour intersection counts if necessary will be collected through a 3rd party vendor. Based on the bottleneck locations and queue lengths, demand volumes will be determined for analysis.

Field Observations: During data collection, field observations will be made during the peak hours to observe the queues and operating conditions. This would include travel time runs (floating car runs) along the US 101 and SR 92 to capture the queues on a specific lane, in addition to INRIX data.

Traffic Forecasting: Future demands on US 101, SR 92, ramps and local streets in the project study limits will be forecasted for both opening year and design years. The project anticipates using model outputs from the C/CAG Travel Demand Model System as a basis for creating future year transportation networks for the project.

To confirm that the model reflects the current plans for the area, an initial step is a review of the land use and network assumptions in the C/CAG model for the area surrounding the project. The land use assumptions will be reviewed for consistency with the Cities' recent General Plans as

well as new projects that are being planned near the interchange area. The review will determine if there is a need to modify the assumptions for either the construction year or design year prior to generating future travel demand forecasts for the no project and project alternatives.

The model outputs will be compared to the existing traffic demand volumes in the study area. Validation and verification of the model will focus on the peak hour and peak period traffic demand volumes. The results of the model validation and verification will be documented in the Existing Conditions and Calibration Report. This report will be submitted to the Caltrans for their review and approval.

Ramp Metering: The project is impacting six ramps (4 with metering and 2 with no existing metering) as identified below.

Ramps with meters:

- Kehoe Ave to NB US101
- Fashion Island Blvd to NB US101
- WB SR92 to NB US101
- Hillsdale Blvd to SB US101

Ramps without meters:

- Edgewater/Mariners Blvd to EB 92
- Foster City Blvd to EB 92

Meters will be installed/adjusted as appropriate based on the guidance from Caltrans. The ramp metering rates, and effective time periods will be included in the traffic analysis accordingly.

Traffic Safety Analysis: A detailed collision analysis will be included in the traffic study.

Freeway and Ramp Operational Analysis: Freeway analysis will be performed using the VISSIM simulation model. The operational analysis will be completed for existing conditions and future conditions (opening and design years) for each alternative, with and without the project as well as any proposed project construction phasing. The traffic analysis will also identify any potential bottlenecks within the study area. Freeway facility operations will be presented in terms of level of service (LOS), density, speed, bottleneck locations, queue length and travel times. Also, the No Build and Build conditions will be compared in terms of vehicle miles travelled (VMT), vehicle hours travelled (VHT), vehicle hours of delay (VHD), vehicle throughput, person throughput, delay per vehicle, speed, travel time and Managed lane travel time savings.

Intersection Capacity and Operational Analysis: The traffic analysis will evaluate the impacts to the intersections using Synchro/Sim-Traffic software.

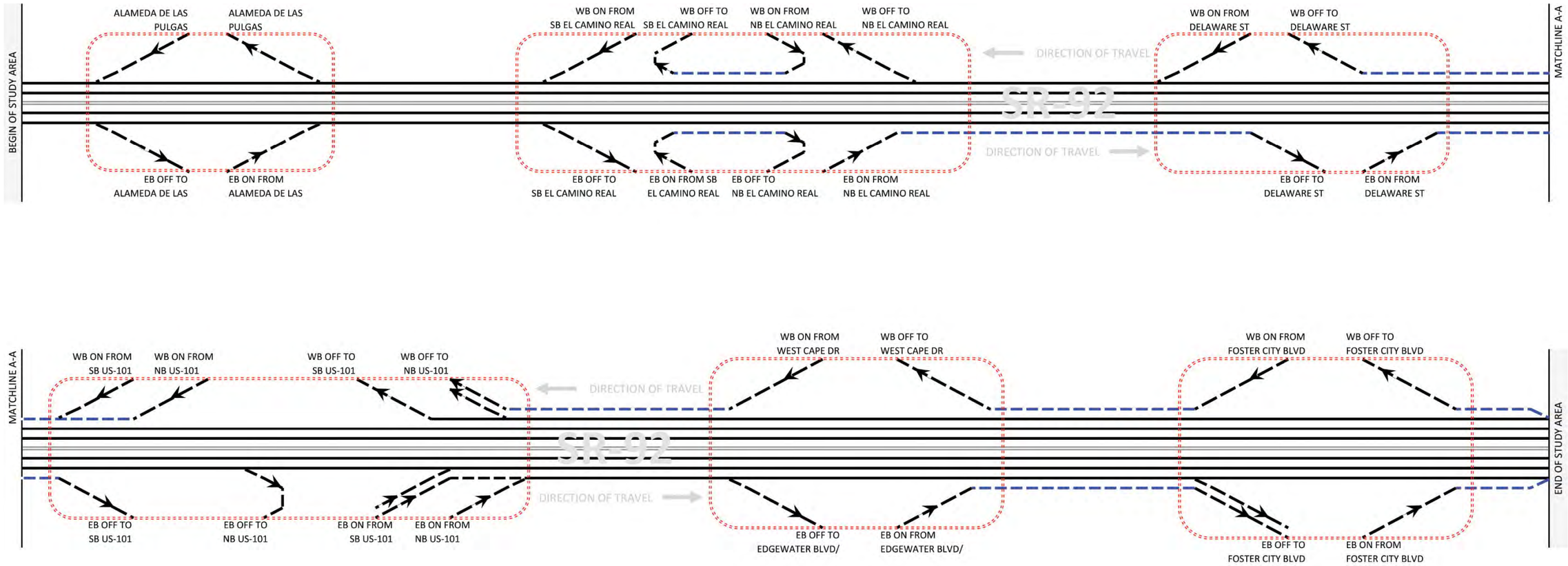
Traffic Operations Analysis Report (TOAR): The findings of the PA&ED traffic analysis will be documented in a Final TOAR, which will be used to help identify design alternatives and support the project purpose and need.

Traffic Management Planning: A preliminary Traffic Management Plan (TMP) will be developed with the PA&ED process.

Project Construction Staging: It is recommended that construction be completed in stages to minimize temporary construction impacts to traffic and local circulation. Any impacts to existing facilities that require closures will be included in the study.

Attachments:

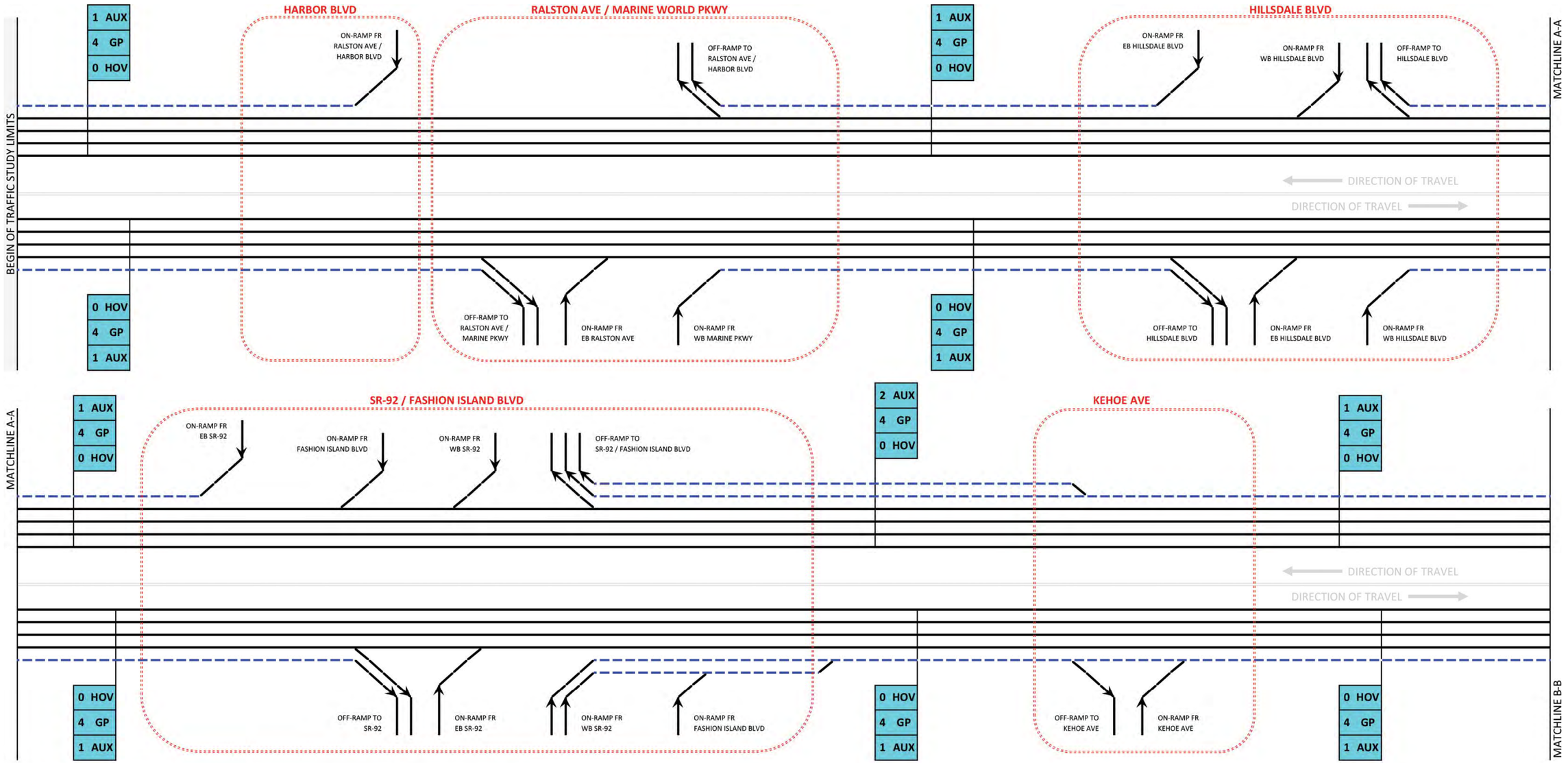
- US 101 and SR 92 Geometry
- INRIX Data
- Alternatives Exhibits

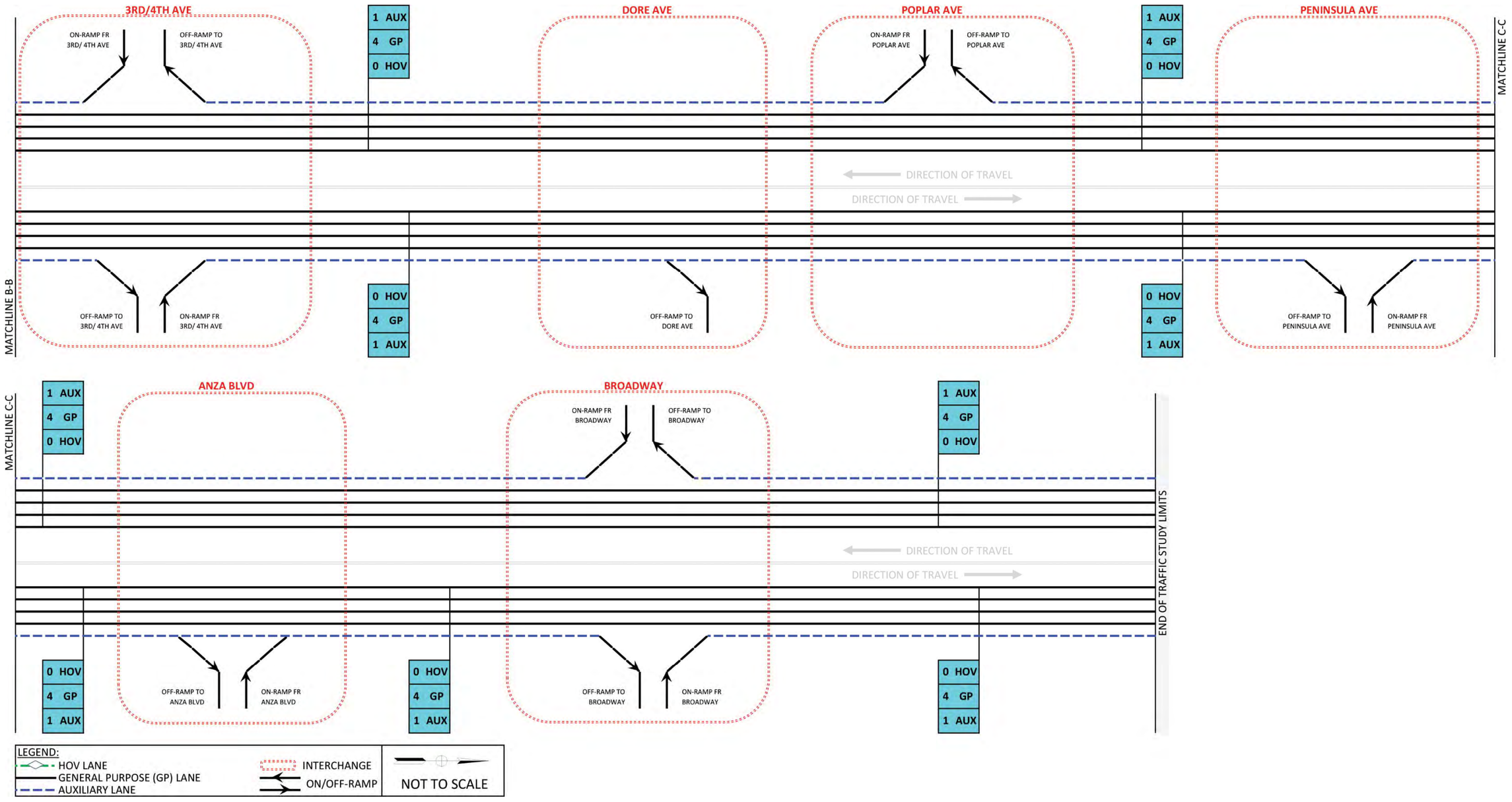


LEGEND:

- INTERCHANGE
- MIXED FLOW (MF) LANE
- AUXILIARY LANE
- ON/OFF-RAMP

NOT TO SCALE


HARBOR BLVD
RALSTON AVE / MARINE WORLD PKWY
HILLSDALE BLVD
SR-92 / FASHION ISLAND BLVD
KEHOE AVE
BEGIN OF TRAFFIC STUDY LIMITS
MATCHLINE A-A
MATCHLINE B-B
1 AUX
4 GP
0 HOV
2 AUX
4 GP
0 HOV
0 HOV
4 GP
1 AUX
ON-RAMP FR RALSTON AVE / HARBOR BLVD
OFF-RAMP TO RALSTON AVE / HARBOR BLVD
OFF-RAMP TO RALSTON AVE / MARINE PKWY
ON-RAMP FR EB RALSTON AVE
ON-RAMP FR WB MARINE PKWY
ON-RAMP FR EB HILLSDALE BLVD
ON-RAMP FR WB HILLSDALE BLVD
OFF-RAMP TO HILLSDALE BLVD
OFF-RAMP TO HILLSDALE BLVD
ON-RAMP FR EB HILLSDALE BLVD
ON-RAMP FR WB HILLSDALE BLVD
DIRECTION OF TRAVEL
DIRECTION OF TRAVEL
ON-RAMP FR EB SR-92
ON-RAMP FR FASHION ISLAND BLVD
ON-RAMP FR WB SR-92
OFF-RAMP TO SR-92 / FASHION ISLAND BLVD
OFF-RAMP TO SR-92
ON-RAMP FR EB SR-92
ON-RAMP FR WB SR-92
ON-RAMP FR FASHION ISLAND BLVD
OFF-RAMP TO KEHOE AVE
ON-RAMP FR KEHOE AVE
LEGEND:
HOV LANE
GENERAL PURPOSE (GP) LANE
AUXILIARY LANE
INTERCHANGE
ON/OFF-RAMP
NOT TO SCALE


3RD/4TH AVE
ON-RAMP FR 3RD/ 4TH AVE
OFF-RAMP TO 3RD/ 4TH AVE
1 AUX
4 GP
0 HOV
DORE AVE
POPLAR AVE
ON-RAMP FR POPLAR AVE
OFF-RAMP TO POPLAR AVE
1 AUX
4 GP
0 HOV
PENINSULA AVE
MATCHLINE C-C
DIRECTION OF TRAVEL
DIRECTION OF TRAVEL
MATCHLINE B-B
OFF-RAMP TO 3RD/ 4TH AVE
ON-RAMP FR 3RD/ 4TH AVE
0 HOV
4 GP
1 AUX
OFF-RAMP TO DORE AVE
0 HOV
4 GP
1 AUX
OFF-RAMP TO PENINSULA AVE
ON-RAMP FR PENINSULA AVE
MATCHLINE C-C
1 AUX
4 GP
0 HOV
ANZA BLVD
BROADWAY
ON-RAMP FR BROADWAY
OFF-RAMP TO BROADWAY
1 AUX
4 GP
0 HOV
DIRECTION OF TRAVEL
DIRECTION OF TRAVEL
END OF TRAFFIC STUDY LIMITS
0 HOV
4 GP
1 AUX
OFF-RAMP TO ANZA BLVD
ON-RAMP FR ANZA BLVD
0 HOV
4 GP
1 AUX
OFF-RAMP TO BROADWAY
ON-RAMP FR BROADWAY
0 HOV
4 GP
1 AUX
LEGEND:
HOV LANE
GENERAL PURPOSE (GP) LANE
AUXILIARY LANE
INTERCHANGE
ON/OFF-RAMP
NOT TO SCALE

Corridor Name: EB SR92 to SB US101

ID	Segment Name	Length (mi)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1626727765	EB SR-92 NB I-280 on- to Ralston off-ramp	0.21	59	55	56	56	58	61	60	55	53	53	58	60	59	59	58	56	54	52	53	57	60	61	60	60
1626722123	EB SR-92 Ralston off- to on-ramp	0.37	60	56	56	57	59	62	63	59	56	55	61	61	60	61	60	59	59	57	58	59	62	61	59	62
170334231	EB SR-92 Ralston on- to De Anza off-ramp	0.20	61	56	57	58	60	63	65	62	58	55	63	63	62	63	62	62	63	61	63	61	64	63	61	63
1626733255	EB SR-92 De Anza off- to on-ramp	0.55	60	57	58	58	61	64	66	63	58	53	64	64	64	64	63	60	63	63	63	62	65	64	62	63
1626727392	EB SR-92 De Anza on- to W. Hillsdale off-ramp	0.20	60	57	57	58	62	65	66	61	50	46	64	63	64	63	60	50	59	60	59	62	65	65	63	64
1626617948	EB SR-92 W. Hillsdale off- to loop on-ramp	0.26	61	58	57	58	62	65	66	61	46	45	64	64	64	63	58	45	57	59	58	62	64	65	63	64
1626652796	EB SR-92 W. Hillsdale loop on- to dia. On-ramp	0.16	61	57	58	57	59	64	66	61	39	43	63	64	63	63	57	40	51	54	55	60	63	63	63	63
1626670643	EB SR-92 W. Hillsdale dia. on- to Alameda de Las Pulgas off-ramp	0.80	62	58	57	58	60	65	67	56	28	38	60	62	61	62	53	29	31	31	33	50	63	64	64	64
1626678318	EB SR-92 Alameda de Las Pulgas off- to on-ramp	0.37	60	54	51	55	59	64	66	49	20	33	55	60	56	60	47	23	15	12	17	34	53	40	59	61
1626729418	EB SR-92 Alameda de Las Pulgas on- to El Camino Real dia. Off-ran	0.24	58	55	52	52	59	60	63	46	18	32	51	55	55	55	45	23	12	10	16	31	58	60	60	59
1626616190	EB SR-92 ECR dia. Off- to loop on-ramp	0.18	58	55	52	52	56	58	61	38	18	31	49	54	54	54	41	23	10	8	13	28	55	58	57	58
1626611283	EB SR-92 ECR loop on- to dia. on-ramp	0.19	54	53	53	52	54	55	57	30	18	30	45	51	50	50	41	24	10	7	12	28	52	51	52	55
1626644082	EB SR-92 ECR dia. on- to Delaware off-ramp	0.04	46	45	44	42	50	53	54	27	19	31	41	43	42	42	38	26	10	7	12	26	45	47	49	52
1626615732	EB SR-92 Delaware off- to on-ramp	0.36	52	51	52	51	56	57	58	22	19	31	47	53	54	53	46	28	10	7	12	28	55	56	57	57
1626682023	EB SR-92 Delaware on- to SB US 101 off-ramp	0.11	53	51	53	51	57	57	56	27	26	34	47	54	54	53	47	28	11	8	13	28	54	56	58	56
1626617552	Connector EB 92 conn. to SB US 101	0.49	54	53	52	53	57	54	45	15	12	16	25	42	49	48	47	48	41	32	37	45	51	53	52	52
1626768019	SB US-101 SB US 101 conn. on to E. Hillsdale off-ramp	0.10	66	65	61	61	63	67	51	23	19	22	29	44	57	59	59	60	57	47	50	60	64	66	67	58
1626725258	SB US-101 E. Hillsdale off- to loop on-ramp	0.45	66	66	64	63	65	68	55	28	23	27	33	47	61	63	62	62	62	60	60	65	67	68	68	64
1626637791	SB US-101 E. Hillsdale loop on- to dia. on-ramp	0.22	66	67	65	64	66	69	61	39	31	36	45	54	62	63	63	62	63	63	62	65	67	68	69	67
1626623456	SB US-101 E. Hillsdale dia. on- to Ralston off-ramp	0.99	66	67	65	65	67	70	64	44	34	45	58	62	65	65	65	63	64	65	65	67	68	68	69	67

Source: INRIX, Fall 2018 (Oct. 16 - Nov. 02)
Typical Weekdays (Tuesday, Wednesday, Thursday)
Holidays, Fridays and Weekends are not included.

Traffic Speed (mph)

Corridor Name: EB SR92 to NB I880

ID	Segment Name	Length (mi)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1626759180	EB SR-92 NB US 101 dia. Conn. on- to Edgewater off-ramp	0.30	60	58	57	58	58	58	59	58	56	54	56	56	55	51	35	18	9	8	12	26	51	56	58	59
1626634582	EB SR-92 Mariners Is. off- to on-ramp	0.29	65	61	60	61	60	63	63	63	62	61	63	62	62	59	45	20	10	8	12	29	60	64	64	65
1626765805	EB SR-92 Mariners Is. on- to Foster City Blvd. off-ramp	0.37	65	62	60	62	61	63	63	63	63	63	65	64	63	61	48	20	12	10	14	30	61	64	64	66
1626651543	EB SR-92 Foster City Blvd. off- to on-ramp	0.29	66	63	63	64	62	65	67	65	67	67	67	67	67	64	48	19	14	12	15	27	63	68	68	67
1626702346	EB SR-92 Foster City Blvd. on-ramp to mid-pt.	0.62	65	62	62	61	62	64	66	66	67	66	66	66	65	64	48	25	20	17	21	31	62	66	66	63
1626702492	EB SR-92 mid-pt. to onto San Mateo Bridge (seg. 1)	0.62	64	61	60	62	61	64	64	66	65	65	65	65	64	63	50	41	32	23	30	43	64	66	65	62
1626702474	EB SR-92 SM BR (seg. 1 to seg. 2)	0.62	64	61	60	61	61	64	64	66	65	65	65	65	62	62	53	47	36	26	34	45	63	65	65	61
1626702454	EB SR-92 SM BR (seg. 2 to seg. 3)	0.62	65	62	61	62	62	64	65	67	66	65	65	66	63	63	57	51	35	28	35	46	64	66	66	64
1626702428	EB SR-92 SM BR (seg. 3 to seg. 4)	0.62	66	64	63	64	63	65	66	67	67	66	66	67	66	64	60	53	35	29	37	49	65	67	68	67
1626702241	EB SR-92 seg. 5	0.62	68	64	64	65	64	67	67	70	69	68	69	70	69	66	62	52	36	31	40	50	65	68	69	68
1626702221	EB SR-92 seg. 6	0.62	67	64	65	65	64	67	67	69	69	69	69	70	69	66	62	51	36	33	42	49	64	68	69	69
1626702200	EB SR-92 seg. 7	0.62	67	64	65	65	64	67	68	69	70	69	69	70	69	66	62	50	36	34	42	48	62	68	69	68
1626702196	EB SR-92 seg. 8	0.62	67	63	65	66	64	67	68	70	70	69	69	70	69	67	62	49	40	39	43	47	62	68	69	69
1626702341	EB SR-92 seg. 9	0.62	67	64	65	65	64	67	68	69	70	68	69	70	68	66	62	48	45	41	42	48	61	68	69	68
169911712	EB SR-92 seg. 10	0.62	67	64	64	64	64	66	67	69	70	68	69	69	68	66	61	48	46	43	43	47	60	68	68	68
1626702303	EB SR-92 seg. 11	0.62	67	64	65	65	64	67	66	68	70	67	69	68	67	66	61	47	44	42	42	46	59	67	68	67
1626702277	EB SR-92 SM BR (seg. 11) to beyond toll building	0.47	67	63	64	64	63	66	66	68	68	65	68	68	67	65	60	44	40	39	39	43	58	66	66	66
1626702091	EB SR-92 beyond toll building to mid-pt.	0.77	67	63	64	63	62	66	66	67	68	65	68	67	67	65	59	45	41	40	41	46	61	67	67	67
1626702072	EB SR-92 mid-pt. to Eden Landing off-ramp	0.62	67	63	64	64	63	66	64	67	68	65	68	68	67	65	60	51	48	46	48	52	63	67	67	68
400357578	EB SR-92 Eden Landing off- to loop on-ramp	0.26	66	62	63	62	62	63	58	66	68	66	68	68	67	66	61	53	50	48	52	54	61	65	67	67
1626644956	EB SR-92 Eden Landing loop on- to Industrial off-ramp	0.41	63	57	56	57	54	57	60	62	64	61	63	63	62	60	55	45	42	45	51	53	59	64	65	64
1626611553	EB SR-92 Industrial off- to loop on-ramp	0.29	61	57	57	57	55	57	59	62	64	59	61	61	59	56	48	30	29	35	47	49	52	61	63	62
1626707480	EB SR-92 Industrial loop on- to Hesperian off-ramp	0.27	59	55	57	57	55	54	55	59	61	57	59	57	55	50	41	24	23	28	41	43	50	59	61	61
1626732173	CD rd/con Start of connector gore pt. to Hesperian off-ramp	0.16	57	52	55	55	54	54	54	57	58	55	55	55	53	47	36	20	18	21	33	39	45	55	58	57
1626673995	CD rd/con Hesperian off- to on-ramp	0.40	21	20	21	21	20	20	20	20	21	20	20	20	20	20	19	15	14	15	17	19	20	20	21	21
1626665736	CD rd/con Hesperian on- to SB I-880 off-ramp	0.21	56	54	55	55	55	53	52	50	53	54	54	54	52	43	33	17	15	18	19	32	44	54	56	55
1626723532	CD rd/con SB I-880 off- to Jackson St. off-ramp	0.21	55	53	53	54	54	52	49	44	50	50	52	52	49	31	20	10	11	11	12	21	33	51	54	53
1626771515	CD rd/con Jackson St. off-ramp to NB I-880 connector on	0.29	56	54	53	55	56	53	39	31	40	47	51	52	44	22	14	11	11	12	11	15	24	46	54	54

Source: INRIX, Fall 2018 (Oct. 16 - Nov. 02)
Typical Weekdays (Tuesday, Wednesday, Thursday)
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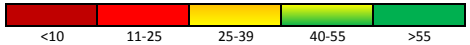
Traffic Speed (mph)



Corridor Name: EB92 from I280 to I880

ID	Segment Name	Length (mi)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1626727765	EB SR-92 NB I-280 on- to Ralston off-ramp	0.21	59	55	56	56	58	61	60	55	53	53	58	60	59	59	58	56	54	52	53	57	60	61	60	60
1626722123	EB SR-92 Ralston off- to on-ramp	0.37	60	56	56	57	59	62	63	59	56	55	61	61	60	61	60	59	59	57	58	59	62	61	59	62
170334231	EB SR-92 Ralston on- to De Anza off-ramp	0.20	61	56	57	58	60	63	65	62	58	55	63	63	62	63	62	62	63	61	63	61	64	63	61	63
1626733255	EB SR-92 De Anza off- to on-ramp	0.55	60	57	58	58	61	64	66	63	58	53	64	64	64	64	63	60	63	63	63	62	65	64	62	63
1626727392	EB SR-92 De Anza on- to W. Hillsdale off-ramp	0.20	60	57	57	58	62	65	66	61	50	46	64	63	64	63	60	50	59	60	59	62	65	65	63	64
1626617948	EB SR-92 W. Hillsdale off- to loop on-ramp	0.26	61	58	57	58	62	65	66	61	46	45	64	64	64	63	58	45	57	59	58	62	64	65	63	64
1626652796	EB SR-92 W. Hillsdale loop on- to dia. On-ramp	0.16	61	57	58	57	59	64	66	61	39	43	63	64	63	63	57	40	51	54	55	60	63	63	63	63
1626670643	EB SR-92 W. Hillsdale dia. on- to Alameda de Las Pulgas off-ramp	0.80	62	58	57	58	60	65	67	56	28	38	60	62	61	62	53	29	31	31	33	50	63	64	64	64
1626678318	EB SR-92 Alameda de Las Pulgas off- to on-ramp	0.37	60	54	51	55	59	64	66	49	20	33	55	60	56	60	47	23	15	12	17	34	53	40	59	61
1626729418	EB SR-92 Alameda de Las Pulgas on- to El Camino Real dia. Off-ra	0.24	58	55	52	52	59	60	63	46	18	32	51	55	55	55	45	23	12	10	16	31	58	60	60	59
1626616190	EB SR-92 ECR dia. Off- to loop on-ramp	0.18	58	55	52	52	56	58	61	38	18	31	49	54	54	54	41	23	10	8	13	28	55	58	57	58
1626611283	EB SR-92 ECR loop on- to dia. on-ramp	0.19	54	53	53	52	54	55	57	30	18	30	45	51	50	50	41	24	10	7	12	28	52	51	52	55
1626644082	EB SR-92 ECR dia. on- to Delaware off-ramp	0.04	46	45	44	42	50	53	54	27	19	31	41	43	42	42	38	26	10	7	12	26	45	47	49	52
1626615732	EB SR-92 Delaware off- to on-ramp	0.36	52	51	52	51	56	57	58	22	19	31	47	53	54	53	46	28	10	7	12	28	55	56	57	57
1626682023	EB SR-92 Delaware on- to SB US 101 off-ramp	0.11	53	51	53	51	57	57	56	27	26	34	47	54	54	53	47	28	11	8	13	28	54	56	58	56
1626644141	EB SR-92 SB US 101 off- to NB US 101 loop off-ramp	0.20	52	52	54	52	54	55	56	47	43	50	56	58	57	57	50	24	10	8	13	29	55	57	58	57
1626660960	EB SR-92 NB US 101 loop off- to NB US 101 dia. Conn. on-ramp	0.32	61	60	59	57	57	59	62	62	59	57	59	60	59	58	45	18	8	6	9	25	54	59	59	61
1626759180	EB SR-92 NB US 101 dia. Conn. on- to Edgewater off-ramp	0.30	60	58	57	58	58	58	59	58	56	54	56	56	55	51	35	18	9	8	12	26	51	56	58	59
1626634582	EB SR-92 Mariners Is. off- to on-ramp	0.29	65	61	60	61	60	63	63	63	62	61	63	62	62	59	45	20	10	8	12	29	60	64	64	65
1626765805	EB SR-92 Mariners Is. on- to Foster City Blvd. off-ramp	0.37	65	62	60	62	61	63	63	63	63	63	65	64	63	61	48	20	12	10	14	30	61	64	64	66
1626651543	EB SR-92 Foster City Blvd. off- to on-ramp	0.29	66	63	63	64	62	65	67	65	67	67	67	67	67	64	48	19	14	12	15	27	63	68	68	67
1626702346	EB SR-92 Foster City Blvd. on-ramp to mid-pt.	0.62	65	62	62	61	62	64	66	66	67	66	66	66	65	64	48	25	20	17	21	31	62	66	66	63
1626702492	EB SR-92 mid-pt. to onto San Mateo Bridge (seg. 1)	0.62	64	61	60	62	61	64	64	66	65	65	65	65	64	63	50	41	32	23	30	43	64	66	65	62
1626702474	EB SR-92 SM BR (seg. 1 to seg. 2)	0.62	64	61	60	61	61	64	64	66	65	65	65	65	62	62	53	47	36	26	34	45	63	65	65	61
1626702454	EB SR-92 SM BR (seg. 2 to seg. 3)	0.62	65	62	61	62	62	64	65	67	66	65	65	66	63	63	57	51	35	28	35	46	64	66	66	64
1626702428	EB SR-92 SM BR (seg. 3 to seg. 4)	0.62	66	64	63	64	63	65	66	67	67	66	66	67	66	64	60	53	35	29	37	49	65	67	68	67
1626702241	EB SR-92 seg. 5	0.62	68	64	64	65	64	67	67	70	69	68	69	70	69	66	62	52	36	31	40	50	65	68	69	68
1626702221	EB SR-92 seg. 6	0.62	67	64	65	65	64	67	67	69	69	69	69	70	69	66	62	51	36	33	42	49	64	68	69	69
1626702200	EB SR-92 seg. 7	0.62	67	64	65	65	64	67	68	69	70	69	69	70	69	66	62	50	36	34	42	48	62	68	69	68
1626702196	EB SR-92 seg. 8	0.62	67	63	65	66	64	67	68	70	70	69	69	70	69	67	62	49	40	39	43	47	62	68	69	69
1626702341	EB SR-92 seg. 9	0.62	67	64	65	65	64	67	68	69	70	68	69	70	68	66	62	48	45	41	42	48	61	68	69	68
169911712	EB SR-92 seg. 10	0.62	67	64	64	64	64	66	67	69	70	68	69	69	68	66	61	48	46	43	43	47	60	68	68	68
1626702303	EB SR-92 seg. 11	0.62	67	64	65	65	64	67	66	68	70	67	69	68	67	66	61	47	44	42	42	46	59	67	68	67
1626702277	EB SR-92 SM BR (seg. 11) to beyond toll building	0.47	67	63	64	64	63	66	66	68	68	65	68	68	67	65	60	44	40	39	39	43	58	66	66	66
1626702091	EB SR-92 beyond toll building to mid-pt.	0.77	67	63	64	63	62	66	66	67	68	65	68	67	67	65	59	45	41	40	41	46	61	67	67	67
1626702072	EB SR-92 mid-pt. to Eden Landing off-ramp	0.62	67	63	64	64	63	66	64	67	68	65	68	68	67	65	60	51	48	46	48	52	63	67	67	68
400357578	EB SR-92 Eden Landing off- to loop on-ramp	0.26	66	62	63	62	62	63	58	66	68	66	68	68	67	66	61	53	50	48	52	54	61	65	67	67
1626644956	EB SR-92 Eden Landing loop on- to Industrial off-ramp	0.41	63	57	56	57	54	57	60	62	64	61	63	63	62	60	55	45	42	45	51	53	59	64	65	64
1626611553	EB SR-92 Industrial off- to loop on-ramp	0.29	61	57	57	57	55	57	59	62	64	59	61	61	59	56	48	30	29	35	47	49	52	61	63	62
1626707480	EB SR-92 Industrial loop on- to Hesperian off-ramp	0.27	59	55	57	57	55	54	55	59	61	57	59	57	55	50	41	24	23	28	41	43	50	59	61	61
1626733536	EB SR-92 Hesperian off-ramp to I-880 OC (left lanes on SR 92)	0.99	56	54	53	53	53	54	56	58	58	57	57	56	57	55	52	42	48	47	52	55	56	56	58	58

Source: INRIX, Fall 2018 (Oct. 16 - Nov. 02)
Typical Weekdays (Tuesday, Wednesday, Thursday)
Holidays, Fridays and Weekends are not included.

Traffic Speed (mph)

<10 | 11-25 | 25-39 | 40-55 | >55

Corridor Name: NB US101 to EB SR92

ID	Segment Name	Length (mi)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1626720444	NB US-101 Ralston Dia. On-ramp to mid-pt.	0.56	67	65	65	65	66	70	66	59	48	57	63	62	62	56	42	38	26	19	21	32	57	66	67	66
1626720260	NB US-101 mid-pt. to Hillsdale off-ramp	0.54	67	65	65	65	66	70	66	51	40	53	63	61	60	51	37	36	28	22	24	33	56	66	68	65
1626703178	NB US-101 Hillsdale off- to loop on-ramp	0.36	68	66	65	65	66	70	62	42	36	46	61	58	55	47	35	35	41	39	38	38	57	65	68	65
1626748269	NB US-101 Hillsdale loop on- to dia. On-ramp	0.12	66	66	63	65	65	70	60	41	36	44	58	55	54	49	38	37	42	42	42	42	57	63	66	66
1626721298	NB US-101 Hillsdale dia. On-ramp to SR 92 off	0.14	64	63	62	63	65	67	57	42	38	47	57	55	53	52	45	44	48	48	47	49	59	62	63	63
1626737498	Connector SR 92 conn. Off to SR 92 EB/WB split	0.16	56	56	55	52	53	54	51	31	29	34	51	50	49	44	25	15	17	16	15	27	48	54	55	55
1626684512	Connector SR 92 EB/WB split to EB SR 92 conn ramp onto EB 92	0.31	53	53	51	52	51	52	49	47	45	43	46	46	45	36	13	7	4	4	5	10	35	47	49	50
1626759180	EB SR-92 EB conn. On- to Mariners Is. off-ramp	0.30	60	58	57	58	58	58	59	58	56	54	56	56	55	51	35	18	9	8	12	26	51	56	58	59
1626634582	EB SR-92 Mariners Is. off- to on-ramp	0.29	65	61	60	61	60	63	63	63	62	61	63	62	62	59	45	20	10	8	12	29	60	64	64	65
1626765805	EB SR-92 Mariners Is. on- to Foster City Blvd. off-ramp	0.37	65	62	60	62	61	63	63	63	63	63	65	64	63	61	48	20	12	10	14	30	61	64	64	66
1626651543	EB SR-92 Foster City Blvd. off- to on-ramp	0.29	66	63	63	64	62	65	67	65	67	67	67	67	67	64	48	19	14	12	15	27	63	68	68	67
1626702346	EB SR-92 Foster City Blvd. on-ramp to mid-pt.	0.62	65	62	62	61	62	64	66	66	67	66	66	66	65	64	48	25	20	17	21	31	62	66	66	63
1626702492	EB SR-92 mid-pt. to onto San Mateo Bridge	0.62	64	61	60	62	61	64	64	66	65	65	65	65	64	63	50	41	32	23	30	43	64	66	65	62
1626702474	EB SR-92 SM BR (seg. 1 to seg. 2)	0.62	64	61	60	61	61	64	64	66	65	65	65	65	62	62	53	47	36	26	34	45	63	65	65	61
1626702454	EB SR-92 SM BR (seg. 2 to seg. 3)	0.62	65	62	61	62	62	64	65	67	66	65	65	66	63	63	57	51	35	28	35	46	64	66	66	64
1626702428	EB SR-92 SM BR (seg. 3 to seg. 4)	0.62	66	64	63	64	63	65	66	67	67	66	66	67	66	64	60	53	35	29	37	49	65	67	68	67
1626702241	EB SR-92 seg. 5	0.62	68	64	64	65	64	67	67	70	69	68	69	70	69	66	62	52	36	31	40	50	65	68	69	68
1626702221	EB SR-92 seg. 6	0.62	67	64	65	65	64	67	67	69	69	69	69	70	69	66	62	51	36	33	42	49	64	68	69	69
1626702200	EB SR-92 seg. 7	0.62	67	64	65	65	64	67	68	69	70	69	69	70	69	66	62	50	36	34	42	48	62	68	69	68
1626702196	EB SR-92 seg. 8	0.62	67	63	65	66	64	67	68	70	70	69	69	70	69	67	62	49	40	39	43	47	62	68	69	69
1626702341	EB SR-92 seg. 9	0.62	67	64	65	65	64	67	68	69	70	68	69	70	68	66	62	48	45	41	42	48	61	68	69	68
169911712	EB SR-92 seg. 10	0.62	67	64	64	64	64	66	67	69	70	68	69	69	68	66	61	48	46	43	43	47	60	68	68	68
1626702303	EB SR-92 seg. 11	0.62	67	64	65	65	64	67	66	68	70	67	69	68	67	66	61	47	44	42	42	46	59	67	68	67
1626702277	EB SR-92 SM BR (seg. 11) to beyond toll building	0.47	67	63	64	64	63	66	66	68	68	65	68	68	67	65	60	44	40	39	39	43	58	66	66	66
1626702091	EB SR-92 beyond toll building to mid-pt.	0.77	67	63	64	63	62	66	66	67	68	65	68	67	67	65	59	45	41	40	41	46	61	67	67	67
1626702072	EB SR-92 mid-pt. to Eden Landing off-ramp	0.62	67	63	64	64	63	66	64	67	68	65	68	68	67	65	60	51	48	46	48	52	63	67	67	68
400357578	EB SR-92 Eden Landing off- to loop on-ramp	0.26	66	62	63	62	62	63	58	66	68	66	68	68	67	66	61	53	50	48	52	54	61	65	67	67
1626644956	EB SR-92 Eden Landing loop on- to Industrial off-ramp	0.41	63	57	56	57	54	57	60	62	64	61	63	63	62	60	55	45	42	45	51	53	59	64	65	64
1626611553	EB SR-92 Industrial off- to loop on-ramp	0.29	61	57	57	57	55	57	59	62	64	59	61	61	59	56	48	30	29	35	47	49	52	61	63	62
1626707480	EB SR-92 Industrial loop on- to Hesperian off-ramp	0.27	59	55	57	57	55	54	55	59	61	57	59	57	55	50	41	24	23	28	41	43	50	59	61	61
1626733536	EB SR-92 Hesperian off-ramp to I-880 OC (left lanes on SR 92)	0.99	56	54	53	53	53	54	56	58	58	57	57	56	57	55	52	42	48	47	52	55	56	56	58	58

Source: INRIX, Fall 2018 (Oct. 16 - Nov. 02)
Typical Weekdays (Tuesday, Wednesday, Thursday)
Holidays, Fridays and Weekends are not included.

Traffic Speed (mph)

Corridor Name: SB US101 to EB SR92

ID	Segment Name	Length (mi)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1626690681	SB US-101 Poplar on- to 3rd/4th off-ramp	0.59	67	65	64	64	65	68	64	23	20	31	47	58	60	52	46	47	43	30	34	54	52	64	66	67
1626737835	SB US-101 3rd/4th off- to 3rd/4th on-ramp	0.39	67	66	64	65	65	69	64	20	19	28	44	58	60	54	50	50	50	36	38	52	48	64	66	67
1626614191	SB US-101 3rd/4th on- to SR 92 off-ramp	0.82	67	66	64	65	66	69	63	21	20	27	40	59	60	58	54	48	43	32	36	51	49	64	65	68
1626745221	Connector SR 92 off- to WB/EB conn. Slip	0.16	59	56	58	60	58	59	59	53	50	52	55	58	58	57	45	19	12	9	12	29	51	55	57	59
1626739388	Connector Eb conn. Off- to Fashion Is. off-ramp	0.11	57	56	56	58	57	58	58	54	52	52	56	57	57	56	43	18	11	8	11	27	46	55	56	57
1626739408	Connector Fashion Is. off- to EB conn. Onto EB SR 92	0.55	54	53	53	54	54	54	55	53	51	49	51	52	51	48	22	9	5	4	5	14	42	50	51	53
1626759180	EB SR-92 EB conn. On- to Mariners Is. off-ramp	0.30	60	58	57	58	58	58	59	58	56	54	56	56	55	51	35	18	9	8	12	26	51	56	58	59
1626634582	EB SR-92 Mariners Is. off- to on-ramp	0.29	65	61	60	61	60	63	63	63	62	61	63	62	62	59	45	20	10	8	12	29	60	64	64	65
1626765805	EB SR-92 Mariners Is. on- to Foster City Blvd. off-ramp	0.37	65	62	60	62	61	63	63	63	63	63	65	64	63	61	48	20	12	10	14	30	61	64	64	66
1626651543	EB SR-92 Foster City Blvd. off- to on-ramp	0.29	66	63	63	64	62	65	67	65	67	67	67	67	67	64	48	19	14	12	15	27	63	68	68	67
1626702346	EB SR-92 Foster City Blvd. on-ramp to mid-pt.	0.62	65	62	62	61	62	64	66	66	67	66	66	66	65	64	48	25	20	17	21	31	62	66	66	63
1626702492	EB SR-92 mid-pt. to onto San Mateo Bridge (seg. 1)	0.62	64	61	60	62	61	64	64	66	65	65	65	65	64	63	50	41	32	23	30	43	64	66	65	62
1626702474	EB SR-92 SM BR (seg. 1 to seg. 2)	0.62	64	61	60	61	61	64	64	66	65	65	65	65	62	62	53	47	36	26	34	45	63	65	65	61
1626702454	EB SR-92 SM BR (seg. 2 to seg. 3)	0.62	65	62	61	62	62	64	65	67	66	65	65	66	63	63	57	51	35	28	35	46	64	66	66	64
1626702428	EB SR-92 SM BR (seg. 3 to seg. 4)	0.62	66	64	63	64	63	65	66	67	67	66	66	67	66	64	60	53	35	29	37	49	65	67	68	67
1626702241	EB SR-92 seg. 5	0.62	68	64	64	65	64	67	67	70	69	68	69	70	69	66	62	52	36	31	40	50	65	68	69	68
1626702221	EB SR-92 seg. 6	0.62	67	64	65	65	64	67	67	69	69	69	69	70	69	66	62	51	36	33	42	49	64	68	69	69
1626702200	EB SR-92 seg. 7	0.62	67	64	65	65	64	67	68	69	70	69	69	70	69	66	62	50	36	34	42	48	62	68	69	68
1626702196	EB SR-92 seg. 8	0.62	67	63	65	66	64	67	68	70	70	69	69	70	69	67	62	49	40	39	43	47	62	68	69	69
1626702341	EB SR-92 seg. 9	0.62	67	64	65	65	64	67	68	69	70	68	69	70	68	66	62	48	45	41	42	48	61	68	69	68
169911712	EB SR-92 seg. 10	0.62	67	64	64	64	64	66	67	69	70	68	69	69	68	66	61	48	46	43	43	47	60	68	68	68
1626702303	EB SR-92 seg. 11	0.62	67	64	65	65	64	67	66	68	70	67	69	68	67	66	61	47	44	42	42	46	59	67	68	67
1626702277	EB SR-92 SM BR (seg. 11) to beyond toll building	0.47	67	63	64	64	63	66	66	68	68	65	68	68	67	65	60	44	40	39	39	43	58	66	66	66
1626702091	EB SR-92 beyond toll building to mid-pt.	0.77	67	63	64	63	62	66	66	67	68	65	68	67	67	65	59	45	41	40	41	46	61	67	67	67
1626702072	EB SR-92 mid-pt. to Eden Landing off-ramp	0.62	67	63	64	64	63	66	64	67	68	65	68	68	67	65	60	51	48	46	48	52	63	67	67	68
400357578	EB SR-92 Eden Landing off- to loop on-ramp	0.26	66	62	63	62	62	63	58	66	68	66	68	68	67	66	61	53	50	48	52	54	61	65	67	67
1626644956	EB SR-92 Eden Landing loop on- to Industrial off-ramp	0.41	63	57	56	57	54	57	60	62	64	61	63	63	62	60	55	45	42	45	51	53	59	64	65	64
1626611553	EB SR-92 Industrial off- to loop on-ramp	0.29	61	57	57	57	55	57	59	62	64	59	61	61	59	56	48	30	29	35	47	49	52	61	63	62
1626707480	EB SR-92 Industrial loop on- to Hesperian off-ramp	0.27	59	55	57	57	55	54	55	59	61	57	59	57	55	50	41	24	23	28	41	43	50	59	61	61
1626733536	EB SR-92 Hesperian off-ramp to I-880 OC (left lanes on SR 92)	0.99	56	54	53	53	53	54	56	58	58	57	57	56	57	55	52	42	48	47	52	55	56	56	58	58

Source: INRIX, Fall 2018 (Oct. 16 - Nov. 02)
Typical Weekdays (Tuesday, Wednesday, Thursday)
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Traffic Speed (mph)
<10 | 11-25 | 25-39 | 40-55 | >55

Corridor Name: NB US101 to WB SR92

ID	Segment Name	Length (mi)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1626720444	NB US-101 Ralston Dia. On-ramp to mid-pt.	0.56	67	65	65	65	66	70	66	59	48	57	63	62	62	56	42	38	26	19	21	32	57	66	67	66
1626720260	NB US-101 mid-pt. to Hillsdale off-ramp	0.54	67	65	65	65	66	70	66	51	40	53	63	61	60	51	37	36	28	22	24	33	56	66	68	65
1626703178	NB US-101 Hillsdale off- to loop on-ramp	0.36	68	66	65	65	66	70	62	42	36	46	61	58	55	47	35	35	41	39	38	38	57	65	68	65
1626748269	NB US-101 Hillsdale loop on- to dia. On-ramp	0.12	66	66	63	65	65	70	60	41	36	44	58	55	54	49	38	37	42	42	42	42	57	63	66	66
1626721298	NB US-101 Hillsdale dia. On-ramp to SR 92 off	0.14	64	63	62	63	65	67	57	42	38	47	57	55	53	52	45	44	48	48	47	49	59	62	63	63
1626737498	Connector SR 92 conn. Off to SR 92 EB/WB split	0.16	56	56	55	52	53	54	51	31	29	34	51	50	49	44	25	15	17	16	15	27	48	54	55	55
1626695629	Connector NB 101 conn. To WB 92 from NB 101 EB 92 split	0.46	52	54	52	48	52	52	49	24	20	23	48	47	47	46	45	46	46	44	45	46	49	50	51	51
1626630223	WB SR-92 NB/SB US 101 conn. On- to Delaware off-ramp	0.21	56	55	55	53	56	60	57	27	23	29	52	54	54	55	54	56	56	49	53	55	57	57	58	57
1626732759	WB SR-92 Delaware off- to on-ramp	0.25	55	54	54	53	54	59	56	35	29	33	52	53	54	54	54	52	53	42	49	53	55	56	57	55
1626615714	WB SR-92 Delaware on- to ECR off-ramp	0.05	54	52	55	54	50	57	52	37	31	33	46	47	48	49	47	45	46	37	43	47	51	53	55	53
1626735379	WB SR-92 ECR off- to loop on-ramp	0.15	54	55	54	57	57	60	58	43	36	37	54	54	55	55	55	53	53	45	51	53	55	56	58	56
1626616167	WB SR-92 ECR loop on- to dia. on-ramp	0.22	57	57	53	56	57	61	60	47	38	40	58	57	59	59	58	57	56	50	55	56	58	59	61	59
1626665178	WB SR-92 ECR dia. on- to Alameda de Las Pulgas off-ramp	0.22	57	57	56	56	56	61	61	51	39	43	59	59	60	60	59	58	58	51	56	57	59	59	59	59
1626666901	WB SR-92 Alameda de Las Pulgas off- to on-ramp	0.36	56	57	55	55	55	61	61	49	37	51	60	60	59	61	60	58	58	52	56	56	59	58	58	59
1626662350	WB SR-92 Alameda de Las Pulgas on- to W. Hillsdale off-ramp	0.87	53	50	50	48	51	56	57	46	40	50	55	55	56	56	56	54	53	48	54	56	57	57	60	57
1626668540	WB SR-92 W. Hillsdale off- to on-ramp	0.33	55	55	51	52	54	57	58	52	51	56	59	59	60	60	60	58	54	45	57	57	58	60	62	59
1626623089	WB SR-92 W. Hillsdale on- to De Anza off-ramp	0.35	57	57	54	55	57	60	61	54	53	57	61	61	62	61	61	57	55	48	57	61	61	61	63	61
1626733246	WB SR-92 De Anza off- to on-ramp	0.52	59	58	57	59	60	62	62	56	55	58	63	63	63	63	63	62	61	56	62	63	62	61	64	62
1626612001	WB SR-92 De Anza on- to Ralston off-ramp	0.18	60	58	56	59	60	61	62	55	52	57	63	63	63	63	62	62	60	52	61	61	60	55	63	61
1626722146	WB SR-92 Ralston off- to on-ramp	0.30	60	59	56	61	61	63	61	52	48	56	64	63	63	63	62	62	58	43	57	62	61	60	63	62
1626668561	WB SR-92 Ralston on to I-280 off-ramp	0.20	59	57	55	59	60	62	60	50	46	54	62	62	62	62	61	57	51	35	45	61	63	61	62	62

Source: INRIX, Fall 2018 (Oct. 16 - Nov. 02)

Typical Weekdays (Tuesday, Wednesday, Thursday)

Holidays, Fridays and Weekends are not included.

Traffic Speed (mph)

<10 | 11-25 | 25-39 | 40-55 | >55

Corridor Name: SB US101 to WB SR92

ID	Segment Name	Length (mi)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1626614191	SB US-101 3rd on- to WB 92/Fashion Is. off-ramp	0.82	67	66	64	65	66	69	63	21	20	27	40	59	60	58	54	48	43	32	36	51	49	64	65	68
1626745221	Connector WB 92/Fashion Is. off- to Fashion Is. off-ramp	0.16	59	56	58	60	58	59	59	53	50	52	55	58	58	57	45	19	12	9	12	29	51	55	57	59
1626717830	Connector Fashion Is. off- to WB 92 conn. onto WB 92	0.43	52	52	53	51	50	51	50	43	40	42	48	49	49	49	48	45	35	30	36	46	47	48	50	52
1626630223	WB SR-92 NB/SB US 101 conn. On- to Delaware off-ramp	0.21	56	55	55	53	56	60	57	27	23	29	52	54	54	55	54	56	56	49	53	55	57	57	58	57
1626732759	WB SR-92 Delaware off- to on-ramp	0.25	55	54	54	53	54	59	56	35	29	33	52	53	54	54	54	52	53	42	49	53	55	56	57	55
1626615714	WB SR-92 Delaware on- to ECR off-ramp	0.05	54	52	55	54	50	57	52	37	31	33	46	47	48	49	47	45	46	37	43	47	51	53	55	53
1626735379	WB SR-92 ECR off- to loop on-ramp	0.15	54	55	54	57	57	60	58	43	36	37	54	54	55	55	55	53	53	45	51	53	55	56	58	56
1626616167	WB SR-92 ECR loop on- to dia. on-ramp	0.22	57	57	53	56	57	61	60	47	38	40	58	57	59	59	58	57	56	50	55	56	58	59	61	59
1626665178	WB SR-92 ECR dia. on- to Alameda de Las Pulgas off-ramp	0.22	57	57	56	56	56	61	61	51	39	43	59	59	60	60	59	58	58	51	56	57	59	59	59	59
1626666901	WB SR-92 Alameda de Las Pulgas off- to on-ramp	0.36	56	57	55	55	55	61	61	49	37	51	60	60	59	61	60	58	58	52	56	56	59	58	58	59
1626662350	WB SR-92 Alameda de Las Pulgas on- to W. Hillsdale off-ramp	0.87	53	50	50	48	51	56	57	46	40	50	55	55	56	56	56	54	53	48	54	56	57	57	60	57
1626668540	WB SR-92 W. Hillsdale off- to on-ramp	0.33	55	55	51	52	54	57	58	52	51	56	59	59	60	60	60	58	54	45	57	57	58	60	62	59
1626623089	WB SR-92 W. Hillsdale on- to De Anza off-ramp	0.35	57	57	54	55	57	60	61	54	53	57	61	61	62	61	61	57	55	48	57	61	61	61	63	61
1626733246	WB SR-92 De Anza off- to on-ramp	0.52	59	58	57	59	60	62	62	56	55	58	63	63	63	63	63	62	61	56	62	63	62	61	64	62
1626612001	WB SR-92 De Anza on- to Ralston off-ramp	0.18	60	58	56	59	60	61	62	55	52	57	63	63	63	63	62	62	60	52	61	61	60	55	63	61
1626722146	WB SR-92 Ralston off- to on-ramp	0.30	60	59	56	61	61	63	61	52	48	56	64	63	63	63	62	62	58	43	57	62	61	60	63	62
1626668561	WB SR-92 Ralston on to I-280 off-ramp	0.20	59	57	55	59	60	62	60	50	46	54	62	62	62	62	61	57	51	35	45	61	63	61	62	62

Source: INRIX, Fall 2018 (Oct. 16 - Nov. 02)

Typical Weekdays (Tuesday, Wednesday, Thursday)

Holidays, Fridays and Weekends are not included.

Traffic Speed (mph)

Corridor Name: SB US101 from Poplar Ave. to Hillsdale Blvd.

ID	Segment Name	Length (mi)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1626690681	SB US-101 Poplar on- to 3rd/4th off-ramp	0.59	67	65	64	64	65	68	64	23	20	31	47	58	60	52	46	47	43	30	34	54	52	64	66	67
1626737835	SB US-101 3rd/4th off- to 3rd/4th on-ramp	0.39	67	66	64	65	65	69	64	20	19	28	44	58	60	54	50	50	50	36	38	52	48	64	66	67
1626614191	SB US-101 3rd/4th on- to SR 92 off-ramp	0.82	67	66	64	65	66	69	63	21	20	27	40	59	60	58	54	48	43	32	36	51	49	64	65	68
1626615905	SB US-101 WB 92 off- to EB 92 loop on-ramp	0.59	69	68	65	65	68	71	56	14	12	16	24	52	66	66	64	63	60	54	56	63	67	68	66	66
1626687703	SB US-101 EB 92 loop on- to Fashion Is. on-ramp	0.13	64	62	61	56	58	65	46	14	12	15	20	39	55	58	58	56	54	43	45	58	63	65	63	51
1626651842	SB US-101 Fashion Is. on- to EB 92 dia. on-ramp	0.15	67	65	63	59	61	66	50	19	17	19	25	43	58	60	60	57	56	44	47	61	65	66	65	51
1626768019	SB US-101 EB 92 dia. on- to E. Hillsdale off-ramp	0.10	66	65	61	61	63	67	51	23	19	22	29	44	57	59	59	60	57	47	50	60	64	66	67	58
1626725258	SB US-101 E. Hillsdale off- to loop on-ramp	0.45	66	66	64	63	65	68	55	28	23	27	33	47	61	63	62	62	62	60	60	65	67	68	68	64
1626637791	SB US-101 E. Hillsdale loop on- to dia. on-ramp	0.22	66	67	65	64	66	69	61	39	31	36	45	54	62	63	63	62	63	63	62	65	67	68	69	67
1626623456	SB US-101 E. Hillsdale dia. on- to Ralston off-ramp	0.99	66	67	65	65	67	70	64	44	34	45	58	62	65	65	65	63	64	65	65	67	68	68	69	67

Source: INRIX, Fall 2018 (Oct. 16 - Nov. 02)

Typical Weekdays (Tuesday, Wednesday, Thursday)

Holidays, Fridays and Weekends are not included.

Traffic Speed (mph)

<10 | 11-25 | 25-39 | 40-55 | >55

me: WB SR92 to NB US101

ID	Segment Name	Length (mi)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1626731584	WB SR-92 Hesperian on- to Industrial off-ramp	0.40	60	60	62	62	64	64	23	11	19	28	61	65	64	64	64	65	65	65	63	64	65	64	65	63
1626633959	WB SR-92 Industrial off- to on-ramp	0.24	60	60	63	63	64	64	22	12	18	27	60	66	54	63	65	67	66	67	65	64	65	65	65	63
1626718785	WB SR-92 Industrial on- to Clawiter off-ramp	0.17	60	59	63	62	64	64	21	12	17	26	58	65	54	52	64	66	66	66	64	64	65	65	65	63
400233910	WB SR-92 Clawiter off- to on-ramp	0.27	58	61	64	64	65	64	22	14	17	24	59	68	69	69	69	69	68	68	66	66	67	67	67	66
1626628448	WB SR-92 Clawiter on- to mid. Pt.	0.56	61	62	64	64	66	62	24	16	19	24	56	68	69	68	69	69	68	68	66	67	67	68	68	65
1626628468	WB SR-92 mid. Pt. to mid. Pt.	0.56	62	62	64	62	64	57	25	18	21	24	48	61	67	66	68	67	67	67	64	66	67	66	67	65
1626628329	WB SR-92 mid. Pt. to toll plaza parking lot	0.56	57	56	58	56	58	51	24	19	22	24	40	52	57	61	64	63	63	63	59	60	61	60	62	59
1626736918	WB SR-92 Toll plaza parking lot through toll plaza	0.30	39	41	45	44	45	44	18	13	16	17	27	48	50	47	49	46	46	46	43	44	43	38	44	42
1626706428	WB SR-92 Through toll plaza onto SM Bridge seg 1	0.63	58	56	60	58	59	61	28	25	27	27	37	61	63	62	63	64	65	64	61	62	62	61	63	61
1626706447	WB SR-92 seg 2	0.63	62	61	64	62	65	66	36	36	36	38	46	67	69	69	70	70	70	69	67	68	68	67	68	66
1626706470	WB SR-92 seg 3	0.63	64	64	67	64	66	65	37	40	39	40	47	67	70	70	71	71	69	70	68	68	69	69	69	68
1626706325	WB SR-92 seg 4	0.63	65	64	67	64	67	62	37	42	41	40	45	63	70	71	71	71	68	70	68	68	68	69	70	67
1626706348	WB SR-92 seg 5	0.63	66	64	67	64	67	59	41	43	42	40	46	55	70	71	72	71	68	70	67	68	69	69	69	67
1626706368	WB SR-92 seg 6	0.63	66	64	67	65	67	54	44	43	42	41	46	46	65	70	72	71	68	70	68	68	69	69	68	68
1626706371	WB SR-92 seg 7	0.63	66	63	66	65	66	50	47	45	42	42	45	44	60	70	71	70	67	69	67	68	68	68	69	68
1626706227	WB SR-92 seg 8	0.63	63	62	66	64	64	47	49	44	41	43	48	49	59	68	69	69	63	68	66	67	67	67	67	65
1626706248	WB SR-92 seg 9	0.63	62	60	64	62	62	45	47	40	37	40	46	52	58	64	65	65	60	64	63	64	65	65	65	64
1626706268	WB SR-92 seg 10	0.63	61	60	64	62	62	59	47	42	39	41	46	59	62	63	65	64	62	65	63	64	65	65	65	64
1626706290	WB SR-92 seg 11	0.63	62	61	65	62	64	64	48	44	40	41	45	62	64	65	65	66	64	66	65	65	65	66	66	65
1626706146	WB SR-92 SM BR seg 11 to Foster City Blvd. off-ramp	0.65	62	61	61	59	64	63	54	44	37	47	45	63	66	65	66	67	65	65	64	65	65	64	66	65
1626633822	WB SR-92 Foster City Blvd. off- to on-ramp	0.35	63	62	65	63	64	65	54	33	24	33	37	57	66	65	65	68	65	55	64	66	66	66	66	66
1626651658	WB SR-92 Foster City Blvd. on- to Fashion Is. off-ramp	0.31	61	60	63	61	62	63	51	29	24	33	38	50	61	61	61	61	58	45	56	61	62	63	64	62
170219266	WB SR-92 Fashion Is. off- to on-ramp	0.30	61	60	64	61	62	62	52	28	25	33	40	48	61	61	62	62	59	44	54	62	63	62	64	64
1626773223	WB SR-92 Fashion Is. on- to NB US 101 off-ramp	0.36	59	58	62	59	58	59	49	25	23	30	40	44	56	56	57	57	55	44	50	57	58	57	61	60
1626676064	Connector WB 92 conn. dia off- to Fashion Is. on-ramp	0.40	55	55	58	56	56	54	45	32	28	37	45	48	52	53	53	52	52	49	50	51	52	54	54	54
1626696602	Connector Fashion Is. on- to WB 92 conn. on-ramp	0.03	54	53	58	56	55	53	40	28	26	36	48	44	47	49	50	50	51	48	51	51	50	51	52	53
1626725183	NB US-101 WB 92 conn. On- to Kehoe off-ramp	0.42	65	63	65	66	67	68	37	22	21	34	50	35	45	48	50	50	55	54	59	59	56	64	67	67
1626771091	NB US-101 Kehoe off- to on-ramp	0.26	65	64	67	66	68	69	38	22	23	33	48	35	45	48	49	50	53	55	59	59	60	66	67	68
1626748894	NB US-101 Kehoe on- to 3rd/4th off-ramp	0.46	65	64	67	66	68	68	41	25	24	32	46	38	45	49	48	50	53	56	57	56	61	65	66	67
1626614054	NB US-101 3rd/4th off- to on-ramp	0.39	66	64	67	66	68	68	51	32	27	34	53	53	57	58	56	55	56	59	58	56	61	64	66	68
1626663421	NB US-101 3rd/4th on- to Dore off-ramp	0.38	65	58	66	65	68	67	56	36	30	38	55	57	59	60	57	57	57	58	58	57	61	64	66	67
1626631555	NB US-101 Dore off- to Peninsula off-ramp	0.64	63	63	66	66	68	67	59	39	34	42	57	60	62	63	60	60	59	59	60	59	62	64	66	68
1626672754	NB US-101 Peninsula off- to on-ramp	0.47	63	64	66	66	68	68	59	39	35	44	57	62	64	64	63	61	56	50	58	59	63	64	66	69

Source: INRIX, Fall 2018 (Oct. 16 - Nov. 02)

Typical Weekdays (Tuesday, Wednesday, Thursday)

Holidays, Fridays and Weekends are not included.

Traffic Speed (mph)

<10 | 11-25 | 25-39 | 40-55 | >55

Corridor Name:

ID	Segment Name	Length (mi)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1626731584	WB SR-92 Hesperian on- to Industrial off-ramp	0.40	60	60	62	62	64	64	23	11	19	28	61	65	64	64	64	65	65	65	63	64	65	64	65	63
1626633959	WB SR-92 Industrial off- to on-ramp	0.24	60	60	63	63	64	64	22	12	18	27	60	66	54	63	65	67	66	67	65	64	65	65	65	63
1626718785	WB SR-92 Industrial on- to Clawiter off-ramp	0.17	60	59	63	62	64	64	21	12	17	26	58	65	54	52	64	66	66	66	64	64	65	65	65	63
400233910	WB SR-92 Clawiter off- to on-ramp	0.27	58	61	64	64	65	64	22	14	17	24	59	68	69	69	69	69	68	68	66	66	67	67	67	66
1626628448	WB SR-92 Clawiter on- to mid. Pt.	0.56	61	62	64	64	66	62	24	16	19	24	56	68	69	68	69	69	68	68	66	67	67	68	68	65
1626628468	WB SR-92 mid. Pt. to mid. Pt.	0.56	62	62	64	62	64	57	25	18	21	24	48	61	67	66	68	67	67	67	64	66	67	66	67	65
1626628329	WB SR-92 mid. Pt. to toll plaza parking lot	0.56	57	56	58	56	58	51	24	19	22	24	40	52	57	61	64	63	63	63	59	60	61	60	62	59
1626736918	WB SR-92 Toll plaza parking lot through toll plaza	0.30	39	41	45	44	45	44	18	13	16	17	27	48	50	47	49	46	46	46	43	44	43	38	44	42
1626706428	WB SR-92 Through toll plaza onto SM Bridge seg 1	0.63	58	56	60	58	59	61	28	25	27	27	37	61	63	62	63	64	65	64	61	62	62	61	63	61
1626706447	WB SR-92 seg 2	0.63	62	61	64	62	65	66	36	36	36	38	46	67	69	69	70	70	70	69	67	68	68	67	68	66
1626706470	WB SR-92 seg 3	0.63	64	64	67	64	66	65	37	40	39	40	47	67	70	70	71	71	69	70	68	68	69	69	69	68
1626706325	WB SR-92 seg 4	0.63	65	64	67	64	67	62	37	42	41	40	45	63	70	71	71	71	68	70	68	68	68	69	70	67
1626706348	WB SR-92 seg 5	0.63	66	64	67	64	67	59	41	43	42	40	46	55	70	71	72	71	68	70	67	68	69	69	69	67
1626706368	WB SR-92 seg 6	0.63	66	64	67	65	67	54	44	43	42	41	46	46	65	70	72	71	68	70	68	68	69	69	68	68
1626706371	WB SR-92 seg 7	0.63	66	63	66	65	66	50	47	45	42	42	45	44	60	70	71	70	67	69	67	68	68	68	69	68
1626706227	WB SR-92 seg 8	0.63	63	62	66	64	64	47	49	44	41	43	48	49	59	68	69	69	63	68	66	67	67	67	67	65
1626706248	WB SR-92 seg 9	0.63	62	60	64	62	62	45	47	40	37	40	46	52	58	64	65	65	60	64	63	64	65	65	65	64
1626706268	WB SR-92 seg 10	0.63	61	60	64	62	62	59	47	42	39	41	46	59	62	63	65	64	62	65	63	64	65	65	65	64
1626706290	WB SR-92 seg 11	0.63	62	61	65	62	64	64	48	44	40	41	45	62	64	65	65	66	64	66	65	65	65	66	66	65
1626706146	WB SR-92 SM BR seg 11 to Foster City Blvd. off-ramp	0.65	62	61	61	59	64	63	54	44	37	47	45	63	66	65	66	67	65	65	64	65	65	64	66	65
1626633822	WB SR-92 Foster City Blvd. off- to on-ramp	0.35	63	62	65	63	64	65	54	33	24	33	37	57	66	65	65	68	65	55	64	66	66	66	66	66
1626651658	WB SR-92 Foster City Blvd. on- to Fashion Is. off-ramp	0.31	61	60	63	61	62	63	51	29	24	33	38	50	61	61	61	61	58	45	56	61	62	63	64	62
170219266	WB SR-92 Fashion Is. off- to on-ramp	0.30	61	60	64	61	62	62	52	28	25	33	40	48	61	61	62	62	59	44	54	62	63	62	64	64
1626773223	WB SR-92 Fashion Is. on- to NB US 101 off-ramp	0.36	59	58	62	59	58	59	49	25	23	30	40	44	56	56	57	57	55	44	50	57	58	57	61	60
1626647235	WB SR-92 NB US 101 off- to SB US 101 off-ramp	0.20	55	54	54	55	55	59	51	26	21	26	40	48	55	57	57	57	56	49	50	57	58	58	58	59
1626667121	Connector WB 92 loop off to SB US 101	0.37	45	46	45	48	41	42	32	5	5	6	8	22	37	40	40	39	38	20	24	37	38	40	41	43
1626687703	SB US-101 EB 92 loop on- to Fashion Is. on-ramp	0.13	64	62	61	56	58	65	46	14	12	15	20	39	55	58	58	56	54	43	45	58	63	65	63	51
1626651842	SB US-101 Fashion Is. on- to EB 92 dia. on-ramp	0.15	67	65	63	59	61	66	50	19	17	19	25	43	58	60	60	57	56	44	47	61	65	66	65	51
1626768019	SB US-101 EB 92 dia. on- to E. Hillsdale off-ramp	0.10	66	65	61	61	63	67	51	23	19	22	29	44	57	59	59	60	57	47	50	60	64	66	67	58
1626725258	SB US-101 E. Hillsdale off- to loop on-ramp	0.45	66	66	64	63	65	68	55	28	23	27	33	47	61	63	62	62	62	60	60	65	67	68	68	64
1626637791	SB US-101 E. Hillsdale loop on- to dia. on-ramp	0.22	66	67	65	64	66	69	61	39	31	36	45	54	62	63	63	62	63	63	62	65	67	68	69	67
1626623456	SB US-101 E. Hillsdale dia. on- to Ralston off-ramp	0.99	66	67	65	65	67	70	64	44	34	45	58	62	65	65	65	63	64	65	65	67	68	68	69	67

Source: INRIX, Fall 2018 (Oct. 16 - Nov. 02)

Typical Weekdays (Tuesday, Wednesday, Thursday)

Holidays, Fridays and Weekends are not included.

Traffic Speed (mph)

<10 | 11-25 | 25-39 | 40-55 | >55

Corridor Name: WB SR92 from Herperian Blvd. to I-280

ID	Segment Name	Length (mi)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1626731584	WB SR-92 Hesperian on- to Industrial off-ramp	0.40	60	60	62	62	64	64	23	11	19	28	61	65	64	64	64	65	65	65	63	64	65	64	65	63
1626633959	WB SR-92 Industrial off- to on-ramp	0.24	60	60	63	63	64	64	22	12	18	27	60	66	54	63	65	67	66	67	65	64	65	65	65	63
1626718785	WB SR-92 Industrial on- to Clawiter off-ramp	0.17	60	59	63	62	64	64	21	12	17	26	58	65	54	52	64	66	66	66	64	64	65	65	65	63
400233910	WB SR-92 Clawiter off- to on-ramp	0.27	58	61	64	64	65	64	22	14	17	24	59	68	69	69	69	69	68	68	66	66	67	67	67	66
1626628448	WB SR-92 Clawiter on- to mid. Pt.	0.56	61	62	64	64	66	62	24	16	19	24	56	68	69	68	69	69	68	68	66	67	67	68	68	65
1626628468	WB SR-92 mid. Pt. to mid. Pt.	0.56	62	62	64	62	64	57	25	18	21	24	48	61	67	66	68	67	67	67	64	66	67	66	67	65
1626628329	WB SR-92 mid. Pt. to toll plaza parking lot	0.56	57	56	58	56	58	51	24	19	22	24	40	52	57	61	64	63	63	63	59	60	61	60	62	59
1626736918	WB SR-92 Toll plaza parking lot through toll plaza	0.30	39	41	45	44	45	44	18	13	16	17	27	48	50	47	49	46	46	46	43	44	43	38	44	42
1626706428	WB SR-92 Through toll plaza onto SM Bridge seg 1	0.63	58	56	60	58	59	61	28	25	27	27	37	61	63	62	63	64	65	64	61	62	62	61	63	61
1626706447	WB SR-92 seg 2	0.63	62	61	64	62	65	66	36	36	36	38	46	67	69	69	70	70	70	69	67	68	68	67	68	66
1626706470	WB SR-92 seg 3	0.63	64	64	67	64	66	65	37	40	39	40	47	67	70	70	71	71	69	70	68	68	69	69	69	68
1626706325	WB SR-92 seg 4	0.63	65	64	67	64	67	62	37	42	41	40	45	63	70	71	71	71	68	70	68	68	68	69	70	67
1626706348	WB SR-92 seg 5	0.63	66	64	67	64	67	59	41	43	42	40	46	55	70	71	72	71	68	70	67	68	69	69	69	67
1626706368	WB SR-92 seg 6	0.63	66	64	67	65	67	54	44	43	42	41	46	46	65	70	72	71	68	70	68	68	69	69	68	68
1626706371	WB SR-92 seg 7	0.63	66	63	66	65	66	50	47	45	42	42	45	44	60	70	71	70	67	69	67	68	68	68	69	68
1626706227	WB SR-92 seg 8	0.63	63	62	66	64	64	47	49	44	41	43	48	49	59	68	69	69	63	68	66	67	67	67	67	65
1626706248	WB SR-92 seg 9	0.63	62	60	64	62	62	45	47	40	37	40	46	52	58	64	65	65	60	64	63	64	65	65	65	64
1626706268	WB SR-92 seg 10	0.63	61	60	64	62	62	59	47	42	39	41	46	59	62	63	65	64	62	65	63	64	65	65	65	64
1626706290	WB SR-92 seg 11	0.63	62	61	65	62	64	64	48	44	40	41	45	62	64	65	65	66	64	66	65	65	65	66	66	65
1626706146	WB SR-92 SM BR seg 11 to Foster City Blvd. off-ramp	0.65	62	61	61	59	64	63	54	44	37	47	45	63	66	65	66	67	65	65	64	65	65	64	66	65
1626633822	WB SR-92 Foster City Blvd. off- to on-ramp	0.35	63	62	65	63	64	65	54	33	24	33	37	57	66	65	65	68	65	55	64	66	66	66	66	66
1626651658	WB SR-92 Foster City Blvd. on- to Fashion Is. off-ramp	0.31	61	60	63	61	62	63	51	29	24	33	38	50	61	61	61	61	58	45	56	61	62	63	64	62
170219266	WB SR-92 Fashion Is. off- to on-ramp	0.30	61	60	64	61	62	62	52	28	25	33	40	48	61	61	62	62	59	44	54	62	63	62	64	64
1626773223	WB SR-92 Fashion Is. on- to NB US 101 off-ramp	0.36	59	58	62	59	58	59	49	25	23	30	40	44	56	56	57	57	55	44	50	57	58	57	61	60
1626647235	WB SR-92 NB US 101 off- to SB US 101 off-ramp	0.20	55	54	54	55	55	59	51	26	21	26	40	48	55	57	57	57	56	49	50	57	58	58	58	59
1626667140	WB SR-92 SB US 101 off- to NB/SB US 101 conn. on-ramp	0.30	61	59	57	59	60	65	60	26	20	26	55	59	61	61	62	62	63	57	58	62	63	63	64	63
1626630223	WB SR-92 NB/SB US 101 conn. On- to Delaware off-ramp	0.21	56	55	55	53	56	60	57	27	23	29	52	54	54	55	54	56	56	49	53	55	57	57	58	57
1626732759	WB SR-92 Delaware off- to on-ramp	0.25	55	54	54	53	54	59	56	35	29	33	52	53	54	54	54	52	53	42	49	53	55	56	57	55
1626615714	WB SR-92 Delaware on- to ECR off-ramp	0.05	54	52	55	54	50	57	52	37	31	33	46	47	48	49	47	45	46	37	43	47	51	53	55	53
1626735379	WB SR-92 ECR off- to loop on-ramp	0.15	54	55	54	57	57	60	58	43	36	37	54	54	55	55	55	53	53	45	51	53	55	56	58	56
1626616167	WB SR-92 ECR loop on- to dia. on-ramp	0.22	57	57	53	56	57	61	60	47	38	40	58	57	59	59	58	57	56	50	55	56	58	59	61	59
1626665178	WB SR-92 ECR dia. on- to Alameda de Las Pulgas off-ramp	0.22	57	57	56	56	56	61	61	51	39	43	59	59	60	60	59	58	58	51	56	57	59	59	59	59
1626666901	WB SR-92 Alameda de Las Pulgas off- to on-ramp	0.36	56	57	55	55	55	61	61	49	37	51	60	60	59	61	60	58	58	52	56	56	59	58	58	59
1626662350	WB SR-92 Alameda de Las Pulgas on- to W. Hillsdale off-ramp	0.87	53	50	50	48	51	56	57	46	40	50	55	55	56	56	56	54	53	48	54	56	57	57	60	57
1626668540	WB SR-92 W. Hillsdale off- to on-ramp	0.33	55	55	51	52	54	57	58	52	51	56	59	59	60	60	60	58	54	45	57	57	58	60	62	59
1626623089	WB SR-92 W. Hillsdale on- to De Anza off-ramp	0.35	57	57	54	55	57	60	61	54	53	57	61	61	62	61	61	57	55	48	57	61	61	61	63	61
1626733246	WB SR-92 De Anza off- to on-ramp	0.52	59	58	57	59	60	62	62	56	55	58	63	63	63	63	63	62	61	56	62	63	62	61	64	62
1626612001	WB SR-92 De Anza on- to Ralston off-ramp	0.18	60	58	56	59	60	61	62	55	52	57	63	63	63	63	62	62	60	52	61	61	60	55	63	61
1626722146	WB SR-92 Ralston off- to on-ramp	0.30	60	59	56	61	61	63	61	52	48	56	64	63	63	63	62	62	58	43	57	62	61	60	63	62
1626668561	WB SR-92 Ralston on to I-280 off-ramp	0.20	59	57	55	59	60	62	60	50	46	54	62	62	62	62	61	57	51	35	45	61	63	61	62	62

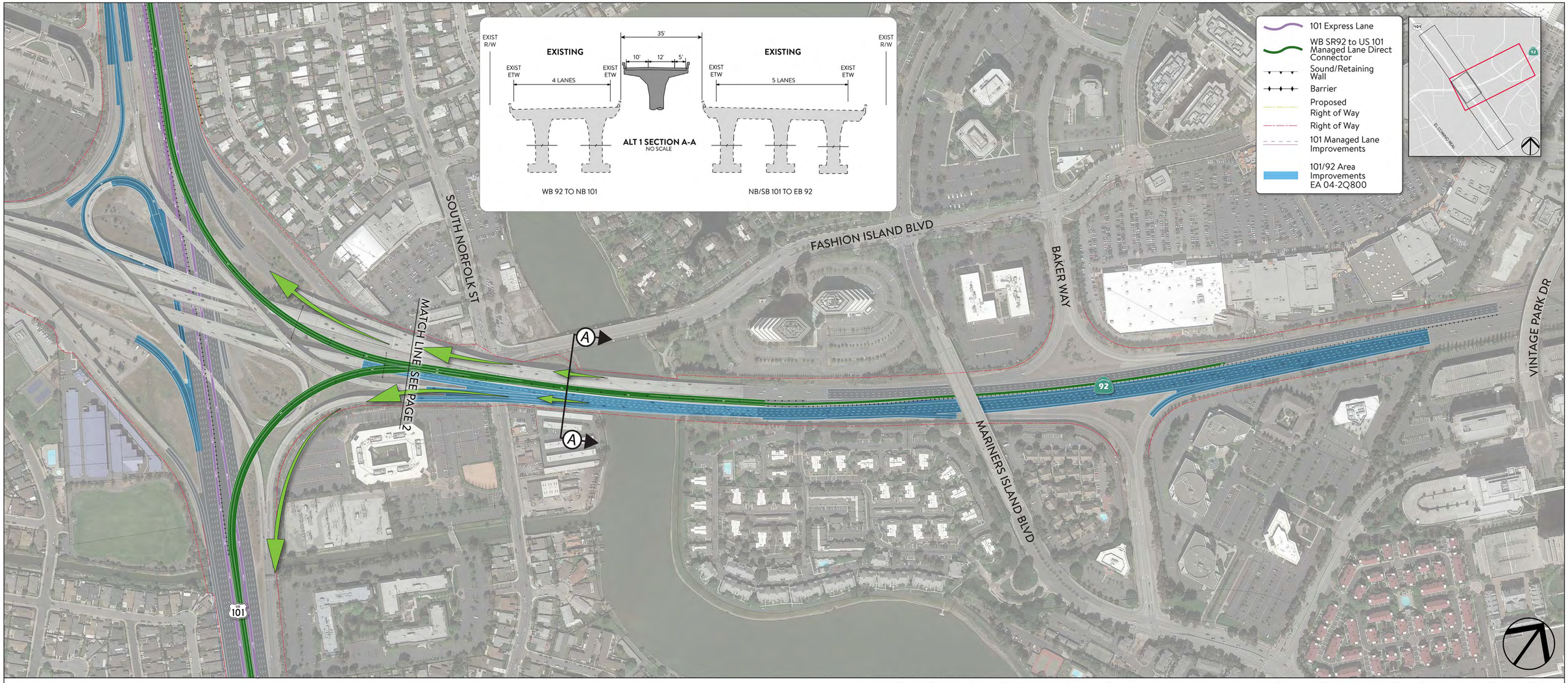
Source: INRIX, Fall 2018 (Oct. 16 - Nov. 02)

Typical Weekdays (Tuesday, Wednesday, Thursday)

Holidays, Fridays and Weekends are not included.

Traffic Speed (mph)

<10 | 11-25 | 25-39 | 40-55 | >55



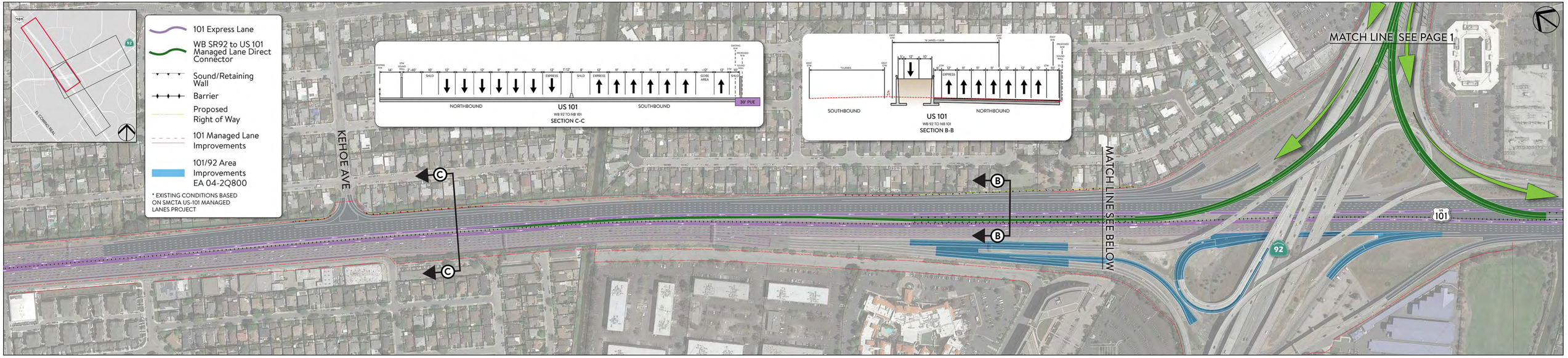
MARK THOMAS

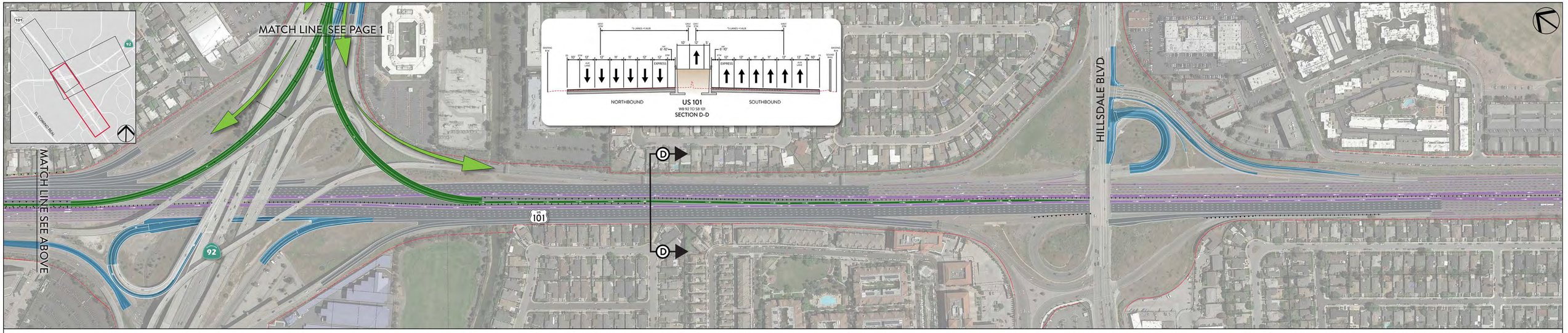
0 100 200 400
Graphic Scale
1"=200'

US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR PROJECT

ALTERNATIVE 1 - MANAGED LANE DIRECT CONNECTOR FROM WESTBOUND SR 92 TO US 101

PAGE 1





MARK THOMAS

Graphic Scale
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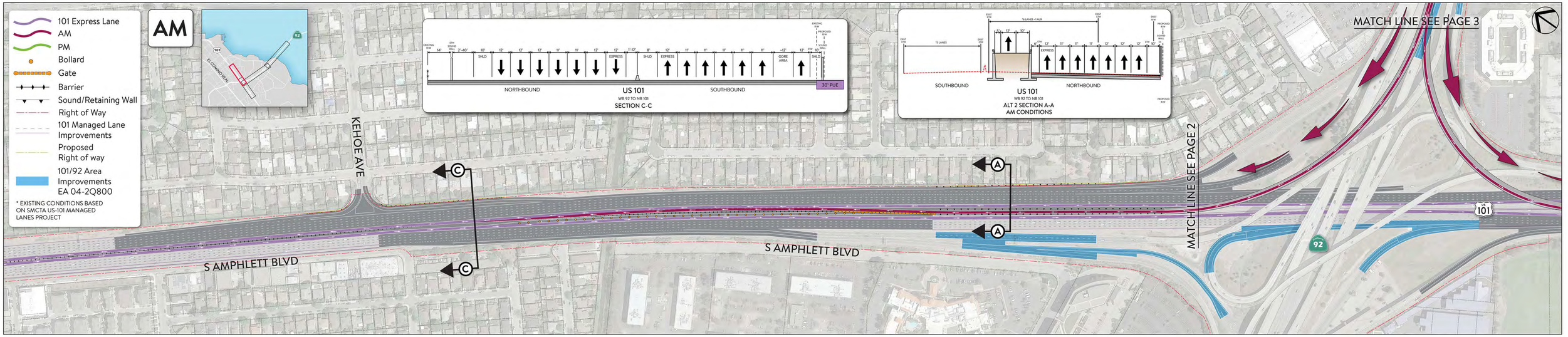
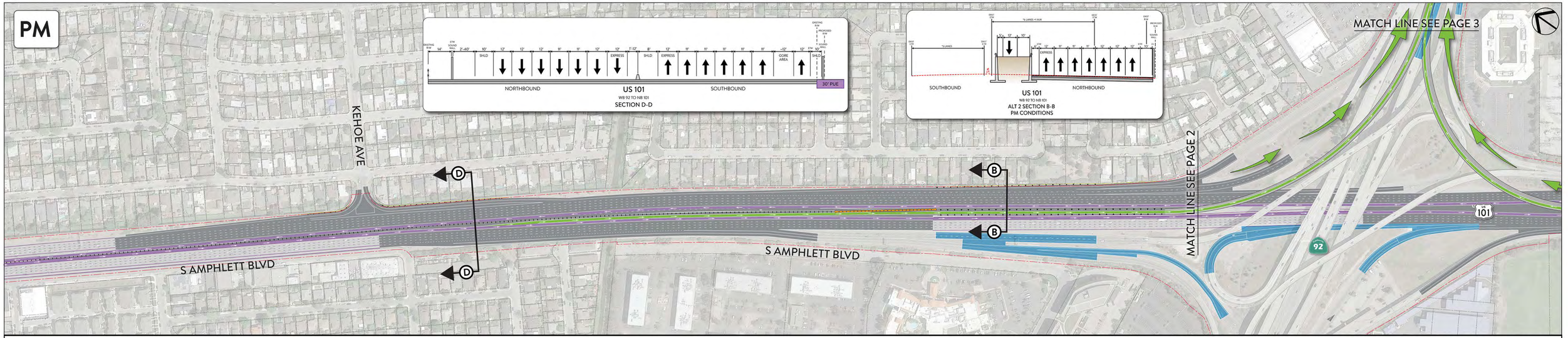
1"=200'

US 101 / SR DIRECT CONNECTOR PROJECT

ALTERNATIVE 1 - DIRECT CONNECTOR FROM WESTBOUND SR 92 TO US 101

PAGE 2





MARK THOMAS

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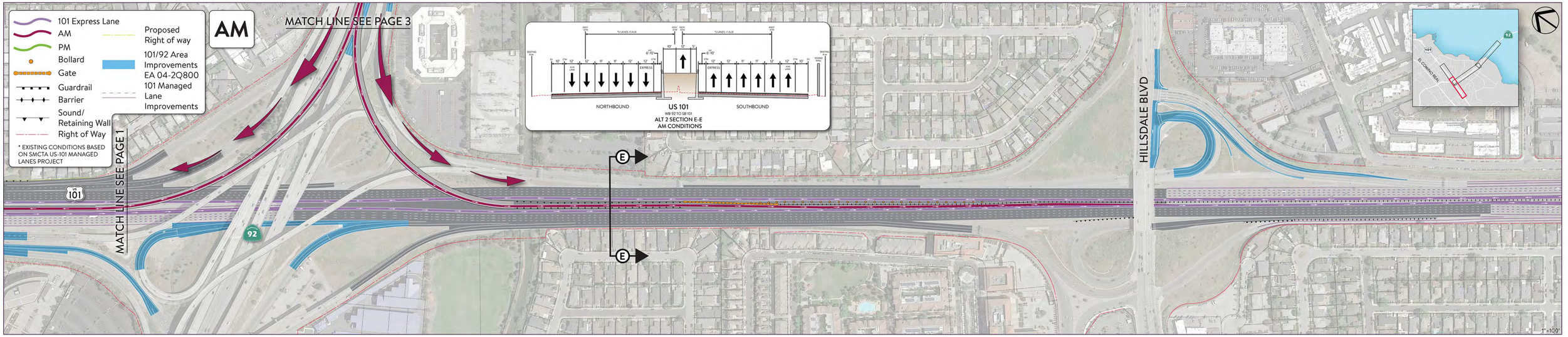
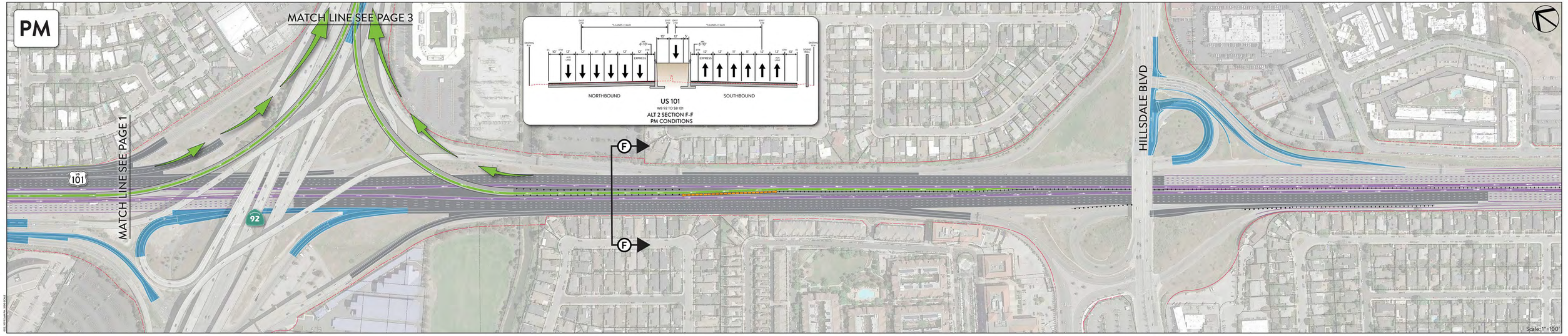
US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR PROJECT

ALTERNATIVE 2 - REVERSIBLE US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR

PAGE 1





MARK THOMAS

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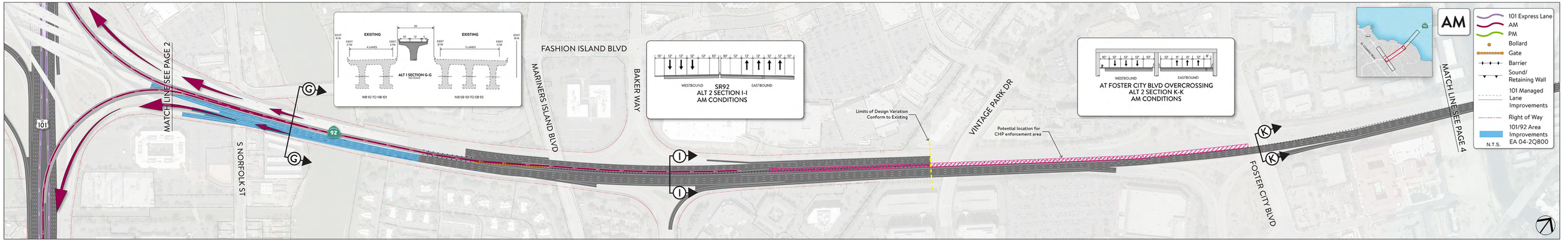
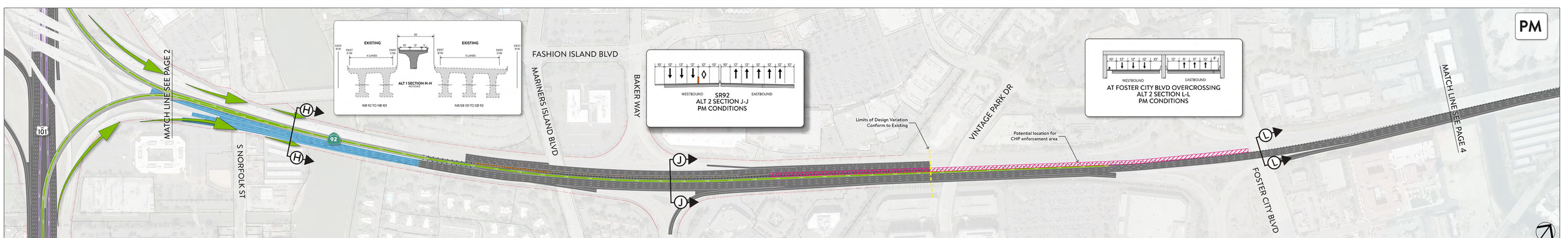
US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR PROJECT

ALTERNATIVE 2 - REVERSIBLE US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR

PAGE 2





MARK THOMAS

US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR PROJECT

ALTERNATIVE 2 - REVERSIBLE US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR

MARK THOMAS

US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR PROJECT

ALTERNATIVE 2 - REVERSIBLE US 101 / SR 92 MANAGED LANE DIRECT CONNECTOR

Attachment F

Not Used

Attachment G

Risk Register

RISK REGISTER LEVEL	3	PROJECT NAME	US 101 / SR 92 Direct Connector Project	DIST-EA	04-2Q800			Project Manager	Project Manager	Arul Edwin	RISK MANAGER	RISK MANAGER	Sasha Dansky	TOTAL COST (Capital +Support)	$182,800,000.00
PROJECT PHASE	PID	PDT MEMBERS		RISK ASSESSMENT INFORMATION										TOTAL DAYS (Construction + Initial review (30 days)+ Closeout (60 days))	930

Risk Identification						Probability			Cost Impact		Cost Impact ($)				Time Impact		Time Impact (days)				Phase	Capital / Support	Individual Risk	Risk Response			
Status	ID #	Category	Title	Risk Statement	Current Status/ Assumptions	Prob Low	Prob High	Rating	Rating	Score	Cost Low	Cost Most likely	Cost High	Cost Probable	Rating	Score	Low	Most likely	High	Time Probable	ENG / CON	C/S	Rationale	Strategy	Response Actions	Risk Owner	Updated
Active	1	Organization	Funding Changes	Due to lack of programmed funding project delivery schedule could be delayed or the project canceled.	Project is currently unfunded for PA&ED, PS&E, and Construction.	30	50	3-Moderate	02-Low	6	$0	$50,000	$150,000	$23,333	08-High	24	60	300	600	124	ENG	C	Project would be on hold until other funding sources were identified.	Accept	SMCTA and C/CAG to identify necessary funding.	SMCTA and C/CAG	7/25/2019
Active	2	Design	Approval of Non-Standard Features	Due to the inability to justify the merits of non-standard features during PA&ED, additional elements may have to be constructed, resulting in additional unanticipated construction costs, increase the project time, or possible removal of improvement alternative.	Held an initial design meeting with Caltrans to determine the likelihood of approval for the non-standard features being proposed.	10	30	2-Low	08-High	16	$0	$0	$40,000,000	$2,666,667	04-Moderate	8	0	80	120	15	ENG	S	If non-standard improvements are not approved, additional improvements would be required, and would likely result in significant construction cost increase.	Mitigate	Provide thorough justification for non standard features.	Design	7/25/2019
Active	3	Design	Positive Location of Utilities	Because positive location of utilities may reveal utilities that require relocation, due to encroachment or conflict, utility relocations or approvals may result in increased project cost and potential schedule delay.	Preliminary utility mapping does not indicate utility relocation concerns.	10	30	2-Low	04-Moderate	8	$10,000	$25,000	$100,000	$7,000	08-High	16	150	300	600	65	CON	C	The proposed process is consistent with Caltrans standards and processes. Should any significant issues arise during PA&ED or PS&E, potholing could be scheduled at that time to enable quantification of potential utility relocation impacts.	Accept	Follow standard utility locating processes at the appropriate stage of project development	Design	7/25/2019
Active	4	Construction	Paleontological / Cultural Resources	Due to excavations along the project, paleontological or cultural resources could potentially be encountered during construction, resulting in increased project costs and schedule impacts during construction.	Project currently assumes that no significant paleontological or cultural resources will be encountered.	0	10	1-Very Low	02-Low	2	$10,000	$50,000	$100,000	$2,583	04-Moderate	4	30	60	120	3	CON	S	If it is determined that there is a high potential for paleontological or cultural resources to be discovered within the environmental study area, monitoring for artifacts during construction may be required which may slightly increase cost and increase construction duration	Accept	If resources are determined to be likely, additional testing and studies would be performed during PA&ED. If during construction, earth-moving activity within and around the immediate discovery area will be diverted and a qualified paleontologist will assess the nature and significance of the find.	Design	7/25/2019
Active	5	Design	Hazardous Materials	As result of preliminary findings of Initial Site Assessment, potential presence of hazardous materials may require Phase II soils sampling, which would increase project costs.	Likelihood of hazardous materials other than ADL is unlikely; however, ADL testing is anticipated during PS&E.	30	50	3-Moderate	04-Moderate	12	$25,000	$100,000	$250,000	$45,000	02-Low	6	0	0	90	12	ENG	S	Aerially deposited lead (ADL) or other contaminated materials can be encountered on highway widening projects. Recent construction likely eliminated most sources of contamination and the short-term improvements involve limited excavation, but the risk is still present and should be monitored.	Mitigate	Initial Site Assessment (ISA) is being performed during PID phase. Consider performing phase 2 testing during PA&ED depending on ISA.	PDT	7/25/2019
Active	6	Construction	Hazardous Materials	Due to unforeseen hazardous materials being discovered during construction, addition hazardous materials mitigation/ removal may be required, increasing construction cost and potentially delaying construction.	All hazardous materials will be identified during project delivery, so likelihood of encountering during construction is low.	10	30	2-Low	04-Moderate	8	$50,000	$150,000	$350,000	$33,333	04-Moderate	8	30	90	120	17	ENG	C	Aerially deposited lead (ADL) or other contaminated materials can be encountered on highway widening projects. Recent construction likely eliminated most sources of contamination and the short-term improvements involve limited excavation, but the risk is still present and should be monitored.	Accept	If encountered, RE will have to tap into contingency funds	RE	7/25/2019
Active	7	PM	Coordination with Adjacent Projects	As a result of the lack of sufficient information about the adjacent on-going projects, there could be potential of contract delays and extra costs.	Adjacent projects are identified, but scope of work is not clearly defined or finalized.	10	30	2-Low	02-Low	4	$25,000	$50,000	$100,000	$10,833	08-High	16	90	120	150	24	ENG	S	Project sponsors and Caltrans communicating regarding planning/ anticipated projects, and will continue to do so throughout project development	Mitigate	Adjacent projects scopes are under development. PDT will continue to engage cities, C/CAG, and Caltrans on future projects.	PM	7/25/2019
Active	8	Design	Additional Right of Way Needs	Due to unforeseen right of way needs identified or resident relocation is necessary during project delivery, additional time and cost may be needed.	Project anticipates minimum right of way impacts.	10	30	2-Low	04-Moderate	8	$100,000	$600,000	$5,000,000	$250,000	04-Moderate	8	60	90	120	18	ENG	S	If additional right of way is needed, project cost and additional time would be needed. ROW could potentially require additional environmental revalidation if footprint impacts were not previously disclosed.	Mitigate	PDT to identify all right of way needs early in project delivery.	PDT	7/25/2019
Active	9	Construction	Impacts to Existing State Facilities	Due to unanticipated damage/ conflict with existing state facilities, additional construction cost for protection/ repair/ relocation may be required	Project does not anticipate impacts to existing state facilities	10	30	2-Low	04-Moderate	8	$50,000	$100,000	$150,000	$20,000	04-Moderate	8	30	60	120	13	ENG	S	Unmapped fiber, TOS, or landscaping features may be encountered during construction.	Mitigate	Identifying all state owned facilities during project development and designing improvements to avoid impact.	Design	7/25/2019
Active	10	Construction	Unanticipated Utility Conflicts	Due to the discovery of unmapped/ incorrectly mapped existing utilities, utility relocations or redesign of improvements may be required, increasing project cost and construction duration	All existing utilities available to us at this time are accurately mapped and no conflicts are expected	10	30	2-Low	04-Moderate	8	$50,000	$150,000	$200,000	$28,333	04-Moderate	8	20	60	90	12	ENG	C	Utilities may be protected in place or improvements redesigned to avoid impacts if discovered during construction.	Accept	Utilize contingency funds to pay for protection/ relocation or redesign	RE	7/25/2019
Active	11	PM	Project Support	Due to additional right of way needs, or potential resident relocation, community support of the project may be jeopardized due to community impact.	Right of way impacts are identified and expected to be minimal.	10	30	2-Low	02-Low	4	$50,000	$75,000	$100,000	$15,000	08-High	16	120	200	300	41	ENG	C	Project could be put on hold or completely canceled in there is not local support for the improvements.	Avoid	Minimize or eliminate right of way impacts through innovative design.	Design	7/26/2019
Active	12	PM	Legislation Requirements for Shoulder Use	Due to current legislative restrictions on shoulder use, shoulder running lane may not be possible to implement, which would impact the proposed improvements.	Within restricted conditions and heavy condition areas, part time shoulder use may be justified.	10	50	2-Low	02-Low	4	$75,000	$100,000	$150,000	$31,250	04-Moderate	8	6	1	2	1	ENG	S	Additional effort to get approval may result in delay and approval potentially would require legislative action.	Mitigate	Conduct and hold informational meetings, work with legislation and provide justification to approve temporary use of the shoulder.	PM	8/22/2019
Active	13	Environmental	Elevated Environmental Document	As a result of significant environmental impacts or controversy related to the project's impacts, an elevated environmental document could be required.	Current assumption is a Routine Environmental Assessment (NEPA) and an Environmental Impact Report (CEQA). Risks related to potential significant impacts are identified for visual, vehicle miles traveled (VMT) and public controversy.	10	30	2-Low	02-Low	4	$50,000	$100,000	$200,000	$21,667	04-Moderate	8	90	120	160	24	ENG	S	Delay in gaining PA&ED approval, with associated effort to prepare higher level document.	Mitigate	Identify risk during scoping and preparation of technical studies. If potential for significant effects that cannot be mitigated, then build in time and effort for processing of EIS. The higher level NEPA document (an EIS) would require additional effort to complete PA&ED, and approximately 6 to 12 months additional time for review and approvals.	Environmental	3/5/2020
Active	14	Environmental	Project Support	Due to the project not addressing existing operational deficiencies such as weaving congestion between Hillsdale IC and 101/92 IC, there may be a lack of public support for the project.	Cities of San Mateo and Foster City are supportive of the project and there was support for interchange improvements at a community meeting prior to the start of the PID phase.	10	30	2-Low	02-Low	4	$25,000	$100,000	$200,000	$21,667	04-Moderate	8	30	120	160	24	ENG	S	Delay in gaining PA&ED approval, with associated effort for additional community engagement and education.	Mitigate	Conduct community outreach and education during PA&ED	Environmental	3/5/2020
Active	15	Construction	Inadequate Traffic Management	As a result of the size and complexity of the project, additional funds may be needed for COZEEP and Traffic Control which would lead to added costs	Assume adequate TMP costs are estimated	20	50	2-Low	04-Moderate	8	$200,000	$250,000	$500,000	$99,167	02-Low	4	0	0	60	7	CON	C	Additional funds for traffic control could be required. It is unlikely that funding for additional traffic control would cause significant delay.	Mitigate	TMP costs should be refined and updated frequently	Design Project Engineer	3/23/2020
Active	16	Environmental	Additional Alternatives Studied	As as result of the extent of congestion and the results of the inital traffic analysis during PA&ED, the current alternatives may not be shown to meet the project Purpose and Need, which may necessitate the development and study additional alternatives.	The current project alternatives appear to address the Purpose and Need and provide the benefits identified for this project.	0	10	1-Very Low	02-Low	2	$10,000	$50,000	$100,000	$2,583	04-Moderate	4	30	60	120	3	ENG	S	It may be determined during PA&ED that current alternatives do not provide sufficient benefit, or alternative analysis or public input identifies other viable solutions. The PDT may then determine that additional alternatives should be studied.	Accept	Preliminary design, traffic analysis, environmental technical studies and public input during PA&ED will be used to determine if any additional alternatives should be considered.	Environmental	5/8/2020
Active	17	TOAR	COVID19 pandemic impacts to Traffic Forecasting & Operational Analysis Reports	Due to the impacts of the COVID 19 pandemic on travel and traffic demand and the subsequent inability to collect reliable "existing conditions" traffic data, reliable "existing" conditions data may not be available using traditional methods, which would result in a delay to the overall PA&ED schedule.	Available, historic data sources from 2019 (prior to the pandemic) are proposed to be used to establish existing traffic conditions. It is assumed the pre-pandemic travel patterns and volumes will return post-pandemic, thus allowing forecasting models to build upon the available "existing conditions" data in order to derive project level travel demand forecasts.	0	10	1-Very Low	02-Low	2	$10,000	$50,000	$100,000	$2,583	04-Moderate	4	30	60	120	3	ENG	S	There is a draft Caltrans memo circulating in HQ to try to address this issue; the assumptions might differ based on this. Also, since the assumed data cannot be verified in the field, and the data is from various sources, the data set development would be challenging.	Accept	The data that will be used for the analysis will be summarized and circulated to Caltrans for review and approval before performing analysis	Traffic	9/2/2020

Printed Date: 10/12/2020

Attachment H

Storm Water Data Report

Dist-County-Route: 04-SM-101/92
Post Mile Limits: PM 10.6-12.9 / PM R12.0-R14.5
Type of Work: New Direct Connectors
Project ID (EA): 04-2Q790K
Program Identification: 0419000049
Phase: ☒ PID ☐ PA/ED ☐ PS&E

Regional Water Quality Control Board(s): San Francisco Bay – Region 2
Total Disturbed Soil Area: 19.85 acres (Alt. 1); 22.47 acres (Alt.2)
PCTA: 17.70 acres (Alt. 1); 19.50 acres (Alt.2)
Alternative Compliance (acres): 0
ATA 2 (50% Rule)? Yes ☐ No ☒
Estimated Const. Start Date: 07/01/2025
Estimated Const. Completion Date: 12/31/2027
Risk Level: RL 1 ☐ RL 2 ☒ RL 3 ☐ WPCP ☐ Other: _____
Is MWELO applicable? Yes ☐ No ☒
Is the Project within a TMDL watershed? Yes ☐ No ☒
TMDL Compliance Units (acres):_____
Notification of ADL reuse (if yes, provide date): Yes ☐ Date:_____ No ☒

This Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E only.

Olga Rodriguez, Registered Project Engineer — 10/13/20 Date

I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:

Mohammad Suleiman, Project Manager — 10/15/2020 *Date*

Amrinder Jhajj, Designated Maintenance Representative — 10/15/20 *Date*

Alex Mcdonald, Designated Landscape Architect Representative — 10.15.2020 *Date*

[Stamp Required at PS&E only]

Norman Gonsalves, District Design SW Coordinator or Designee — 10/15/2020 *Date*

STORMWATER DATA INFORMATION

1. Project Description

The San Mateo County Transportation Authority (SMCTA), in partnership with the Cities of Foster City and San Mateo and City/County Association of Governments (C/CAG), and in cooperation with California Department of Transportation (Caltrans) propose to add direct connector ramps at the United States (US) 101 and State Route (SR) 92 interchange area.

The US 101 / SR 92 interchange in San Mateo County experiences directional peak period traffic congestion. Westbound SR 92 to northbound and southbound US 101 experiences congestion during the morning commute hours, and northbound and southbound US 101 to eastbound SR 92 experiences congestion in the afternoon commute hours.

The US 101 / SR 92 Direct Connector Project (Project) considers two build alternatives. Alternative 1 provides a morning commute benefit by providing a direct connector to the northbound and southbound US 101 managed lanes from westbound SR 92. Alternative 2 provides the same morning commute benefit, but also provides an afternoon commute benefit by reversing the direction of the direct connector in the afternoon. Alternative 2 includes improvements along eastbound SR 92, which terminate just west of the San Mateo-Hayward Bridge. Alternative 2 also considers a design variation which would terminate the eastbound improvement on SR 92 at the Mariner Island interchange. Some of the project construction elements, like widening of SR 92, may have an impact on stormwater quality and regulated waters.

The various area calculations associated with this project, and relevant for stormwater and environmental features have been provided in a table below. The total project area is 128 acres. The total Disturbed Soil Area (DSA) was calculated based on the area that will require construction of new pavement and other improvements as well as areas associated with soil disturbance activities during project construction. The Net New Impervious (NNI) and Replaced Impervious Surface (RIS) areas were calculated based on the proposed improvements shown in the design exhibits provided as part of this report package. Pavement overlap areas were included as RIS. Based on the current design, there will be some pavement overlay work that does not include exposing the subgrade. The Net Impervious Surface (NIS) area equals to the sum of NNI and RIS, which have been provided in Table 1 below. The NNI is not greater than 50% of the post project impervious area at this point. Due to impacts to existing treatment facilities, Condition 1 for Additional Treatment Area (ATA) applies, and has been quantified. Post Construction Treatment Area (PCTA) equals the sum of NIS and ATA. Since the proposed improvements add more than one acre of NIS to the pre project conditions, Permanent Treatment Best Management Practices (BMPs) and Trash Control Devices will need to be incorporated as part of the project. Impacts to existing BMPs will be further verified at the Project Approval and Environmental Document (PA&ED) phase.

Table 1: Area Calculations

Alternative	Net New Impervious Area (NNI) (acres)	Replaced Impervious Surface (RIS) (acres)	New Impervious Surface (NIS) (acres)	Additional Treated Area (ATA) Condition 1 (acres)	Post Construction Treatment Area (PCTA) (acres)	Disturbed Soil Area (DSA) (acres)
1	14.41	1.43	15.84	1.86	17.70	19.85
2	16.21	1.43	17.64	1.86	19.50	22.47

2. Site Data and Stormwater Quality Design Issues

2.1 Project Location and Receiving Water Bodies

The project is primarily under the jurisdiction of San Francisco Bay Regional Water Quality Control Board.

Table 2: Hydrologic Information

Hydrologic Unit	South Bay
Hydrologic Area	San Mateo Bayside
Hydrologic Sub-Area#	204.40
HSA Area (Acres)	107,918
Watershed	San Francisco Bay
Subwatershed	San Francisco Bay Estuaries
Average Annual Precipitation (inches)	14.86

Clean Water Act Section 303 (d) List of Water Quality Limited Segments

The Clean Water Act (CWA) Section 303(d) List of Water Quality Limited Segments (here to known as "303(d) List") is a list of water bodies that do not meet water quality standards. The State Water Resources Control Board (SWRCB) developed this list and it is also approved by the United States Environmental Protection Agency (US EPA). These regulations require that the responsible jurisdictions establish a ranking system, by priority, for water bodies on the list; also, action plans need to be developed, such as Total Maximum Daily Loads (TMDLs), to improve water quality. The 303(d) List is typically revised every two years. Lower San Francisco Bay is an indirect receiving water body for the project and is listed on TMDLs & 303(d) list. The following table lists water bodies that are in the vicinity of this project and on the latest 303(d) and TMDL list published by Caltrans.

Table 3: TMDLs and 303(d) Listed Water Bodies (2014-2016 List)

Caltrans Water Quality Planning Tool (November 2019)

Name	Pollutant
Laurel Creek	Diazinon
San Francisco Bay, Lower	Chlordane, DDT (Dichlorodiphenyltrichloroethane), Dieldrin, Dioxin compounds (including 2,3,7,8-TCDD), Furan Compounds, Invasive Species. Mercury, PCBs (Polychlorinated biphenyls), PCBs (Polychlorinated biphenyls) (dioxin-like), Trash
Lakeshore Park Beach (Marina Lagoon, San Mateo County)	Indicator Bacteria
Aquatic Park (Marina Lagoon, San Mateo County)	Indicator Bacteria
San Mateo Creek, Lower	Toxicity

Table 4: List of Water Bodies crossings within project limits:

Route	PM	Water Body
US 101	11.67	Borel Creek
US 101	12.47	Leslie Creek
SR 92	R 13.98	Seal Slough

The City of San Mateo comprises four major drainage basins – the San Mateo Creek complex, the North San Mateo complex, the Foster City Lagoon complex, and the 3rd and Detroit watershed, each composed of numerous stream channels, culverts, and storm drainage piping systems. The project site is situated in both the 16th Ave and the 19th Ave Watershed, both of which drain to the Foster City Lagoon, whose water is then pumped into the San Francisco Bay.

The Region 2 Basin Plan published by the San Francisco Bay Regional Water Quality Control Board in 2007 establishes beneficial uses for waterways and water bodies. They include: Municipal and Domestic Supply (MUN); Agricultural Supply (AGR); Industrial Service Supply (IND); Industrial Process Supply (PRO); Groundwater Recharge (GWR); Freshwater Replenishment (FRSH); Navigation (NAV); Contact/Non-Contact Water Recreation (REC-1/ REC-2); Commercial and Sport Fishing (COMM); Warm Freshwater Habitat (WARM); Cold Freshwater Habitat (COLD); Estuarine Habitat (EST); Marine Habitat (MAR); Wildlife Habitat (WILD); Preservation of Areas of Special Biological Significance (ASBS); Rare, Threatened, or Endangered Species (RARE); Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), Shellfish Harvesting (SHELL).

The project area also goes over Seal Slough which ultimately joins the San Francisco Bay (Lower). San Francisco Bay features on the latest Beneficial Use list last updated by the San Francisco Bay Regional Water Quality Control Board in December 2017. Borel Creek crosses US-101 between Hillsdale Boulevard and SR-92 and drains into Seal Slough. Leslie Creek lies to the north of the US-101/ SR-92 interchange just south of Kehoe Avenue and drains to Seal Slough.

Table 5: Beneficial Uses of Water Bodies within, and in vicinity of project limits:

Water Body	Beneficial Uses
San Francisco Bay Lower	IND, COMM, SHELL, EST, MIGR, RARE, SPWN, WILD, REC-1, REC-2, NAV
Seal Slough	EST, RARE, WILD, REC-1, REC-2
Leslie Creek	WARM, WILD, REC-1, REC-2
Borel Creek	WARM, WILD, REC-1, REC-2

Permanent Treatment BMPs can be connected to numerous storm drain inlets and ditches that exist in the project area.

Land Use

The City of San Mateo consists of an area of land that is approximately 15.7 square miles in the northeastern portion of San Mateo County. The City of Foster City is spread over nearly 20 square miles to the east of San Mateo. The land uses directly adjacent to the project include various commercial and residential designations.

Climate

San Mateo County has a Mediterranean climate with warm, dry summers and mild, damp winters. The cities are shielded from the Pacific Ocean by the Montara Mountain block of the Santa Cruz Mountains.

The National Weather Service has maintained a cooperative weather station in San Mateo. Records show that January, the coolest month, had an average maximum of 57.8°F and an average minimum of 41.7°F. September, the warmest month, had an average maximum of 78.0°F and an average minimum of 54.2°F. Annual precipitation averaged 18.77 inches of rainfall, falling on average 60 days each year.

Soils

There is a potential that surface soils adjacent to the roadway may be impacted by aerially deposited lead (ADL) from past use of leaded vehicle fuels. Excavated or graded soils should be tested for ADL. The soils in the area, which is largely urban land, mostly belong to Hydrologic Group C and D, cut/fill slopes, high in silt and clay content according to Caltrans Water Quality Planning Tool. There may also be some mud due to the proximity of this water to the shoreline.

Groundwater Information

The groundwater in the vicinity of US 101, especially where US 101 is nearest the bay, is shallow (approximately 2-5 ft below the ground surface) and the local groundwater gradient direction is towards the bay, therefore up-gradient contaminated sites that have impacted the groundwater have the potential to impact the project site through groundwater migration towards US101 and the bay.

Hydromodification

Although the project lies in areas exempt from hydromodification requirements published by San Mateo County (included as Attachment F), due to more than 1 acre of net new impervious surface and likely impacts to Waters of the US, the project should anticipate compliance with hydromodification requirements under the Caltrans Municipal Separate Storm Sewer Systems (MS4) permit.

Image 1 Google Earth Image of Project Location showing low lying typography and tidal receiving waterbodies.

If the project requires compliance with the Caltrans MS4 permit, prelminary assessment of receiving waters associated with the project indicates that the project would not require implementation of physical measures to address hydromodification. Hydromodification measures are unlikely necessary as the project topography is located lowlying areas that are tidally influenced and aggrading.

Project Risk Level

K=0.32 and LS=0.12 factors were determined from the Caltrans Water Quality Planning Tool. Water Quality Planning Tool indicates soil within Project Limits has a moderate (.32 K Factor) susceptibility to sheet and rill erosion by water. Erosion potential of Site soils indicates a manageable sediment discharge risk and one that will not require extraordinary slope/surface protection systems. For the Risk Level calculations, R factor of 120 was obtained for the expected duration of the project from the US EPA Rainfall Erosivity Calculator. The Risk Level for the project area is 2 based on calculations using R, K and LS factors. More detailed calculations to determine the project-specific LS will be completed at later design phases of the project. The project does not qualify for US EPA Rainfall Erosivity Waiver.

Existing Treatment BMPs and Right-of-Way Acquisition

The project is primarily within Caltrans' right-of-way. No right-of-way acquisitions for construction of Permanent Treatment BMPs outside of Caltrans right-of-way are expected. There are a number of Permanent Treatment BMPs within the project limits that are being implemented as part of US-101 Managed Lanes Project. These BMPs will need to be preserved, but may need to be modified or outfitted if proposed design changes lead to an increase in the impervious area draining to the existing permanent treatment facilities. An exhibit with locations of existing and proposed Permanent Treatment BMPs has been attached at the end of this report. There are two existing BMPs that will have to be removed based on current design. Existing Permanent Treatment BMPs, and any impacts to them, as well as proposed Treatment BMPs in the vicinity of the project will be further verified during the PA&ED phase.

3. Construction Site BMPs to be used on Project

The project's sediment risk is Risk Level 2. Per the requirement of the Construction General Permit, the project SWPPP document will need to be prepared by a Qualified SWPPP Developer (QSD) and enforced by a Qualified SWPPP Practitioner (QSP).

Measures will include a Rain Event Action Plan 48 hours prior to a likely rain event (an event that has 50% or greater chance of producing precipitation), monitoring plan for pre- storm and post storm, and sampling and monitoring of storm water discharge. Monitoring locations to be placed at outfall locations. Three samples are to be collected per day for a qualifying event.

The construction site BMP strategy will include of the following: soil stabilization, sediment controls, tracking controls, wind erosion controls, non-storm water management, and waste management & materials pollution control.

Some disturbed soil areas will need to be temporarily protected and stabilized (soil stabilization) during various phases of the construction of the project.

These BMPs include the following:

- Temporary Hydraulic Mulch (Bonded Fiber Matrix)
- Move In/Move Out (Temporary Erosion Control)
- Temporary Soil Binders

Sediment controls, tracking controls, wind erosion controls, non-storm water management, and waste management & materials pollution control will also be necessary for this project. These BMPs include, but are not limited, to the following:

- Temporary Drainage Inlet Protection

- Temporary Check Dams
- Temporary Silt Fence
- Street Sweeping
- Temporary Fiber Rolls
- Temporary Concrete Washout Facility
- Temporary Construction Entrances/Exits
- Dewatering/Non-Storm Water Control
- Temperary High-Visibility Fence (THVF)
- Storm Water Pollution Prevention Plan (SWPPP)
- Additional Water Pollution Control
- Contaminated Soil Management

4. Maintenance BMPs

Inlet stenciling will be used for existing and proposed inlet within State right-of-way accessible to pedestrians or cyclists. The locations and quantities for the inlet stenciling will be used in the Contract Plans. The drain inlet stenciling will be constructed according to the Caltrans Standard Plan D71. Additional maintenance BMPs will be evaluated and included at later stages of design after discussions with the Caltrans District 4 Stormwater Design staff.

5. Other Water Quality Requirements and Agreements

This project is under the Caltrans Municipal Separate Storm Sewer Systems (MS4) Permit, NPDES No. CAS000003, SWRCB Order No. 2012-0011-DWQ, amended by Order No. 2014-0006-EXEC, Order No. 2014-0077-DWQ, and Order No. 2015-0036-EXEC. The project will also include features for trash control. For hydraulic sizing criteria and requirements for the permanent stormwater treatment BMPs, the guidelines laid out under San Mateo Countywide Water Pollution Prevention Program will be followed, or as instructed by Caltrans District 4 staff. Project developments may affect regulated water bodies within project limits. As such, there will be coordination with San Francisco Bay Regional Water Quality Control Board to see if a Section 401 Water Quality Certification or Waiver is required under the Clean Water Act. Additional coordination will be required with US Army Corps of Engineers to see if a Section 404 permit is required from them as well. The project may require permit for work within 100 feet of the shoreline from San Francisco Bay Conservation and Development Commission (BCDC). SR 92 within the project limits crosses over Seal Slough, but the slough has tidal gates at both ends. There may be support required for the elevated structures in the channel, and the necessity and location of the support will be determined during the PA&ED phase. A stream diversion plan will be developed if the support is deemed necessary, and a Section 1602 Permit for Lake and Streambed Alteration Agreement from California Department of Fish and Wildlife will be secured.

6. Permanent BMPs

6.1 Potential Permanent Water Quality Impacts

Potential permanent impacts to existing water quality will be like the existing facility, including the deposition and transport of trash, sediment and vehicular-related pollutants. Vehicular-related pollutant sources include but are not limited to, combustion from fossil fuels, litter from motorists, and the wearing of brake pads.

6.2 Design Pollution Prevention Best Management Practices

As part of the Design Pollution Prevention BMPs, measures to preserve existing vegetation and control runoff will be identified during the PA&ED phase. During design and construction of project improvements, the aim will be to disturb the least amount of existing vegetation and reduce the extent of clearing and grubbing activities. Existing Biostrips and Bioswales shown in Attachment O will be protected from construction activity with THVF. Existing contours and elevations will be taken into consideration while planning for the installation of drainage, permanent treatment measures, and water conveyance systems. Additionally, all proposed slopes will be 4:1 or flatter to the best possible extent. Some constrained areas may require steeper slopes not to exceed 2:1 unless recommended by a Geotechnical. All construction related soil disturbance will receive erosion control treatment. The specific treatments will be defined in subsequent project phases.

The project will be required to implement Design Pollution Prevention BMPs to address hydromodification. Hydromodification will be addressed using treatment BMPs such as vegetated surfaces and storm drain system modifications such as energy dissipation and surface and subsurface detention. The specific hydromodification treatments to be applied will be consistent with Caltrans' requirements and will be specifically identified during the PA/ED phase.

6.3 Permanent Best Management Practices

Permanent Treatment BMPs to be considered for this area will need to meet both Caltrans criteria as well as design guidelines set forth by San Mateo County under its Stormwater C.3 Design Guidebook. The presence of HSG C and D soils means that Infiltration Devices may not be feasible unless soil amendments are used. Biofiltration strips and swales are feasible alongside the mainline freeway and in the ramp loop areas respectively based on current site conditions. The possibility of installing Detention Basins and Austin Media Filters will be explored during PA&ED and PS&E in the loop areas. However, the presence of existing treatment features and Environmentally Sensitive Areas as well as soils with low infiltration rate coupled with high groundwater table due to proximity of the project to the San Francisco Bay can limit the opportunities to install large scale treatment facilities.

Based on the level of detail at the current phase of planning, the treatment requirement for this project is 17.70 acres for Alternative 1, and 19.50 acres for Alternative 2. Initial assessment of the existing drainage patterns and the project features indicates there is potential to treat 11.32 acres within the project limits through existing and proposed Permanent Stormwater Treatment facilities. An exhibit which shows existing and potential locations of Biofiltration Strips, and the watershed areas that drain to these features, has been provided as an attachment to this report. The exhibit also shows Environmentally Sensitive Areas. The proposed roadway slope will allow water to sheet flow over these strips. Based on Caltrans PPDG, Biofiltration Strips need to have a minimum of 15 feet width. However, soil amendments can be used to increase infiltration if the Biofiltration Strips cannot meet the standard width requirement.

Portions of the unpaved areas within the project area are currently being used for Permanent Treatment BMPs to treat existing impervious area. The presence of such facilities limits opportunities to propose treatment BMPs on-site. Some of the existing Permanent Treatment BMPs may need to be modified after verification of impacts to these facilities due to design changes proposed for the mainline freeway. As identified in the exhibit, some existing features will be able to treat flow from proposed freeway configuration if existing slopes and contours are maintained. The exhibit also identified a loss of 1.86 acres of treated impervious area due to potential removal of two existing Biofiltration Strips. Mitigation strategies for any impacts to existing BMPs will be needed. With a significant deficit of available areas

for BMPs to treat the project's proposed new impervious surfaces (let alone any additional area to treat existing impervious services), off-site treatment options need to be identified and evaluated in order to meet the treatment requirement for this project. While the existing Biofiltration Swales are already connected to drainage outfalls, Biofiltration Strips do not need to be connected to a drainage system.

The location and feasibility of any onsite or offsite Permanent Treatment BMPs will be verified during the PA&ED phase based on site conditions and in consultation with Caltrans staff. The appropriate checklists have been included as attachments to this report.

6.4 Trash Control BMPs

In accordance with the latest regulations, this project area will be evaluated for trash accumulation. The trash control BMPs will be sized and implemented based on Caltrans design requirements.

There are several types of Gross Solids Removal Devices are considered by Caltrans. One device type, and the most cost effective, is the trashnet device which is installed at pipe outfall locations. Other devices are Linear Radial Devices. These require significant flow and space to function properly. They can be installed right before the most downstream inlet in a drainage system before the flow outfalls into a water body. These devices require maintenance access so they can be cleaned regularly. A final device type is an inclined screen inside a drainage inlet to provide trash control. Unlike Linear Radial Devices, inclided screens require significant head (5.5') in order to operate. Regardless of the trash capture device selected, in no cases, shall trash capture devices be placed within paved areas or in locations which will result in flooding of the travelled way or cause undue risk for maintenance personel to service.

The capital cost estimate for the trash capture budget as shown below is based on current Caltrans District 4 best practices for trash capture implementation on projects in the Bay Area. It should be noted that no capital cost cap has been identified by either Caltrans or the San Francisco Water Board.

The locations for Trash Control BMPs will be identified after evaluation based on hydraulic data, such as elevations of incoming and outgoing pipes in existing drainage inlets, pipe sizes and flow characteristics after analyzing the flows for a design storm event at PA&ED phase. As noted above, safety considerations for operating traffic and maintenance personel will be considered when determining the selection and placement of trash capture devices.

6.5 Cost of Best Management Practices

While individual BMP items of work will be defined and reflected in the Engineer's Estimate at PA&ED phase, the cost estimates for BMPs at this stage has been provided below. These cost estimates have been developed according to the guidelines provided in Appendix F of Caltrans Project Planning and Design Guide, as well as guidance provided by Caltrans District 4 staff.

Table 6: Cost Estimates for BMPs

BMP strategy	Alternative 1	Alternative 2
Construction Site BMPs	$306,000	$384,000
Permanent Treatment BMPs	$2,530,000	$2,890,000
Trash Management BMPs	$1,011,000	$1,155,000
Total	$3,847,000	$4,429,000

Complete the following table if treatment is required for the project.

Table E-1. Overall Project Treatment Summary Table[1]			
		Alternative 1	Alternative 2
	PCTA (ac)[2]	17.70	19.50
Total Area to be Treated	Treated Impervious Area (CT RW) (ac)	11.32	11.32
	Treated Impervious Area (Outside CT RW) (ac)[3]		
	PCTA Balance (ac)[4]	6.38	8.18

[1] This table is provided as an example. The table may be edited, altered, or removed as applicable or as directed by the District/Regional Design Stormwater Coordinator.

[2] Provide treatment for ATA 1 even if NIS is less than 1 acre.

[3] Requires Regional Board approval. Coordinate with District/Regional NPDES Coordinator.

[4] If less than 0, additional treatment must be identified.

Required Attachments

- Vicinity Map (see Attachment A)
- Evaluation Documentation Form (EDF) (see Attachment H)
- Risk Level Determination Documentation (see Attachments B - F)

Supplemental Attachments

Note: Supplemental Attachments are to be supplied during the SWDR approval process when requested; where noted, some of these items may only be requested on a project-specific basis.

- Hydromodification Map for the County of San Mateo (see Attachment G)
- Checklist T-1, Part 1 (Treatment BMPs), if applicable (see Attachment L)
- Checklist T-1, Part 3 (Treatment BMPs) (see Attachment M)
- Checklist T-1, Part 7 (Treatment BMPs) (see Attachment N)
- Checklist SW-1 (see Attachment I)
- Checklist SW-2 (see Attachment J)
- Checklist SW-3 (see Attachment K)
- EPA Rainfall Erosivity Waiver Documentation (see Attachment C)
- Pavement Overlap Areas Exhibit
- Potential Stormwater Treatment Facilities and Watershed Maps Exhibit

ATTACHMENTS

ATTACHMENT A

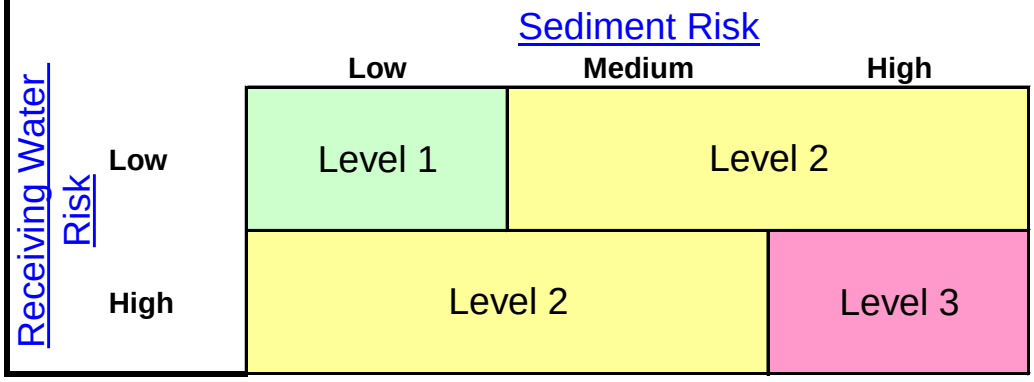
	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	**R Factor Value**		120
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	**K Factor Value**		0.32
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	**LS Factor Value**		0.12
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**		4.608
16	**Site Sediment Risk Factor**		**Low**
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

ATTACHMENT B.1

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	**yes/no**	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml **OR** A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan) http://www.waterboards.ca.gov/waterboards_map.shtml	**yes**	**High**
Region 1 Basin Plan Region 2 Basin Plan Region 3 Basin Plan Region 4 Basin Plan Region 5 Basin Plan Region 6 Basin Plan Region 7 Basin Plan Region 8 Basin Plan Region 9 Basin Plan		

ATTACHMENT B.2

Combined Risk Level Matrix



Project Sediment Risk: **Low**

Project RW Risk: **High**

Project Combined Risk: **Level 2**

ATTACHMENT B.3

Rainfall Erosivity Factor Calculator for Small Construction Sites

EPA's stormwater regulations allow NPDES permitting authorities to waive NPDES permitting requirements for stormwater discharges from small construction sites if:

- the construction site disturbs less than five acres, and
- the rainfall erosivity factor ("R" in the revised universal soil loss equation, or RUSLE) value is less than five during the period of construction activity.

If your small construction project is located in an area where EPA is the permitting authority and your R factor is less than five, you qualify for a low erosivity waiver (LEW) from NPDES stormwater permitting. If your small construction project does not qualify for a waiver, then NPDES stormwater permit coverage is required. Follow the steps below to calculate your R-Factor.

LEW certifications are submitted through the NPDES eReporting Tool or "CGP-NeT". Several states that are authorized to implement the NPDES permitting program also accept LEWs. Check with your state NPDES permitting authority for more information.

- Submit your LEW through EPA's eReporting Tool
- List of states, Indian country, and territories where EPA is the permitting authority
- Construction Rainfall Erosivity Waiver Fact Sheet
- Appendix C of the 2017 CGP – Small Construction Waivers and Instructions

The R-factor calculation can also be integrated directly into custom applications using the R-Factor web service.

For questions or comments, email EPA's CGP staff at cgp@epa.gov.

Select the estimated start and end dates of construction by clicking the boxes and using the dropdown calendar.

The period of construction activity begins at initial earth disturbance and ends with final stabilization.

Start Date: 07/01/2025 **End Date:** 12/31/2027

Locate your small construction project using the search box below or by clicking on the map.

Location: -122.29589492943454 , 37.55306566086965 **Search**

ATTACHMENT C

Click the "Calculate R Factor" button below to calculate an R Factor for your small construction project.

Calculate R Factor

Facility Information

Start Date: 07/01/2025	**Latitude:** 37.5531
End Date: 12/31/2027	**Longitude:** -122.2959

Calculation Results

Rainfall erosivity factor (R Factor) = **120**

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority, you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

ATTACHMENT C

California Department of Transportation

Caltrans > DEA > Stormwater > **Water Quality Planning Tool**

Dataset
Zip Codes

Risk Level Determination

Erosivity Index
K Factor
R Factor (calculations)
LS Factor
Soil Details

Compliance Storm Events

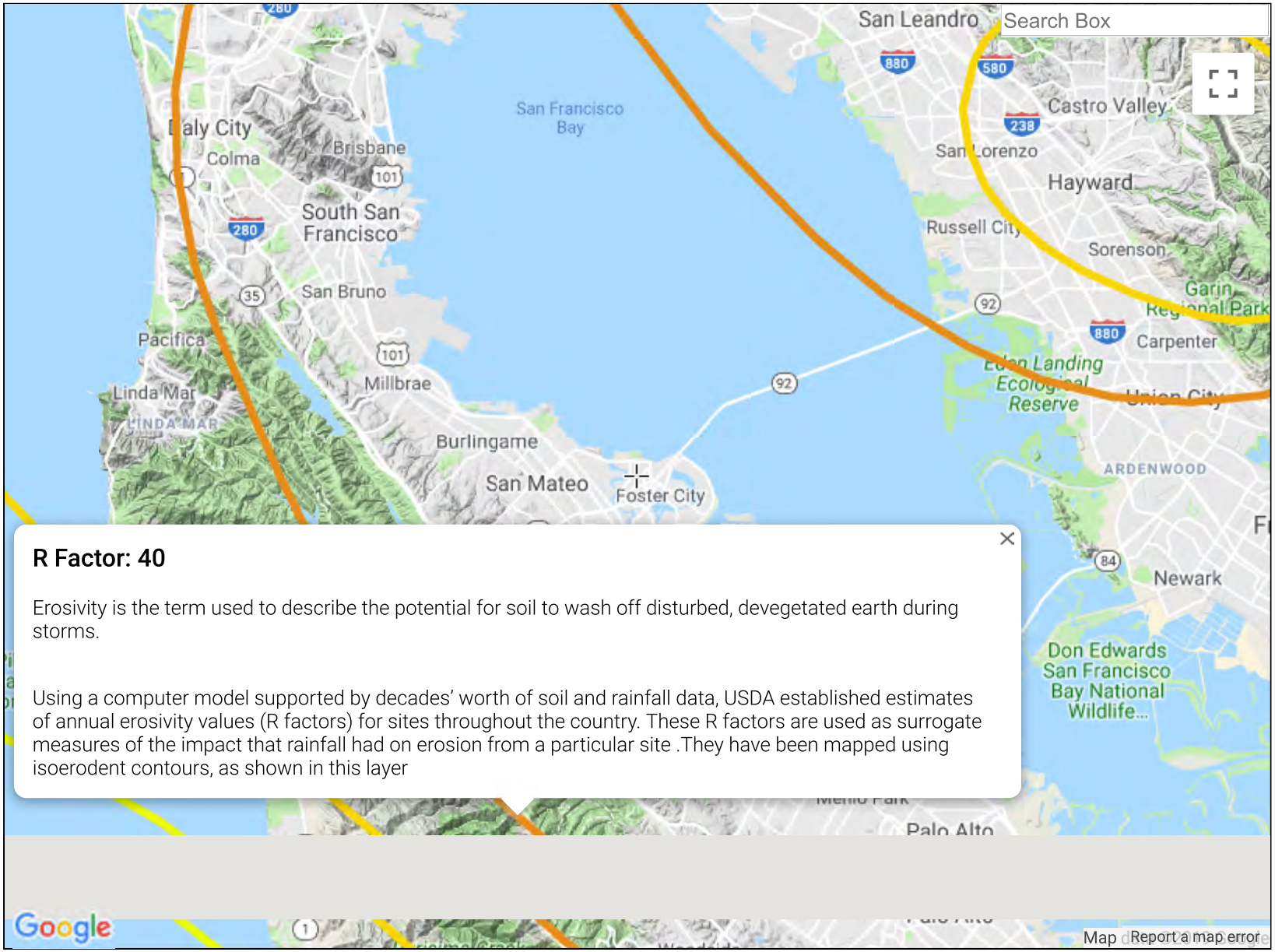
5-yr 24-hr North
10-yr 24-hr North
5-yr 24-hr South
10-yr 24-hr South

Distance and Area

Measure Clear
Feet: 0
Acres: 0

Postmile Lookup

Information
Hover over a layer name for a description. Additional information, tables, coordinates, and links are below the map.
Help



California Department of Transportation

Caltrans > DEA > Stormwater > **Water Quality Planning Tool**

Dataset
Zip Codes

Risk Level Determination

Erosivity Index
K Factor
R Factor (calculations)
LS Factor
Soil Details

Compliance Storm Events

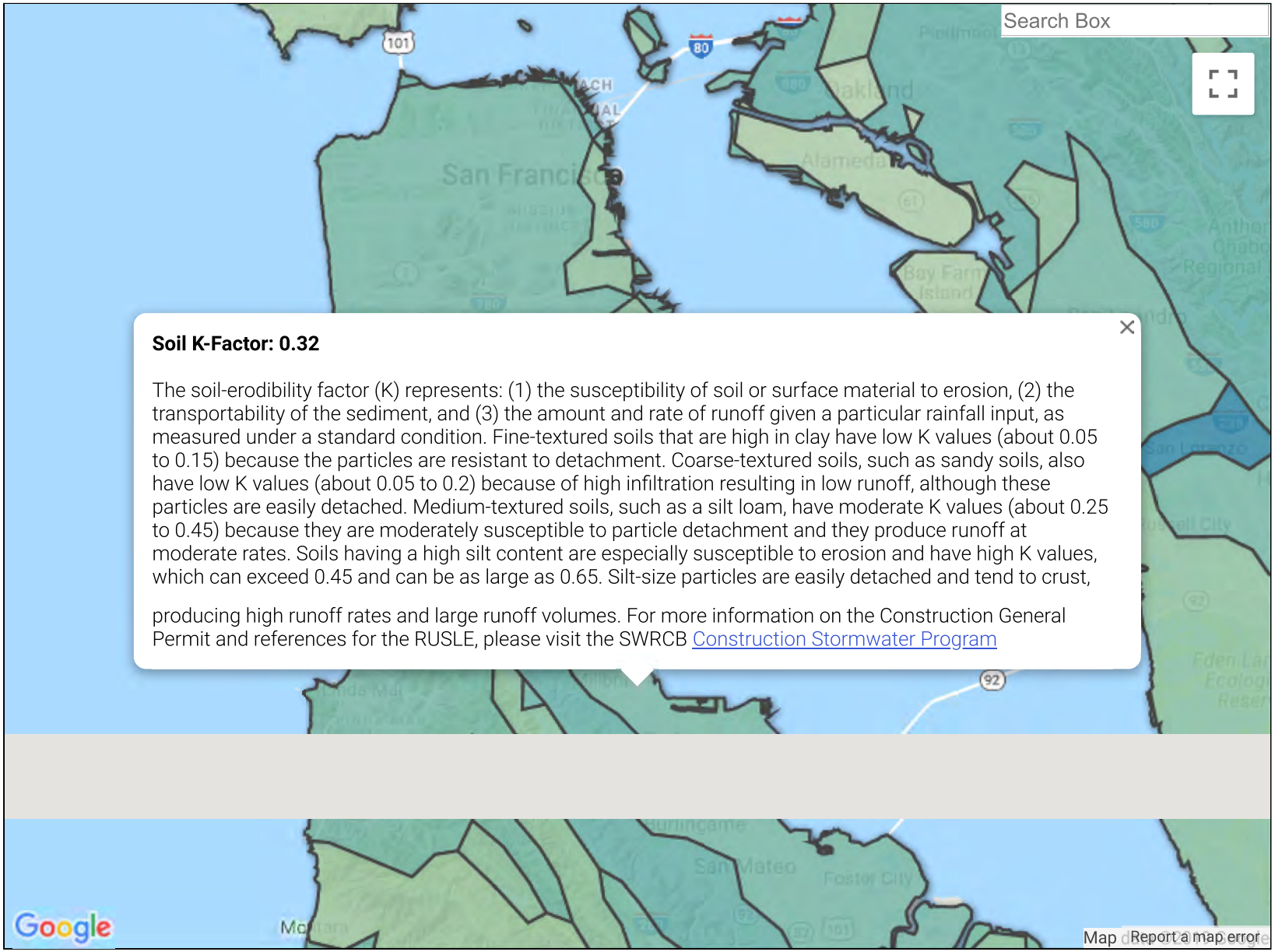
5-yr 24-hr North
10-yr 24-hr North
5-yr 24-hr South
10-yr 24-hr South

Distance and Area

Measure Clear
Feet: 0
Acres: 0

Postmile Lookup

Information
Hover over a layer name for a description. Additional information, tables, coordinates, and links are below the map.
Help



ATTACHMENT E

California Department of Transportation

Caltrans > DEA > Stormwater > **Water Quality Planning Tool**

Dataset
Zip Codes

Risk Level Determination

Erosivity Index
K Factor
R Factor (calculations)
LS Factor
Soil Details

Compliance Storm Events

5-yr 24-hr North
10-yr 24-hr North
5-yr 24-hr South
10-yr 24-hr South

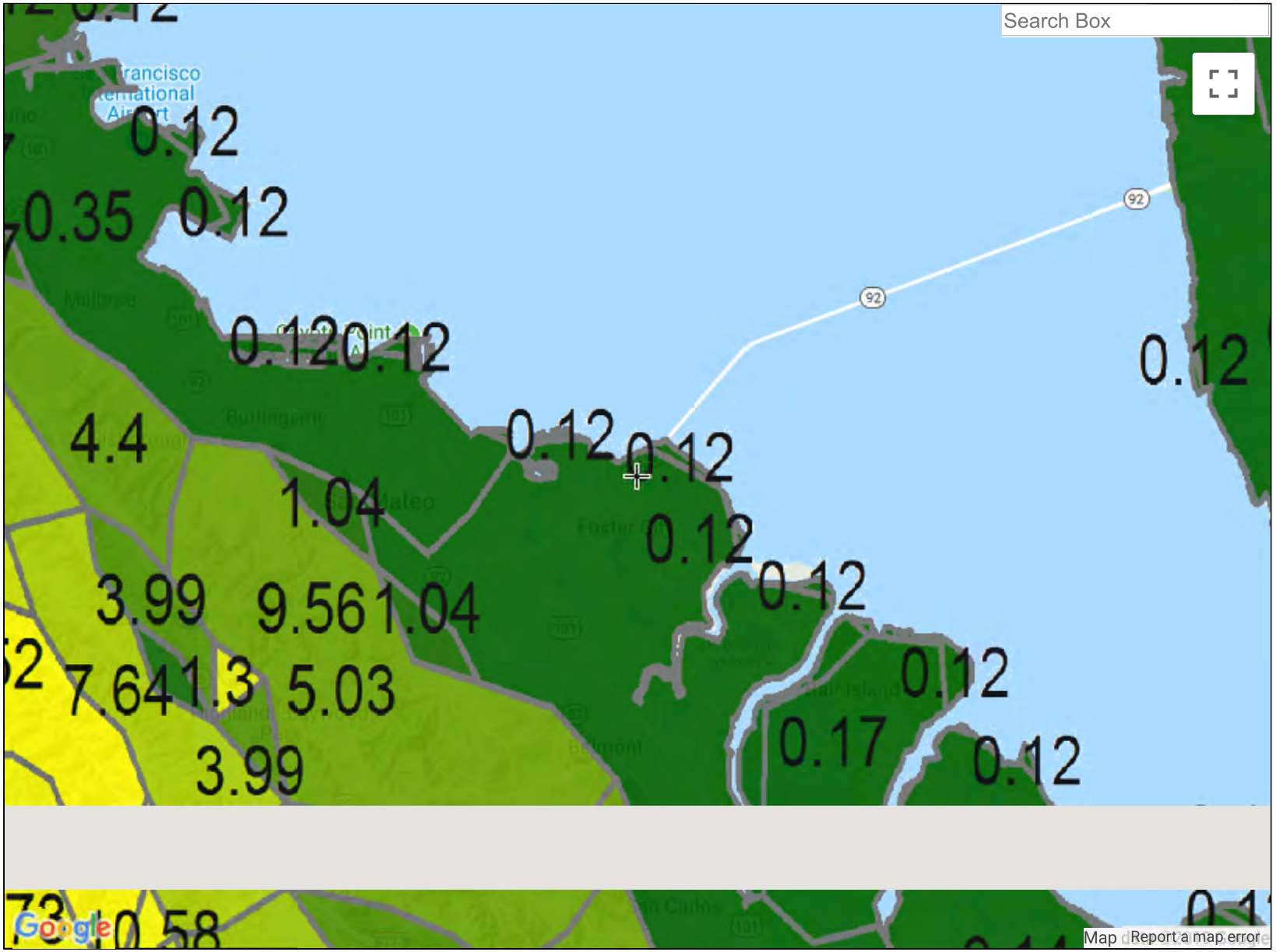
Distance and Area

Measure Clear
Feet: 0
Acres: 0

Postmile Lookup

Information

Hover over a layer name for a description. Additional information, tables, coordinates, and links are below the map.
Help



Appendix

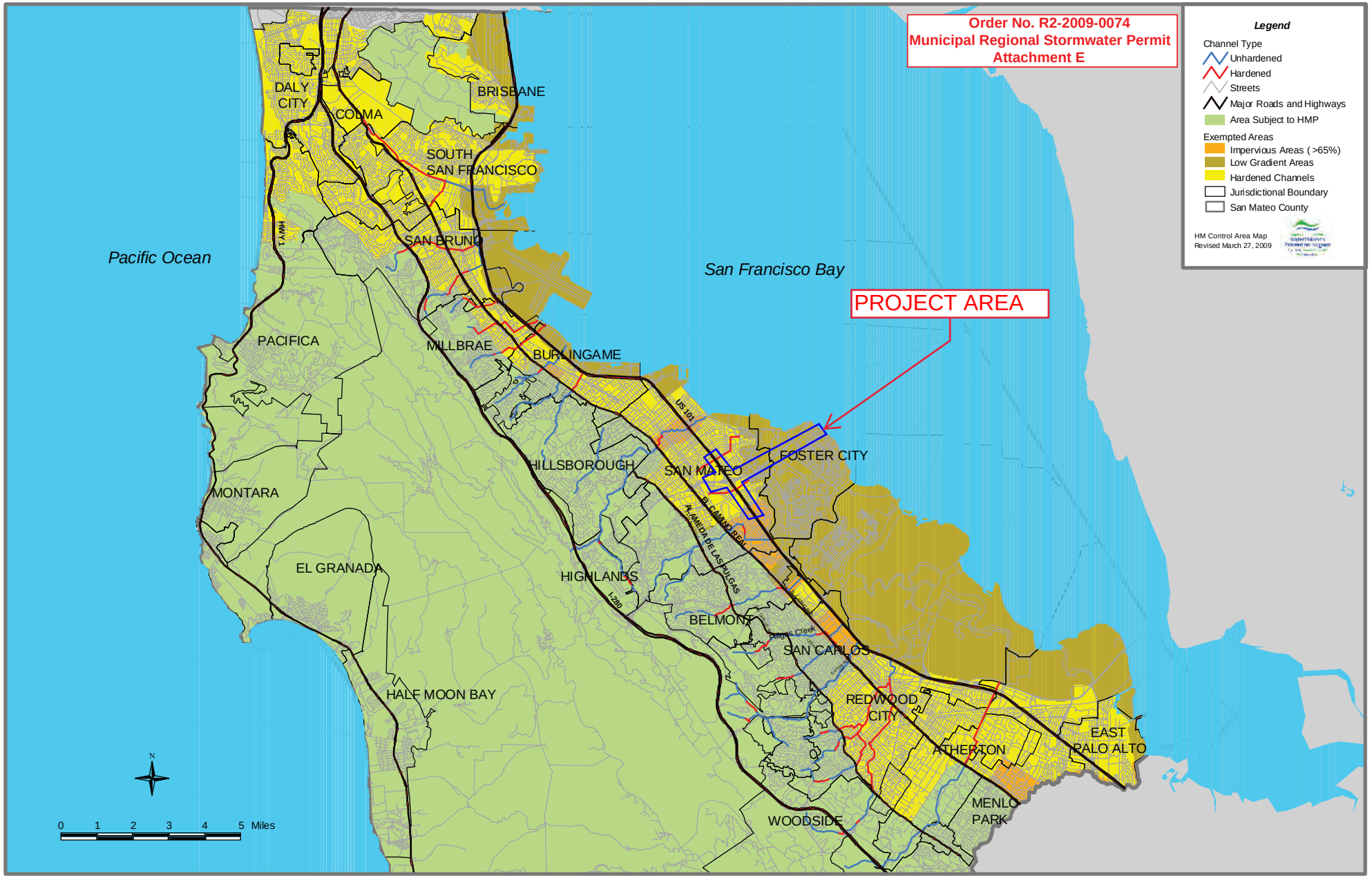
H

Areas Subject to Hydromodification Management Requirements

This appendix presents the countywide Hydromodification Management (HM) Control Area Map, which identifies the geographical areas that are subject to hydromodification management (HM) requirements. The full countywide HM Control Area Map is followed by a series of maps that show detailed areas of the county in which the HM control area boundary does not follow major roadways.

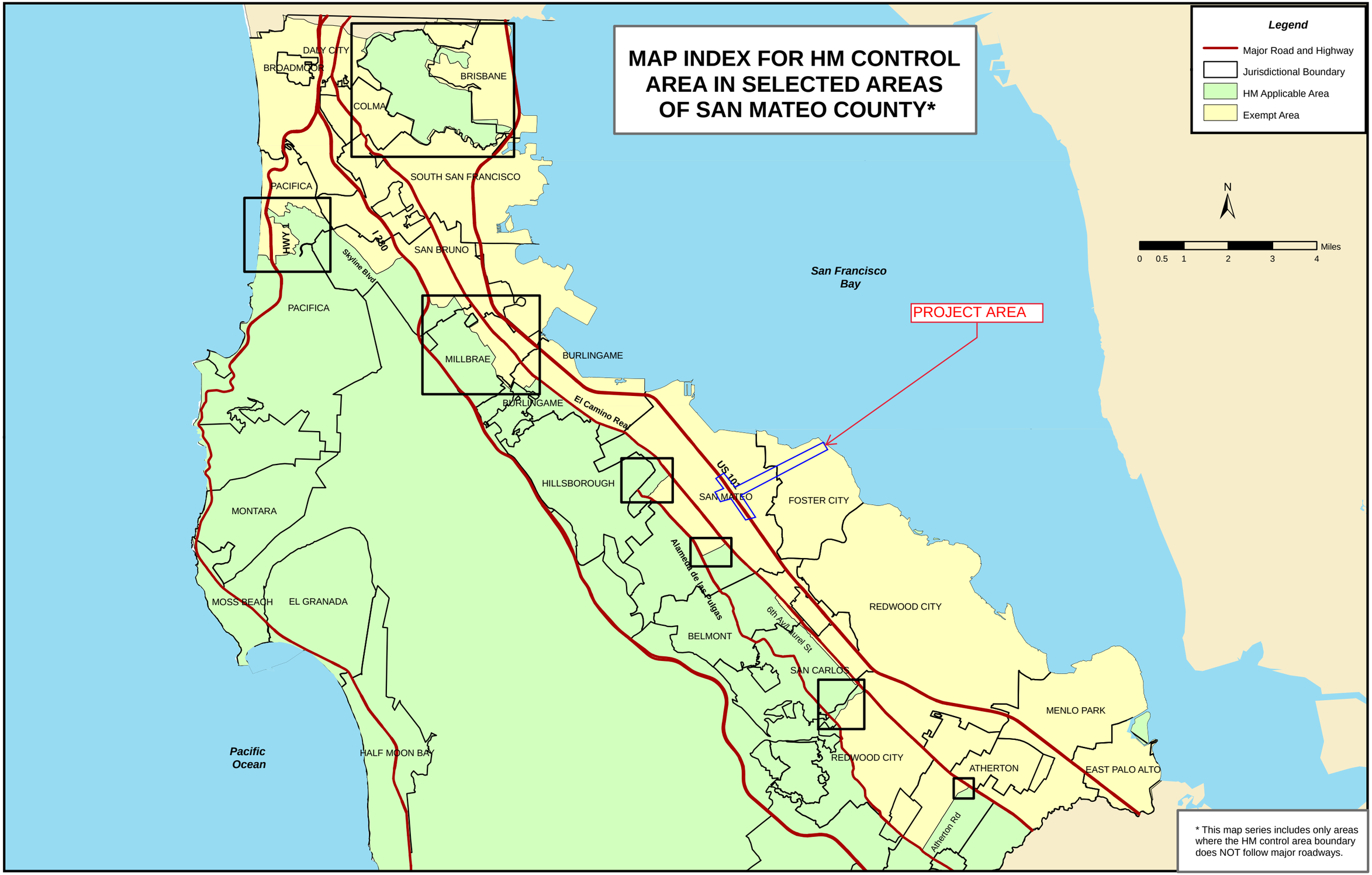
Table of Contents

ATTACHMENT G.1



ATTACHMENT G.2

MAP INDEX FOR HM CONTROL AREA IN SELECTED AREAS OF SAN MATEO COUNTY*



* This map series includes only areas where the HM control area boundary does NOT follow major roadways.

ATTACHMENT G.3

DATE: 06/26/2020

Project ID (EA): 04-2Q790K

No.	Criteria	Yes ✓	No ✓	Supplemental Information for Evaluation
1.	Begin Project evaluation regarding requirement for implementation of Treatment BMPs	✓		See Figure 4-1, Project Evaluation Process for Consideration of Treatment BMPs. Continue to 2.
2.	Is the scope of the Project to install Treatment BMPs (e.g., Alternative Compliance or TMDL Compliance Units)?		✓	If **Yes**, go to 8. If **No**, continue to 3.
3.	Is there a direct or indirect discharge to surface waters?	✓		If **Yes**, continue to 4. If **No**, go to 9.
4.	As defined in the WQAR or ED, does the project: a. discharge to Areas of Special Biological Significance (ASBS), or b. discharge to a TMDL watershed where Caltrans is named stakeholder, or c. have other pollution control requirements for surface waters within the project limits?		✓ ✓ ✓	If **Yes to any**, contact the District/Regional Design Stormwater Coordinator or District/Regional NPDES Coordinator to discuss the Department's obligations, go to 8 or 5. _____*(Dist./Reg. Coordinator initials)* If **No** to all, continue to 5.
5.	Are any existing Treatment BMPs partially or completely removed? (ATA Condition 1, Section 4.4.1)		✓	If **Yes**, go to 8 **AND** continue to 6. If **No**, continue to 6.
6.	Is this a Routine Maintenance Project?		✓	If **Yes**, go to 9. If **No**, continue to 7.
7.	Does the project result in an increase of one acre or more of new impervious surface (NIS)?	✓		If **Yes**, go to 8. If **No**, go to 9.
8.	Project is required to implement Treatment BMPs.	Complete Checklist T-1, Part 1.		
9.	Project is not required to implement Treatment BMPs. _____ *(Dist./Reg. Design SW Coord. Initials)* _____ *(Project Engineer Initials)* _____ *(Date)*	Document for Project Files by completing this form and attaching it to the SWDR.		

ATTACHMENT H

Checklist SW-1, Site Data Sources

Prepared by: Olga Rodriguez Date: 02/23/2020 District-Co-Route: 04-SM-101/92

PM: 10.6–12.9/ R12.0-R14.5 Project ID/EA: 04-2Q790K RWQCB: San Francisco Bay

Information for the following data categories should be obtained, reviewed and referenced as necessary throughout the project planning phase. Collect available project reports and any available documents pertaining to the category and list them and reference your data source. For specific examples of documents within these categories, refer to Section 6.4.3.2. Example categories have been listed below; add additional categories, as needed. Summarize pertinent information in Section 2 of the SWDR.

DATA CATEGORY/SOURCES	Date
Water Quality	
• Caltrans Water Quality Planning Tool	July 2019
• US EPA Rainfall Erosivity Factor Calculator	November 2019
• San Francisco Bay Regional Basin Plan	November 2019
Geotechnical	
• Web Soil Survey - NRCS	July 2019
•	
•	
Topographic	
•	
•	
•	
Hydraulic	
•	
•	
•	
Climatic	
•	
•	
•	
Other Data Categories	
• Preliminary Environmental Analysis Report	July 2019
•	
•	

ATTACHMENT I

Checklist SW-2, Stormwater Quality Issues Summary

Prepared by: Olga Rodriguez Date: 02/26/2020 District-Co-Route: 04-SM-101/92

PM: 10.6–12.9/ R12.0-R14.5 Project ID/EA: 04-2Q790K RWQCB: San Francisco Bay

The following questions provide a guide to collecting critical information relevant to project stormwater quality issues. Consult other Caltrans functional units (Environmental, Landscape Architecture, Maintenance, etc.) and the District/Regional Design Stormwater Coordinator as necessary. Summarize pertinent responses in Section 2 of the SWDR; do not discuss items identified as not applicable.

1.	Determine the receiving waters for the project	☒Complete	☐NA
2.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.	☒Complete	☐NA
3.	Determine if there are any municipal or domestic water supply reservoirs or groundwater percolation facilities within the project limits, as shown by DWP.	☒Complete	☐NA
4.	Determine the RWQCB special requirements, including TMDLs, effluent limits, etc.	☒Complete	☐NA
5.	Determine regulatory agencies seasonal construction and construction exclusion dates or restrictions required by federal, state, or local agencies.	☒Complete	☐NA
6.	Determine if a 401 certification will be required.	☒Complete	☐NA
7.	Identify rainy season.	☒Complete	☐NA
8.	If applicable, determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.	☒Complete	☐NA
9.	If considering Treatment BMPs, determine the soil classification, permeability, erodibility and depth to groundwater.	☒Complete	☐NA
10.	Determine contaminated soils within the project area.	☐Complete	☐NA
11.	Determine the total disturbed soil area of the project.	☒Complete	☐NA
12.	Describe the topography of the project site.	☒Complete	☐NA
13.	List any areas outside of the Caltrans right-of-way that will be included in the project (e.g., contractor's staging yard, work from barges, easements for staging).	☐Complete	☒NA
14.	Determine if additional right-of-way acquisition or easements and right-of-entry will be required for design, construction and maintenance of BMPs. If so, how much?	☐Complete	☒NA
15.	Determine the estimated unit costs for right-of-way should it be needed for Treatment BMPs, stabilized conveyance systems, lay-back slopes, or interception ditches.	☐Complete	☒NA
16.	Determine if project area has any slope stabilization concerns.	☐Complete	☐NA
17.	Describe the local land use within the project area and adjacent areas.	☒Complete	☐NA
18.	Evaluate the presence of dry weather flow.	☐Complete	☐NA

ATTACHMENT J

Checklist SW-3, Measures for Avoiding or Reducing Potential Stormwater Impacts

Prepared by: Olga Rodriguez Date: 02/26/2020 District-Co-Route: 04-SM-101/92

PM: 10.6–12.9/ R12.0-R14.5 Project ID/EA: 04-2Q790K RWQCB: San Francisco Bay

The PE should confer with other functional units, such as Landscape Architecture, Hydraulics, Environmental, Materials, Construction and Maintenance, as needed to assess these issues. Summarize pertinent responses in Section 2 of the SWDR; do not discuss items identified as not applicable.

Options for avoiding or reducing potential impacts during project planning include the following:

1.	Can the project be relocated or realigned to avoid/reduce impacts to receiving waters or to increase the preservation of critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions?	☐Yes	☒No	☐NA
2.	Can structures and bridges be designed or located to reduce work in live streams and minimize construction impacts?	☒Yes	☐No	☐NA
3.	Can any of the following methods be utilized to minimize erosion from slopes:			
	a. Disturbing existing slopes only when necessary?	☒Yes	☐No	☐NA
	b. Minimizing cut and fill areas to reduce slope lengths?	☒Yes	☐No	☐NA
	c. Incorporating retaining walls to reduce steepness of slopes or to shorten slopes?	☐Yes	☐No	☒NA
	d. Acquiring right-of-way easements (such as grading easements) to reduce steepness of slopes?	☐Yes	☒No	☐NA
	e. Avoiding soils or formations that will be particularly difficult to re-stabilize?	☒Yes	☐No	☐NA
	f. Providing cut and fill slopes flat enough to allow re-vegetation and limit erosion to pre-construction rates?	☒Yes	☐No	☐NA
	g. Providing benches or terraces on high cut and fill slopes to reduce concentration of flows?	☐Yes	☐No	☒NA
	h. Rounding and shaping slopes to reduce concentrated flow?	☒Yes	☐No	☐NA
	i. Collecting concentrated flows in stabilized drains and channels?	☒Yes	☐No	☐NA
4.	Does the project design allow for the ease of maintaining all BMPs?	☒Yes	☐No	
5.	Can the project be scheduled or phased to minimize soil-disturbing work during the rainy season?	☐Yes	☐No	
6.	Can permanent stormwater pollution controls such as paved slopes, vegetated slopes, basins, and conveyance systems be installed early in the construction process to provide additional protection and to possibly utilize them in addressing construction stormwater impacts?	☒Yes	☐No	☐NA

ATTACHMENT K

Treatment BMPs
Checklist T-1, Part 1

Prepared by: Olga Rodriguez Date: 02/26/2020 District-Co-Route: 04-SM-101/92

PM: 10.6–12.9/ R12.0-R14.5 Project ID/EA: 04-2Q790K RWQCB: San Francisco Bay

Consideration of Treatment BMPs

This checklist is used for projects that require the consideration of Approved Treatment BMPs, as determined from the process described in Section 4 (Treatment Consideration) and the Evaluation Documentation Form (EDF). This checklist will be used to determine which Treatment BMPs should be considered for each BMP contributing drainage area within the project. Supplemental data will be needed to verify siting and design applicability for final incorporation into a project.

Complete this checklist for each phase of the project. This will help to determine if any changes to the BMP strategy are necessary, based on site specific information gathered during later phases. Use the responses to the questions as the basis of developing the narrative in Section 6 of the Stormwater Data Report to document that Treatment BMPs have been appropriately considered and/or incorporated.

Before evaluating an area for treatment capabilities or to incorporate a Treatment BMP, calculate the numeric sizing requirement for each contributing drainage area (WQV from the 85th percentile 24-hour storm event or WQF rate). Soil and geometric information for the project area will be necessary to use this Checklist.

ATTACHMENT L

Identify the overall project PCTA

Refer to Section 4.4 Treatment Areas for more information on defining these areas.

PCTA = NNI + RIS + ATA (1 Impervious) + ATA (2)

NNI = Net New Impervious Area

RIS = Replaced Impervious Surface

ATA (1 Impervious) = Additional Treatment Area required for existing Treatment BMPs that were removed or modified as part of the project

ATA (2) = Additional Treatment Area required when NNI is 50 percent or greater than total project impervious

What is the PCTA for the project? 17.70 (Alt. 1); 19.50 (Alt.2) **Acres** (A in Table E-1)

The PCTA is the impervious area required to be treated by the project. The PE is to incorporate BMPs until the summation of the treated impervious area of all the BMPs is equivalent to the PCTA for the Project.

Once this area and any ATA 1 (Pervious) has been treated, the project is in compliance with the post construction treatment requirement.

Total Maximum Daily Load (TMDL) Retrofit Projects

If the project is installing Treatment BMPs to only address TMDL requirements, then there is no required PCTA. The Treatment BMPs for a TMDL retrofit project should be designed to treat the impervious and pervious contributing drainage areas, as they are both eligible for compliance unit (CU) credits.

Overall Project Evaluation

Answer all questions, unless otherwise directed.

A. Overall Project Consideration

1. Is the project in a watershed with prescriptive Treatment BMP requirements in an adopted TMDL implementation plan or are there any other requirements for project area (e.g., District, Regional Board, Lawsuit)? ☐ Yes ☒ No

   If Yes, consult the District/Regional Design Stormwater Coordinator or District/Regional NPDES Coordinator to determine if there are written agreements related to specific Treatment BMPs. In this case, determine if the rest of this checklist needs to be followed to address other post construction requirements. If not, document BMP(s) in the Individual Treatment BMP Summary Table, provide information on the basis of the BMP requirement and any regulatory coordination in the SWDR narrative, and complete Table E-2. Otherwise, continue.

   If No, continue.

ATTACHMENT L

2. Does the receiving water have a TMDL for litter/trash, or is there a region specific requirement related to trash? ☒ Yes ☐ No

   If Yes, first evaluate BMPs that can treat other pollutants and are considered to be full capture devices (GSRDs or other) for litter/trash. If other BMPs cannot be sited, consult with the District/Regional Design Stormwater Coordinator or District/Regional NPDES Coordinator to determine if standalone full capture devices (GSRDs or other) are required to be incorporated. If standalone devices are required and no other Treatment BMPs are being considered, go to question 6 of "Individual BMP Evaluation".

   If No, continue.

3. Is the project located in an area that uses traction sand more than twice a year? ☐ Yes ☒ No

   If Yes, first consider BMPs that can treat other pollutants and can capture traction sand. If other BMPs cannot be sited, consult the District/Regional Design Stormwater Coordinator to determine if standalone traction sand trap devices should be incorporated.

   If standalone devices are required and no other Treatment BMPs are being considered, go to question 6 of "Individual BMP Evaluation". Otherwise, continue with this checklist to identify Treatment BMPs that provide traction sand and other pollutant removal, or to design Treatment BMPs in series.

   If No, continue.

B. Dual Purpose Facilities

   Does the project have (or propose to include) any dual purpose facilities that could meet treatment requirements (e.g., Dry Weather Flow Diversion, flood control basins, etc.)? ☐ Yes ☒ No

   If Yes and 100 percent of the PCTA and ATA 1 (Pervious) will be treated by the dual purpose facility, go to question 6 of "Individual BMP Evaluation".

   If Yes, but 100 percent of the PCTA and ATA 1 (Pervious) has not been addressed, continue.

   If No, continue.

C. Evaluate overall project area for infiltration opportunities using existing and proposed roadside surfaces (DPP Infiltration Areas). Assure the DPP Infiltration Area is stabilized to handle highway drainage design flows, for both sheet and concentrated flows (See HDM Section 800).

   Document DPP Infiltration Areas on the "Individual Treatment BMP Summary Table" located at the end of this checklist.

ATTACHMENT L

1. Based on site conditions, do the DPP Infiltration Areas infiltrate 100 percent of the WQV generated by the PCTA and ATA 1 (Pervious) for the project? ☐ Yes ☐ No

   Yes, go to question 6 of "Individual BMP Evaluation".

   If No, account for area infiltrated and continue.

2. Can infiltration for these areas be increased by using soil amendments or other means? ☐ Yes ☐ No

   If Yes, and 100 percent of the WQV generated by the PCTA and ATA 1 (Pervious) is infiltrated, go to question 6 of "Individual BMP Evaluation".

   If Yes, but 100 percent of the WQV generated by the PCTA and ATA 1 (Pervious) is not infiltrated, continue with this checklist to identify Treatment BMPs that will treat the remaining PCTA and ATA 1 (Pervious).

   If No, continue.

ATTACHMENT L

Individual BMP Evaluation

Answer the following questions for each Treatment BMP location being considered. The following process must be followed until the PCTA and ATA 1 (Pervious) or desired treatment area (Alternative Compliance or TMDL CUs) has been achieved; for TMDL CUs, consider both impervious and pervious contributing drainage areas. Use the Individual Treatment BMP Summary Table at the end of the checklist to summarize the selected BMP(s) based on the findings of the following questions for each BMP contributing drainage area.

1. Infiltration Devices (Infiltration Basin, Trench, or other device)

   a. Can 100 percent of the BMP contributing drainage area WQV (or remaining WQV, if in series with a DPP Infiltration Area or other BMP) be infiltrated? ☐ Yes ☐ No

      If Yes, go to question 6.

      If No, continue.

2. Biofiltration Devices (Biofiltration Strips and Swales)

   a. Is this a TMDL retrofit project or is the project within a TMDL watershed or 303(d) impaired receiving water body area? ☐ Yes ☒ No

      If Yes, when designing the biofiltration device, determine the percent WQV infiltrated from both the impervious and pervious BMP contributing drainage areas. Consider using existing or amended soils:

      i. If infiltration is >50 percent, continue to b.

      ii. If infiltration is ≤50 percent, go to question 3.

      If No, continue to b.

   b. Can biofiltration devices be designed to: ☒ Yes ☐ No

      i. Treat 100 percent of the WQF/WQV (or remainder, if in series with a DPP Infiltration Area or other BMP) from the BMP contributing drainage area, and

      ii. Meet the siting and design criteria of the Caltrans biofiltration device design guidance.

      If Yes, continue to c.

      If No, go to question 3.

   c. Biofiltration devices are considered to be an effective method of treatment, go to question 6.

ATTACHMENT L

3. Earthen type BMPs (Detention Devices, Media Filters, or other devices)

   a. Is this a TMDL retrofit project or is the project within a TMDL watershed or 303(d) impaired receiving water body area? ☐ Yes ☐ No

   If Yes, when designing the earthen type BMP, determine the percent WQV infiltrated from both the impervious and pervious BMP contributing drainage area. Consider using existing or amended soils:

   i. If infiltration is >50 percent, continue to b.

   ii. If infiltration is ≤50 percent, go to question 4.

   If No, continue to b.

   b. Can earthen type BMPs (standalone or in series with other approved Treatment BMPs) be designed to: ☐ Yes ☐ No

   iii. Treat 100 percent of the WQV (or remainder, if in series with a DPP Infiltration Area or other BMP) from the BMP contributing drainage area, and

   iv. Meet the criteria of the Caltrans design guidance for the treatment device being considered.

   If Yes, continue to c.

   If No, go to question 4.

   c. Earthen type BMPs are considered to be an effective method of treatment, go to question 6.

ATTACHMENT L

4. Targeted Design Constituent (TDC)

   This approach will compare the effectiveness of individual BMPs and allow the PE to use judgment when evaluating BMP feasibility (site constraints, safety, maintenance requirements, life-cycle costs, etc.).

   a. Does the project discharge to a 303(d) impaired receiving water or a receiving water in a TMDL watershed where Caltrans is a named stakeholder? ☐ Yes ☐ No

      If Yes, is the identified pollutant(s) considered to be a TDC (check all that apply below)? Continue to b. ☐ Yes ☐ No

      ☐ sediments
      ☐ phosphorus
      ☐ nitrogen
      ☐ copper (dissolved or total)
      ☐ lead (dissolved or total)
      ☐ zinc (dissolved or total)
      ☐ general metals (dissolved or total)[1]

      If No or if no TDC is identified, use Matrix A to select BMPs and go to question 5.

   b. Treating Only Sediment. Is sediment a TDC? ☐ Yes ☐ No

      If Yes, use Matrix A to select BMPs and go to question 5.

      If No, continue to c.

   c. Treating Only Metals. Are copper, lead, zinc, or general metals listed TDCs? ☐ Yes ☐ No

      If Yes, use Matrix B to select BMPs, and go to question 5.

      If No, continue to d.

   d. Treating Only Nutrients. Are nitrogen and/or phosphorus listed TDCs? ☐ Yes ☐ No

      If Yes, use Matrix C to select BMPs, and go to question 5.

      If No, continue e.

   e. Treating both Metals and Nutrients. Is copper, lead, zinc, or general metals AND nitrogen or phosphorous a TDC? ☐ Yes ☐ No

      If yes, use Matrix D to select BMPs, and go to question 5.

      If No, continue.

ATTACHMENT L

[1] General metals is a designation used by Regional Water Boards when specific metals have not yet been identified as causing the impairment.

BMP Selection Matrix A: General Purpose Pollutant Removal			
Consider BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Strip: HRT > 5 Austin filter (concrete) Austin filter (earthen) Delaware filter	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip Biofiltration Swale
Tier 2	Strip: HRT < 5 Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Swale	Austin filter (concrete) Delaware filter
HRT = hydraulic residence time (min) All BMPs shown are considered to be effective, but some more than others. The PE should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			

BMP Selection Matrix B: Any metal is the TDC, but not nitrogen or phosphorous			
Consider BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Austin filter (earthen) Austin filter (concrete) Delaware filter	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip Biofiltration Swale
Tier 2	Strip: HRT > 5 Strip: HRT < 5 Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
HRT = hydraulic residence time (min) All BMPs shown are considered to be effective, but some more than others. The PE should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			

BMP Selection Matrix C: Phosphorous and / or nitrogen is the TDC, but no metals are the TDC

ATTACHMENT L

Consider BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Austin filter (earthen) Austin filter (concrete) Delaware filter*	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip Biofiltration Swale
Tier 2	Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
All BMPs shown are considered to be effective, but some more than others. The PE should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			
*Delaware filters would be ranked in Tier 2 if the TDC is nitrogen only, as opposed to phosphorous only or both nitrogen and phosphorous.			

BMP Selection Matrix D: Any metal, plus phosphorous and / or nitrogen are the TDCs			
Consider BMPs (or combinations of) to treat the contributing drainage area WQV with BMPs listed in this table. First evaluate Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility. BMPs are chosen based on the infiltration category determined for BMP contributing drainage area. BMPs in other infiltration categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Austin filter (earthen) Austin filter (concrete) Delaware filter*	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches	Austin filter (earthen) Detention (unlined) Infiltration basins Infiltration trenches Biofiltration Strip Biofiltration Swale
Tier 2	Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
All BMPs shown are considered to be effective, but some more than others. The PE should use professional judgment when selecting BMPs based on overall feasibility. All BMPs are shown to demonstrate equivalent effectiveness.			
*In cases where earthen BMPs also infiltrate, Delaware filters are ranked in Tier 2 if the TDC is nitrogen only, but they are Tier 1 for phosphorous only or both nitrogen and phosphorous.			

ATTACHMENT L

5. Does the project discharge to a 303(d) receiving water that is listed for mercury or low dissolved oxygen? ☒ Yes ☐ No

   If Yes, contact the District/Regional NPDES Coordinator to determine if standing water in a Delaware Media Filter or Wet Basin would be a risk to downstream water quality. Continue to question 6.

   If No, continue to question 6.

6. Identify the Treatment BMPs being considered and complete the Individual Treatment BMP Summary Table and Overall Project Treatment Summary Table on the following pages. Refer to Appendix B of the PPDG and review the checklists identified below for every Treatment BMP under consideration. ☒ Complete

   Document the basis of design in the SWDR narrative and complete Table E-2.

   ____ DPP Infiltration Areas: Checklist T-1, Part 11

   ____ Infiltration Devices: Checklist T-1, Part 2

   _X_ Biofiltration Strips and Biofiltration Swales: Checklist T-1, Part 3

   ____ Detention Devices: Checklist T-1, Part 4

   ____ Traction Sand Traps: Checklist T-1, Part 5

   ____ Dry Weather Diversion: Checklist T-1, Part 6

   _X_ GSRDs: Checklist T-1, Part 7

   ____ Media Filter [Austin Sand Filter and Delaware Filter]: Checklist T-1, Part 8

   Note:

   Multi-Chamber Treatment Train (MCTT) is not listed here because Caltrans has found that other approved BMPs are equally effective and more sustainable due to lower life cycle costs.

   Wet Basins are not listed here due to feasibility issues due to site feasibility and issues with long term operation and maintenance.

   MCTT and Wet Basins may be considered or implemented upon the recommendation of the District/Regional Design Stormwater Coordinator.

7. Prepare cost estimate, including right-of-way, and identify any pertinent site specific determination of feasibility for selected Treatment BMPs and include in the SWDR for approval. ☒ Complete

ATTACHMENT L

Individual Treatment BMP Summary Table

☐ Complete

List the selected BMPs based on the findings of this checklist and the treated areas associated with each BMP in Table E-2. For projects with multiple BMPs, add rows (if needed), or attach a separate sheet displaying the following information.

Each BMP must be tracked in Table E-2. Districts may use a modified table based upon their needs. See Section 6.6 for additional information.

Table E-2. Individual Treatment BMP Summary Table[1]

BMP Identifier-Number	BMP Type	Treated Impervious Area (CT RW) (ac)	Treated Impervious Area (Outside CT RW) (ac)	Treated Pervious Area (CT RW) (ac)	Treated Pervious Area (Outside CT RW) (ac)	Treated WQV/WQF (%)
Total Area to be Treated (acre)		(B in Table E-1)	(C in Table E-1)			

[1] The treated areas identified in this table are a product of the BMP CDA and Treated WQV/WQF (%).

The BMPs summary table and cost breakdown will be included at the PA&ED phase.

ATTACHMENT L

Treatment BMPs

Checklist T-1, Part 3

Prepared by: Olga Rodriguez Date: 02/26/2020 District-Co-Route: 04-SM-101/92

PM: 10.6–12.9/ R12.0-R14.5 Project ID/EA: 04-2Q790K RWQCB: San Francisco Bay

Biofiltration Swales / Biofiltration Strips

Feasibility

1. Do the climate and site conditions allow vegetation to be established? ☒Yes ☐No
   If "No", evaluate other BMPs.
2. Can biofiltration swale be designed with a slope between 0.25 and 6 percent (with 1 to 2 percent preferred)? ☒Yes ☐No
   If "No", Biofiltration Swales are not feasible.
3. Can biofiltration strips be designed with a maximum slope of 2H:1V (with 4H:1V or flatter preferred)? ☒Yes ☐No
   If "No", Biofiltration Strips are not feasible.
4. Are Biofiltration device(s) proposed at sites where known contaminated soils exist? ☐Yes ☒No
   If "Yes", consult with District/Regional NPDES Coordinator about how to proceed.
5. Does adequate area exist within the RW to place Biofiltration device(s)? ☒Yes ☐No
   If "Yes", continue to Design Elements section. If "No", continue to Question 6.
6. If adequate area does not exist within RW, can suitable, additional RW be acquired to site Biofiltration devices and how much RW would be needed to treat WQF? ☐Yes ☒No
   _____ acres
   If "Yes", continue to Design Elements section. If "No", continue to Question 7.
7. If adequate area cannot be obtained, document in Section 6 of the SWDR that the inability to obtain adequate area prevents the incorporation of these Treatment BMPs into the project. ☐Complete

ATTACHMENT M

Design Elements

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 6 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1.	Has the District Landscape Architect provided vegetation mixes appropriate for climate and location? *	☐Yes	☒No
2.	Can the biofiltration swale be designed as a conveyance system under any expected flows > the WQF event, as per HDM Chapter 800? * (e.g., freeboard, minimum slope)	☒Yes	☐No
3.	Can the biofiltration swale be designed as a water quality treatment device under the WQF while meeting the required HRT, depth, and velocity criteria? (Reference Appendix B, Section B.4.3)*	☒Yes	☐No
4.	Is the maximum length of a biofiltration strip ≤ 100 ft? Strips > 100 ft. may still be considered as long as potential erosion issues have been addressed. **	☒Yes	☐No
5.	Has the minimum width (perpendicular to flow) of the invert of the biofiltration swale received the concurrence of District Maintenance? *	☐Yes	☒No
6.	Can biofiltration swales be located in natural or low cut sections to reduce maintenance problems caused by animals burrowing through the berm of the swale? *	☒Yes	☐No
7.	Has the infiltration rate of the bio-filtration device been calculated and maximized through amendments where appropriate?**	☒Yes	☐No
8.	Have Biofiltration Systems been considered for locations upstream of other Treatment BMPs, as part of a treatment train or pretreatment? ** If "Yes", document the amount of runoff treated (WQV/WQF).	☐Yes	☒No
9.	Has the lining material been selected based on the permissible shear and velocity (refer to HDM Chapter 860 and Table 865.2)?*	☒Yes	☐No

ATTACHMENT M

Treatment BMPs

Checklist T-1, Part 7

Prepared by: Olga Rodriguez Date: 02/26/2020 District-Co-Route: 04-SM-101/92

PM: 10.6–12.9/ R12.0-R14.5 Project ID/EA: 04-2Q790K RWQCB: San Francisco Bay

Gross Solids Removal Devices (GSRDs)

Feasibility

1.	Is the receiving water body downstream of the tributary area to the proposed GSRD on a 303(d) list or has a TMDL for litter been established?	☒Yes	☐No
2.	Are the devices sized for flows generated by the peak drainage facility design event (1-year, 1-hour) or can peak flow be diverted?	☐Yes	☐No
3.	Are the devices sized to contain gross solids (litter and vegetation) for a period of one year?	☐Yes	☐No
4.	Is there sufficient access for maintenance and large equipment (vacuum truck)?	☒Yes	☐No

If "No" to any question above, then Gross Solids Removal Devices are not feasible. Note that Biofiltration Systems, Infiltration Devices, Detention Devices, Dry Weather Flow Diversion, and Media Filters may be considered for litter capture, but consult with District/Regional NPDES Coordinator if proposed to meet a TMDL for litter.

5.	Does adequate area exist within the RW to place Gross Solids Removal Devices? If "Yes", continue to Design Elements section. If "No", continue to Question 6.	☒Yes	☐No
6.	If adequate area does not exist within RW, can suitable, additional RW be acquired to site Gross Solids Removal Devices and how much RW would be needed? _____ acres If "Yes", continue to Design Elements section. If "No", continue to Question 7.	☐Yes	☐No
7.	If adequate area cannot be obtained, document in Section 6 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project.	☐Complete	

ATTACHMENT N

Design Elements – Linear Radial Device

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 6 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1. Does sufficient hydraulic head exist to place the Linear Radial GSRD? * ☐Yes ☐No
2. Is a fiberglass reinforced plastic frame and grate being considered for high vandalism areas? Consult District Maintenance. ** ☐Yes ☐No
3. Was the litter accumulation rate of 10 ft^3/ac/yr (or a different rate recommended by District Maintenance) used to size the device? * ☐Yes ☐No
4. Was the overflow release device sized for the design storm event?* ☐Yes ☐No
5. Were the standard detail sheets used for the layout of the devices? ** ☐Yes ☐No
   If No, consult with OHSD and District/Regional Design Stormwater Coordinator.
6. Is the maximum depth of the storage within 10 ft of the ground surface, or another depth as required by District Maintenance? * ☐Yes ☐No

Design Elements – Inclined Screen

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 6 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1. Does sufficient hydraulic head exist to place the Inclined Screen GSRD? * ☐Yes ☐No
2. Was the litter accumulation rate of 10 ft^3/ac/yr (or a different rate recommended by District Maintenance) used to size the device? * ☐Yes ☐No
3. Is a fiberglass reinforced plastic frame and grate being considered for high vandalism areas? Consult District Maintenance. ** ☐Yes ☐No
4. Was the overflow release device sized for the design storm event?* ☐Yes ☐No
5. Were the standard details sheets used for the layout of the devices? ** ☐Yes ☐No
   If No, consult with OHSD and District/Regional Design Stormwater Coordinator.
6. Is the maximum depth of the storage within 10 ft of the ground surface, or another depth as required by District Maintenance? * ☐Yes ☐No

ATTACHMENT N

KEHOE AVE

0.16 AC

NB 101

SB 101

0.44 AC

1.53 AC

1.21 AC

MATCH LINE SEE BELOW

© 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DS

0.21 AC

0.14 AC

NB 101

SB 101

0.58 AC

0.65 AC

SR 92

0.24 AC

0.55 AC

1.00 AC

MATCH LINE SEE ABOVE

MATCH LINE SEE NEXT SHEET

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LEGEND

- Exist BIOSWALE
- Exist BIOSTRIP
- PROPOSED BIOSTRIP
- ESA
- DRAINAGE AREA
- POTENTIALLY LOST TREATMENT AREAS

ATTACHMENT O

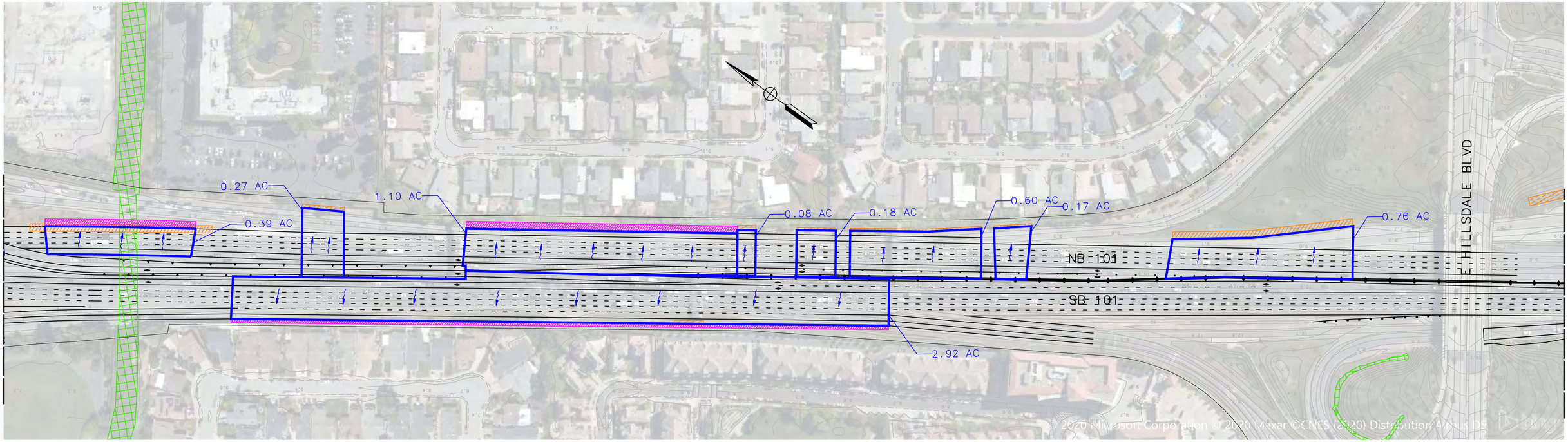
SCALE: 1" = 100'

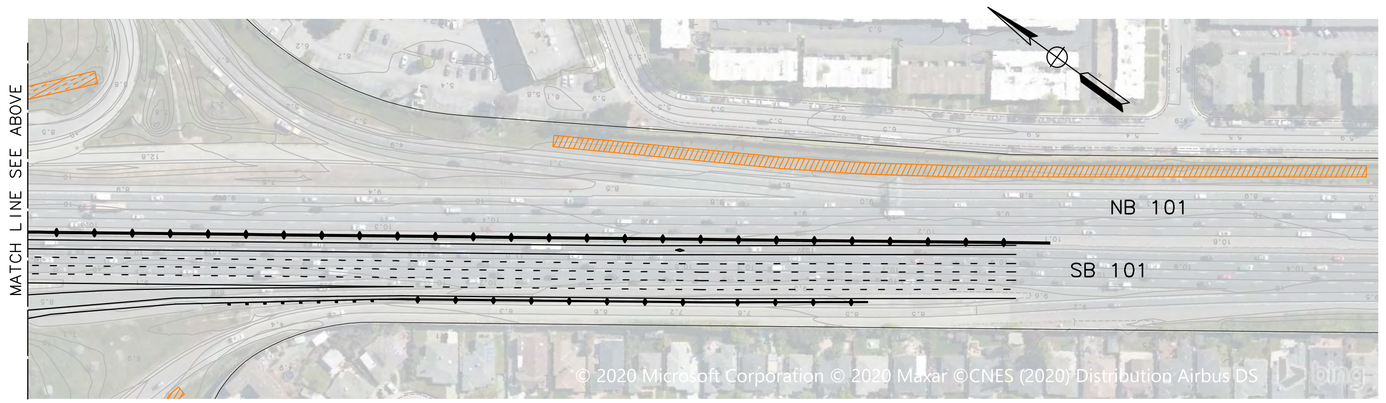
US 101 / SR 92 DIRECT CONNECTOR

EA 04-2Q800

STORM WATER TREATMENT FEATURES & WATERSHED AREA MAPS

MARK THOMAS





SCALE: 1" = 100'

ATTACHMENT O

US 101 / SR 92 DIRECT CONNECTOR

EA 04-2Q800

STORM WATER TREATMENT FEATURES & WATERSHED AREA MAPS

MARK THOMAS

LEGEND

PROPOSED STRUCTURE

OVERLAP AREA

0 100 200 400

Graphic Scale

PROPOSED STRUCTURE OVERLAP EXISTING PAVEMENT AREA		
TOTAL	62,485 SF	1.43 ACRES

ATTACHMENT P

US 101 / SR 92 INTERCHANGE
EA 04-2Q800

PAVEMENT OVERLAP AREAS

SAN MATEO COUNTY TRANSPORTATION AUTHORITY

MARK THOMAS

Attachment I

PSR-PDS Survey Needs Questionnaire

US 101 / SR 92 Direct Connector Project

PSR-PDS SURVEY NEEDS QUESTIONNAIRE

The project datums, vertical and horizontal, need to be established as soon as possible in the schedule, and all other mapping adjusted to the project datums.

What Survey Control Datums will be used for project design and mapping?

Vertical Control

- ☑ NAVD 1988 (Preferred)
- ☐ NGVD 1929 (Alternative)
- ☐ Other (Must consult with Caltrans Surveys)

Horizontal Control

California Coordinate System of 1983

- ☑ Epoch __2017.50___
- ☐ Other than CCS83 (Must consult with Caltrans Surveys)

Will the project need a Sea Level Rise Risk Assessment?	***Answer: Yes***
Does the project adjoin the ocean or tidal waterways?	***Answer: Yes***
Is the existing highway protected by levees, sea walls, or rip-rap?	***Answer: No***

Will existing as-builts, centerlines, or base mapping require any datum or unit conversions?

Answer: Potentially, since some of the project as-builts are in older format (NGVD 1929) and/or in metric units. However, new surveys will be done to prepare new topo base maps and control lines with latest standards.

Are the right of way record maps current?

Answer: To be determined (record maps for the project will be obtained at a later time)

Is there any need to accelerate design accuracy surveys for this project?

Answer: Potentially, PDT may be looking at possible ways to accelerate project schedule.

Attachment J

Quality Management Plan

Quality Management Plan

For Preparation of Project Initial Documents for Locally Implemented Projects on the State Highway system

June 15, 2020

AGREEMENT COVER SHEET

Abstract: This section briefly addresses the quality assurance and quality control procedures that will be implemented for the development, review and approval of Project Initial Documents (PID) for Highway System Projects Sponsored and/or implemented by local and regional agencies and others.

QUALITY MANAGEMENT PLAN
FOR
US-101 / SR-92 DIRECT CONNECTOR PROJECT

Project Study Report-Project Development Support

SM-04-101-11.5/12.3 EA 2Q790

Approved by M Suleiman 9/23/20
Mohammad Suleiman, Caltrans Project Manager Date

Approved by 09/25/2020
Arul Edwin, SMCTA Project Manager Date

Approved by 06/16/20
Sasha Dansky, Mark Thomas Project Manager Date

TABLE OF CONTENTS

Attachments

Introduction

The purpose of the Quality Management Plan is to facilitate an effective and efficient process for the development, review, and approval of US-101 / SR-92 Direct Connector Project Initial Document (PID) for State Highway System (SHS) projects sponsored by San Mateo County Transportation Authority (SMCTA). The Consultant Project Manager has developed and will follow this Quality Management Plan that meets the standards of professional practice and satisfies requirements of the project scope, cost, and schedule. The Project Managers from Caltrans and SMCTA shall ensure that all Project Development Team (PDT) members utilize the Quality Management Plan elements as described in this document during the production and review of PID. Quality Assurance/Quality Control (QA/QC) will be performed before deliverables are presented to Caltrans for review. Each team member must understand the project objectives, apply sound engineering principles and is expected to produce quality, accurate, and complete documents within the project schedule and budget. Project documents will be prepared in accordance with current Caltrans regulations, policies, procedures, manuals, and standards.

The following information describes the quality procedures that will be implemented for work performed during the development, review, and approval of US-101 / SR-92 Direct Connector Project PSR-PDS.

Quality Control Reviews

1. Quality Control (QC) Reviews shall be conducted for all deliverables. A project schedule shall be developed with the consensus of the PDT that identifies anticipated reports, submittal dates and review periods. See Attachment A for the list of deliverables and Attachment D for the project schedule.
2. Prior to submission to Caltrans, each deliverable will be subject to review by senior staff and/or Mark Thomas Project Manager, the SMCTA Project Manager. The review and documentation process is described in Attachment C, Project Quality Assurance/Quality Control Plan.
3. Project documents and deliverables will be reviewed for conformance with project design criteria, legibility, and completeness and compliance with regulatory and code requirements.
4. All QC comments will be evaluated by the lead author for the document, discussed with the QC reviewer as needed and, if appropriate, incorporated into the deliverable. SMCTA and Caltrans Project Managers will review and approve the resolution of each comment.
5. The Quality Control Review Form, as shown in Attachment B, shall be used to document all quality control reviews.

Checking of Calculations

Final report calculations associated with the conceptual alternatives, cost estimates, and traffic technical reports shall be checked for reasonableness. All calculations shall be independently checked by a different qualified technical staff than the one who prepared them.

Checking of Drawings

Conceptual geometric plans figures, mapping, and preliminary bridge plans (if applicable) shall be checked in accordance with established standards (e.g. Highway Design Manual and local standards).

Quality Assurance

The Project Managers from Caltrans and SMCTA, along with SMCTA's consultant(s) will be responsible

for the development of deliverables and assure that the stated quality control procedures are being followed.

Independent Quality Assurance (IQA)

Caltrans Project Manager will perform an IQA to review and approve all project deliverables. Caltrans project management would ensure that Caltrans function units provide or remain responsible for IQA of all project deliverables.

QA/QC Duties and Responsibilities

Quality control begins with assigning the most appropriate person to each task. Each member of the team should be responsible for controlling the quality of the product, beginning with the project staff through to the Project Managers. The qualifications of the team members overseeing and doing the work should be identified. All team members should be in constant communication with the each other and their respective Principals and Project Managers in regards to project status, schedule, and any issues that might arise during the development of the PID.

The duties and responsibilities of each of the project members in coordinating and guiding the project efforts are described below:

a. **Principals-in-Charge (PICs)** – Responsible for allocation of resources and monitoring of the project to ensure adherence to the project objectives, schedule, budget, approvals, and ensuring that the QC/QA plan is in place and being implemented. Provides periodic audits of technical work and performance of respective staff.

b. **Caltrans Project Manager -** Responsible for Independent Quality Assurance as described in the Cooperative Agreement.

c. **SMCTA Manager** – Responsible for completion of project scope and tasks, and adherence to project schedule and budget, including QA/QC program. Responsible for technical review and approval of project documents before issuance to the Caltrans; certifies that each submittal has been prepared and checked in accordance with Caltrans standards, policies, and procedures, sound engineering practices and represents a quality product; and maintains frequent contact and communication with the Caltrans Project Manager to assure satisfaction with the progress and performance.

d. **Consultant Project Manager** - Responsible for implementation of the QA/QC practices and processes and ensures consistency with Caltrans standards, policies, and procedures. Identifies the quality control actions required to be taken, the resources to be applied to these quality control actions, and interaction of these activities with the other elements of work. Identifies the personnel involved and their duties; allocates time, effort, and resources to the quality control function; and reviews and revises the allocated resources appropriately as the work progresses. Responsible for production of the technical work produced by staff. Assist the SMCTA Project Manager in the execution of the Quality Management Plan. Reports to the SMCTA Project Manager and works closely with SMCTA in the early identification and resolution of any product deficiencies. This includes but is not limited to: (a) Perform periodic reviews of quality control documentation and (b) identification and control of nonconforming conditions

d. **Technical Staff** – Responsible for the quality of the work produced within their respective disciplines. Establishes operating guidelines and areas of responsibility within the activity; monitors the work periodically to assure adherence to the contract scope of services and to the established reviewing procedures to ensure consistency with Caltrans standards, policies, and procedures. Advises the Consultant Project Manager regarding the progress of work and of any circumstances that may require particular attention; reviews work prior to submittal to the Project Managers for quality control review. Resolves QC review comments, insures comments are incorporated into the final document and reviews completed work before it is transmitted to the SMCTA Project Manager for approval prior to submittal to the Caltrans.

Document Control

SMCTA and Consultants shall make available and maintain electronic records and hard copies of drafts and final reports for inspection upon request during the development of the PSR-PDS.

Control of Sub-Consultants

If a portion of the scope of work is subcontracted out by SMCTA's Consultant, then all sub-consultants will have the same responsibilities as the SMCTA's Consultant.

ATTACHMENT A

LIST OF DELIVERABLES AND ASSIGNED QC REVIEWERS

Task No	Deliverable	Originator/Author	Technical QC Reviewer
1.4	Quality Management Plan	Kira Davis (MT)	Sasha Dansky (MT)
7.1	Project Schedule	Sasha Dansky	Arul Edwin
1.4	QA/QC Plan	Kira Davis	Sasha Dansky
4	Draft Project Purpose and Need	Sasha Dansky Jeff Zimmerman (AECOM)	Arul Edwin
5	Geometric Engineering Layout Plans and Cross-Sections	Kira Davis	Sasha Dansky
6.4.3	Intersection Control Evaluation (ICE)	Swathi Korpu (AECOM)	Swathi Korpu (AECOM)
6.4.1	Traffic Engineering Performance Assessment (TEPA)	Swathi Korpu	Swathi Korpu
6.2	Preliminary Environmental Analysis Report (PEAR)	Kristin Tremaine (AECOM)	Jeff Zimmerman (AECOM)
7.2.1	Draft PSR-PDS	Kira Davis	Sasha Dansky
7.2.2	Final PSR-PDS	Olga Rodriguez	Sasha Dansky
6.1	Initial Site Assessment	Kristin Tremaine	Jeff Zimmerman
6.5	Storm Water Evaluation & Documentation	Harfateh Grewal	Sasha Dansky
6.8	Risk Register	Olga Rodriguez	Sasha Dansky
6.9	Capital Cost Estimates	Olga Rodriguez	Sasha Dansky
7.3	Supplemental Scoping Documents	Olga Rodriguez	Sasha Dansky

ATTACHMENT B - QUALITY CONTROL REVIEW FORM
Quality Control Review Sign-Off Form

Client:	**San Mateo Transportation Authority**	**Date to Reviewer:**	**5/21/20**
Project Name:	**101/92 Direct Connector PSR/PDS**	**Review Deadline:**	**5/23/20**
Client & Job Number:	**SMCTA SJ-18127**	**Actual Review Date:**	**5/22/20**
Project Manager:	**Sasha Dansky**	**Deliverable Due Date:**	**5/25/20**
Reviewer:	**Matt Brogan**	**Actual Hours:**	**4**
Production Coordinator:	**Olga Rodriguez**	**Project Type:**	
Item Reviewed:	**PSR/PDS 101/92 Direct Connector**	**Task/Activity:**	
Project Task or Phase:	**Final PSR/PDS Task 5, 6, 7**		

Deliverable %: **100%** **Internal Review** **External Review**

Type of Review	Comment Sheet Attached/Emailed	Completed by Reviewer	
		Initial	Date
Reports:			
Environmental			
Master Plans			
Reports and Documents		MB	5/22/2020
Technical Memorandum			
Other:			
Design:			
Calculations		OR	5/22/2020
Civil		OR	5/22/2020
Cost Estimates		OR	5/22/2020
Electrical			
Instrumentation & Control			
Process			
Structural		EF	
Stormwater		MB	
Other:			

Notes:
Please return "signed" QC Review Sign-off Form and markups to your assigned Production Coordinator.

Signatures:

Project Manager	05/24//20 **Date - Response to Comments**
QC Reviewer	05/24//20 **Date - Resolution Accepted**

Instructions:
1) Project Manager fills out QC Review form & transmits to assigned QC Reviewer with document(s);
2) After review, QC Reviewer returns reviewed document/completed QC Review form to PM with comments:
3) Project Manager is responsible for reviewing comments, making appropriate changes/notations, & informing QC Reviewer of changes made;
4) QC Reviewer completes form upon resolution.

QA-QC Program Coord.

Signature	6/16/20 **Date**

Attachment K

Division of Engineering Services PSR-PDS Scoping Checklist

ARTICLE 11

Division of Engineering Services
PSR-PDS Scoping Checklist

Project Information

District: 4 County: San Mateo Route: US 101 / SR 92 (Post Mile): PM 10.6-12.9/ PM R12.0-R14.5
EA: 04-2Q790 Project ID#: 0419000049

Project Description**:** US 101 / SR 92 Direct Connector Project

Project Manager: Mohammad Suleiman Phone # (510) 622-5943

DES Project Liaison Engineer* (PLE): Reto Schaerli Phone # (916) 227-8875

DES Special Funded Projects Liaison Engineer: Phone #

DES Consultant Management Engineer: Phone #

*The Project Liaison Engineer will provide assistance with the completion of this form.

Project Scope

DES acknowledges that scope is in development at this time. The Project Liaison Engineer is available to assist the District in determining the involvement of DES functional units. The intent of the checklist is to gather as much information as possible on the alternatives to accurately identify the involvement of DES.

Describe and identify in the following sections a general description of improvements anticipated as part of the project scope that will require DES functional unit involvement.

Check applicable boxes describing proposed scope of project.

☐ New Expressway/Freeway on new alignment	☐ Other Roadway Realignment	☐ Widen Highway
☐ Construct Interchange	☐ Emergency/Storm Damage	☐ Rockfall Project
☐ Modify Interchange	☐ Bridge Widening	☐ Left-turn Pocket
☐ Bridge Replacement (New alignment? ☐ Yes ☐ No)	☐ Curve Correction	☐ Modify Slope
	☐ Building Project	☐ Stabilize Subgrade
	☐ Median Barrier Retrofit	☐ Stabilize Roadway
☐ Bridge Rehabilitation	☐ Construct Passing Lane	☐ Landslide/Slip-out
☒ New Bridge	☒ Soundwall/Retaining Wall	☐ Bridge Deck Rehab.
☐ Bridge Seismic Retrofit	☐ Roadway Rehabilitation	☐ Bridge Joint Seals
☐ Other Design: Explain:		

Briefly describe proposed scope of DES involvement for all alternatives.

Alternative 1: US 101 / SR 92 Direct Connector from westbound SR 92 to northbound and southbound US 101:

Review proposed direct connector bridges: SR 92 over seal slough, the US 101 north connector and the US 101 south connector.

Alternative 2: Reversible US 101 / SR 92 Direct Connector

Review proposed direct connector bridges: SR 92 over seal slough, the US 101 north connector and the US 101 south connector.

Project Schedule

PA/ED State Date	Summer 2020

Project Cost

For PSR (PDS) projects, the following section is to be used for EACH alternative, provided that the scope is significantly different.

Build Alternative 1

Project Cost Range ($ 1000's)		**Cost of Largest Structure ($ 1000's)**
Roadway	$ 56,000	$60,000
Structure**	$ 60,000	
Total	$ 116,000	

**Structure Cost Range to be provided by (check one)

☒ Consultant ☐ Structure Design Technical Liaison.

Build Alternative 2

Project Cost Range ($ 1000's)		**Cost of Largest Structure ($ 1000's)**
Roadway	$ 73,030	$60,000
Structure**	$ 60,000	
Total	$ 134,563	

**Structure Cost Range to be provided by (check one)

☒ Consultant ☐ Structure Design Technical Liaison.

Project Scope Breakdown by DES Function

Photogrammetry

Note: A Photogrammetry Service Request-PSR (PDS) must be completed and submitted to DES Photogrammetry by the District Photogrammetry Coordinator.

Bridge Design Services (check applicable boxes)

Design by:

☐ Office of Structure Design
☐ Structure Maintenance Design
☐ Office of Structure Contract Management (Consultant Design Oversight)
☒ Office of Special Funded Projects (Consultant Design Oversight)

Bridge Information:

☒ New Bridge(s)	Number 3	Br. Name(s) & No(s).
☐ Bridge Replacement(s)	Number	Br. Name(s) & No(s).
☐ Bridge Widening(s)	Number	
☐ New Bridge over water	Number	
☐Bridge Replacement over water	Number	Br. Name(s) & No(s).
☐Bridge Widening over water	Number	Br. Name(s) & No(s).
☐ Bridge Rail Replacement(s)	Number	Br. Name(s) & No(s).
☐Approach Slab	Number	Br. Name(s) & No(s).
☐Bridge with Railroad Involved	Number	Br. Name(s) & No(s).
☐Bridge w/ Scour Analysis	Number	Br. Name(s) & No(s).
☐Bridge w/ Special Design or Retrofit	Number	Br. Name(s) & No(s).

Other DES functional units required for Structure Work

☐ Structure Hydraulics (include if bridge is over or adjacent to water)
☐ Preliminary Investigations (Structure Foundation Plan)
☒ Geotechnical Services (Structure Foundations)

Wall Design Data for Structure Design & Geotechnical Services

☒ Soundwall(s) Number 2	Est. Max. Ht 15 Est. Length 3000	☒ Standard Design	☐ Special Design
☒ Ret. walls(s) Number 6	Est. Max. Ht 12 feet Est. Length 900 feet	☒ Standard ☐ Design	☐ Special Design
☐ MSE Wall(s) Number	Est. Max. Ht Est. Length	☐ Standard Design	☐ Special Design

Geotechnical Services

Is Oversight for consultant prepared geotechnical reports required?

☒ Yes ☐ No

Has the Geotechnical Design Liaison or other geotechnical person been contacted?

☐ Yes ☒ No If yes, who?

Terrain	☒ Flat	☐ Rolling	☐ Mountainous	
Cuts:	Est. Max Height (m)	Est. Volume (m^3):	☐ New	☐ Widen
Fills:	Est. Max Height (m)	Est. Volume (m^3):	☐ New	☐ Widen

Sign Structures

☒ Overhead Sign Foundations	Number 11
☐ Changeable Message Sign Foundations	Number

Other:

☐ Special Studies (slope stability, rockfall, erosion, seepage, ground water, settlement, liquefaction, slipout repair, rock slope, etc.) Explain
☐ Existing Maintenance Problems: Explain:

Technical Specialist Design

Anticipated insertable plan sheet(s) check below:

☐ Culvert(s)	Number
☐ Barrier(s)	Number
☒ Signs and Overhead Structures	Number 11
☐ Other Design:	Explain:

Transportation Architecture Design

☐ Design New Building(s)	Explain:
☐ Remodel Existing Buildings(s)	Explain:
☒ Bridge Aesthetics Evaluation	Explain: Project will construct significant bridge structures and retaining walls that will require bridge aesthetics.
☐ Build scale model	Explain:
☐ Other Aesthetics work	Explain:

Electrical, Mechanical, Water & Wastewater Design

☐ Pumping Plants	Explain:
☐ Movable bridge, drawbridge	Explain:
☐ Lighting control system for facilities	Explain:
☐ Sanitary Systems	Explain:

Materials Engineering & Testing Services

Pavement

☐ Rigid ☒ Flexible	Average Grade	Average Superelevation
☐ Deflection Study Required	No. of Locations	Lane/miles to be tested

Consultation and Inspection

☐ Loop detectors	☐ Signal & Lighting Products	☐ Changeable Message Signs, Closed Circuit TV
☒ Concrete Bridge	☐ Steel Bridge	

Materials Engineering & Testing Services (Continued)

Corrosion Tests

☒ Soil	☐ Concrete	☐ Cathodic Protection System

Other

☐ Special Products:	Explain

Additional Studies, Investigations or Research from DES

Identify additional studies or investigations that may be required from DES Functional Units.

Prepared By: Sasha Dansky **Date** 5/25/2020

Please submit this form to DES, to the attention of the Project Liaison Engineer, Office of Project Delivery, in the subdivision of Program/Project & Resource Management.

DES will provide a Structure Cost Estimate Range, for each alternative and a resource summary estimate to be included in the project workplan.

Attachment L

Design Scoping Index

US 101 / SR 92 Direct Connector Project

Project Initiation Document
Design Scoping Index

Location Map

Attach the project location map to index to show the location of all design improvements.

Today's Date:	5-25-2020
Status (Initial, Update):	SD, Update

General Information:

District:	County:	Route:	Kilometer Post (Post Mile)	EA
04	SM	US101/SR92	PM 10.6-12.9/ PM R12.0-R14.5	04-2Q790

Project Manager	Mohammad Suleiman	Phone #	(510) 622-5943
Task Manager		Phone #	
Project Engineer	Sasha Dansky (Consultant)	Phone #	(925) 938-0383
Design Functional Manager		Phone #	

General Project Descriptions:	The US 101 / SR 92 Direct Connector Project (Project) considers two build alternatives. The two build alternatives: • Alternative 1: US 101 / SR 92 Direct Connector from westbound SR 92 to northbound and southbound US 101 • Alternative 2: Reversible US 101 / SR 92 Direct Connector

Project Need:	The US 101/SR 92 Interchange is a major facility that serves substantial regional traffic as well as local street connections. There are no existing High Occupancy Vehicle (HOV) bypasses or lane designations for the connecting ramps at US 101 and SR 92 that might provide incentives for carpool or bus use. There is substantial delay and congestion within the interchange area caused by heavy traffic volumes and inadequate capacity during peak periods, without any options for multi-occupant vehicles to bypass the existing congested conditions. In addition, inefficient weaving and merging at the interchange ramp connections contribute to the existing congestion. Congestion and weaving conflicts also contribute to higher than average collision rates at ramp and connector locations throughout the project limits. Specific major congestion locations are summarized below. **AM Peak Period** Heavy traffic movement along westbound SR 92, from San Mateo-Hayward Bridge to northbound and southbound US 101, creates substantial delay during the AM peak period. • **Westbound SR 92 to Southbound US 101**. The existing single-lane loop connector does not carry adequate capacity to handle the heavy traffic volume from westbound SR 92 to southbound US 101. In addition, the westbound to southbound loop connector ramp merge with the southbound US 101 mainline resulting in congestion on US 101, which spills back upstream of the loop connector ramp merge, contributing to additional delay along both southbound US 101 and the westbound to southbound connector ramp. Also contributing to the delay at this location are vehicles originating from the Edgewater Boulevard / Mariners Island Boulevard on-ramp heading westbound on SR 92 beyond US 101 that must weave across the lanes exiting to the connector ramps to northbound and southbound US 101to get to the number one lane or the number two lane on westbound SR 92, and this weaving activity adds to delays.

	• **Westbound SR 92 to Northbound US 101**. The queue from the westbound SR 92 loop connector ramp to southbound US 101 (described above) extends beyond the connector ramp to northbound US 101, affecting westbound SR 92 mainline operation by blocking one of the two exit lanes to northbound US 101. Additionally, the westbound SR 92 to northbound US 101 connector ramp is controlled by a ramp meter. Heavy traffic volumes using this connector ramp merge with traffic from the metered Fashion Island Boulevard on-ramp (one general purpose lane and one HOV lane) after the ramp meter lines but prior to merging onto the northbound US 101 mainline. The queuing on this connector ramp is due to inadequate capacity on the US 101 mainline and weaving/merging along the ramp resulting in congestion that spills back upstream along the connector ramp and onto westbound SR 92. • **Eastbound and Westbound SR 92**. Eastbound traffic on SR 92 entering the interchange extends from the southbound US 101 ramp to beyond Alameda de las Pulgas (west of the US 101/SR 92 interchange). In the westbound direction, there is a bottleneck that develops at the South Delaware Street off-ramp forming a queue that extends back to the connector from northbound US 101. The westbound SR 92 off-ramp queue extends from the southbound/northbound US 101 ramps to the Foster City Boulevard interchange. • **PM Peak Period** Heavy traffic movement from northbound and southbound US 101 along eastbound SR 92 to the San Mateo- Hayward Bridge creates substantial delay at several locations during the PM peak period. • **Northbound and Southbound Connector Ramps and Eastbound SR 92 Mainline.** Heavy traffic on the southbound US 101 connector ramp merging with the northbound US 101 connector ramps and the eastbound SR 92 mainline traffic over a short distance of approximately 1,000 feet results in substantial delays backing up traffic onto both northbound and southbound US 101 and eastbound SR 92. The congestion on eastbound SR 92 extends beyond Alameda de las Pugas west of the US 101/SR 92 interchange. A bottleneck also occurs at the mainline lane drop east of Foster City Boulevard interchange and the queue from this bottleneck extends back to the US 101/SR 92 interchange and merges with the bottleneck at the US 101 ramps merge/lane drops. • **Northbound US 101 to Eastbound SR 92.** The one-lane connector ramp does not have adequate capacity to handle traffic volume from northbound US 101 to eastbound SR 92, resulting in traffic queues on northbound US 101 that typically extends several miles back past the East Hillsdale Boulevard and Marine Parkway/Ralston Avenue Interchanges.
Project Purpose:	• Improve the operational efficiency for multi-occupant vehicles and express lane users traveling between US 101 and SR 92 , • Increase person throughput (the number of people moved), and • Encourage carpooling and transit use.

Item	Considerations	Yes/No/Specific	Comments (summarize pertinent information. assumptions and reference location of detailed information):
1. Project Setting (refer to Planning Scoping Checklist)	Rural or Urban?	Urban	
	Current Land Uses: (e.g., industrial, light industry, commercial, agricultural residential etc).	Mixed, including commercial and residential	
	Adjacent Land Uses:	See above	
	Existing Landscaping:	Some landscaping (low plants)	
	Designated or Eligible Scenic Highway	No	

The following pages are to be used for each alternative provided that the scope is significantly different. If a route has been adopted as a freeway, a decision must be made as to whether or not the project will address improvements to the existing traversable highway or move to construction of a freeway facility.

Item	Considerations		Yes/No/Specific	Comments (summarize pertinent information, assumptions and reference location of detailed information):
Design Concept and Route Matters	1.	Design Concept?		
		Freeway/Expressway/ Conventional Highway	Specific	US 101: 10 to 11 lanes, SR 92: 6 to 8 lanes
		Mixed highway and transit	No	
		Mixed highway and rail	No	
		Urban	Yes	
		Other	N/A	
	2.	Existing Route Adoption Date		
	3.	New Route Adoption Proposed?		
	4.	Existing Freeway Agreement Date		
	5	New Freeway Agreement Proposed?		
	6.	Public Road Connection Proposed?	No	
Design Criteria	1.	Design speed for highway facilities within the project limit	Specific	Posted speed limit on US 101 is 65 mph and on SR 92 posted speed limit varies from 55 to 65 mph. Standard direct connector design speed is 50 mph.
		mi/hr?	mi/hr	
	2.	Design Period: (10 yr/15 yr/20yr)	20 year	
		Construction Year	2024	
		Design Year	2045	

	3.	Design Capacity - Level of Service to be maintained over the design period:		
		Mainline	TBD in the PA&ED Phase	
		Ramp	TBD in the PA&ED Phase	
		Local Street	TBD in the PA&ED Phase	
		Weaving Sections	TBD in the PA&ED Phase	
	4.	Design Vehicle Selection	Yes	
		STAA	Yes	
		California	Yes	
		Bus	Yes	

Proposed Roadbed and Structure Widths

Forecasted Average Daily Traffic volumes	TBD
Percent truck volume	TBD

	Roadbed Width			**Structure Width** Direct Connector Structure		
State Highway US 101	Existing	Proposed	Standard	Existing	Proposed	Standard
Lane widths/#	11'-12'	11'-12'	12'		12'	12'
Left Shoulder	4'-13'	2'-10'	10'		4'	4'
Right Shoulder	8'-13'	0'-10'	10'		10' & 18'	10'
Median Width	None	None	None	None	None	None
Bicycle lane	None	None	None	None	None	None
Sidewalk	None	None	None	None	None	None
Planting strip	None	None		None	None	
	Roadbed Width					
State Highway SR 92	Existing	Proposed	Standard			
Lane widths/#	12'	11'-12'	12'			
Left Shoulder	5'-22'	2'-22'	10'			
Right Shoulder	10'-12'	5'-10'	10'			
Median Width	None	None	None			
Bicycle lane	None	None	None			
Sidewalk	None	None	None			
Planting strip	None	None				

Item	**Considerations**	**Yes/No/Specific**	**Comments (summarize pertinent information, assumptions and**

				reference location of detailed information):
Roadway Design Scoping	1. Mainline Operations	Main lane highway widening?	Yes	On US 101 widening for the direct connector to land to the left of the HOV lane. On SR 92 widening for the direct connector and for shoulder running lane in Alternative 2.
		Existing pavement to be rehabilitated with Asphalt Concrete/Rubberized AC/PCC?	TBD	Depends on existing road surface conditions, available funding and maintenance schedule.
		Widen existing facility.	Specific	US 101 existing 10 lane facility to an 11-12 lane facility. SR 92 from a 6 lane facility to 7-8 lane facility.
		Local street structures to span lanes.	No	
		Curb extensions	No	
		Shoulder improvements	Yes	
		Bicycle lanes	N/A	
		Pedestrian refuge islands	N/A	
		Sidewalks	N/A	
		Right of Way acquisition required for shoulder.	Yes	
		Upgrade existing facility to: Expressway/Freeway/ Controlled Access Highway/ Traversable Highway Standards?	No	
		Improve Vertical Clearance	No	
		Adequate Falsework Clearance	Yes	
		Traffic calming features	No	

Item	**Considerations**		**Yes/No/Specific**	**Comments (summarize pertinent information, assumptions and reference location of detailed information):**
Roadway Design Scoping	2. Ramp/Street Intersection Improvements	New Signals?	No	
		Modify Existing Signals?	No	
		Right Turn Lanes	No	
		Widening for Localized Through lanes?	No	
		Merging Lanes?	Yes	
		Deceleration/Acceleration lanes?	No	

		Left Turn Lanes?	No	
		>300 VPH Left Turn (Requires Double Left Turn Lane)		
		Interchange Spacing?	Specific	Project is not modifying the existing location of interchanges; existing conditions is non-standard.
		Ramps Intersect Local Street < 4% grade?	No	
		Intersection Spacing?	Specific	Hillsdale Blvd and the NB US 101 exit ramp at Hillsdale Blvd is 425 feet from the Hillsdale Blvd at Norfolk intersection.
		Exit Ramps >1,500 VPH (Requires two lane exit)	Yes	
		Single lane ramps exceeding 1000' widened to Two lanes	No	
		Curb Ramps?	N/A	
		Pedestrian Facilities?	N/A	
		Other?		
Operational Improvements	Truck Climbing Lane	Sustained Grade exceeding 2% and Total Rise Exceeds 50'?	N/A	
		Other?	N/A	
	Auxiliary Lanes	2000' between Successive On-Ramps?	No	Existing non-standard feature will be perpetuated due to restrictive conditions.
		Two lane Exit Ramps have 1300' Auxiliary Lane?	No	
		Weaving < 2000' between off-ramp and on-ramp?	No	Existing non-standard feature will be perpetuated due to restrictive conditions.
		Other?	N/A	
Right of Way Access Control	Existing access control extends at least 50 ft beyond end of curb return, radius or taper?		No	
	New construction access control extends at least 100' (urban areas) or 300' (rural areas) beyond end of curb returns, radius or taper?		Yes	
	Other?			
Highway Planting and Irrigation	Clearing and Grubbing?		Yes	

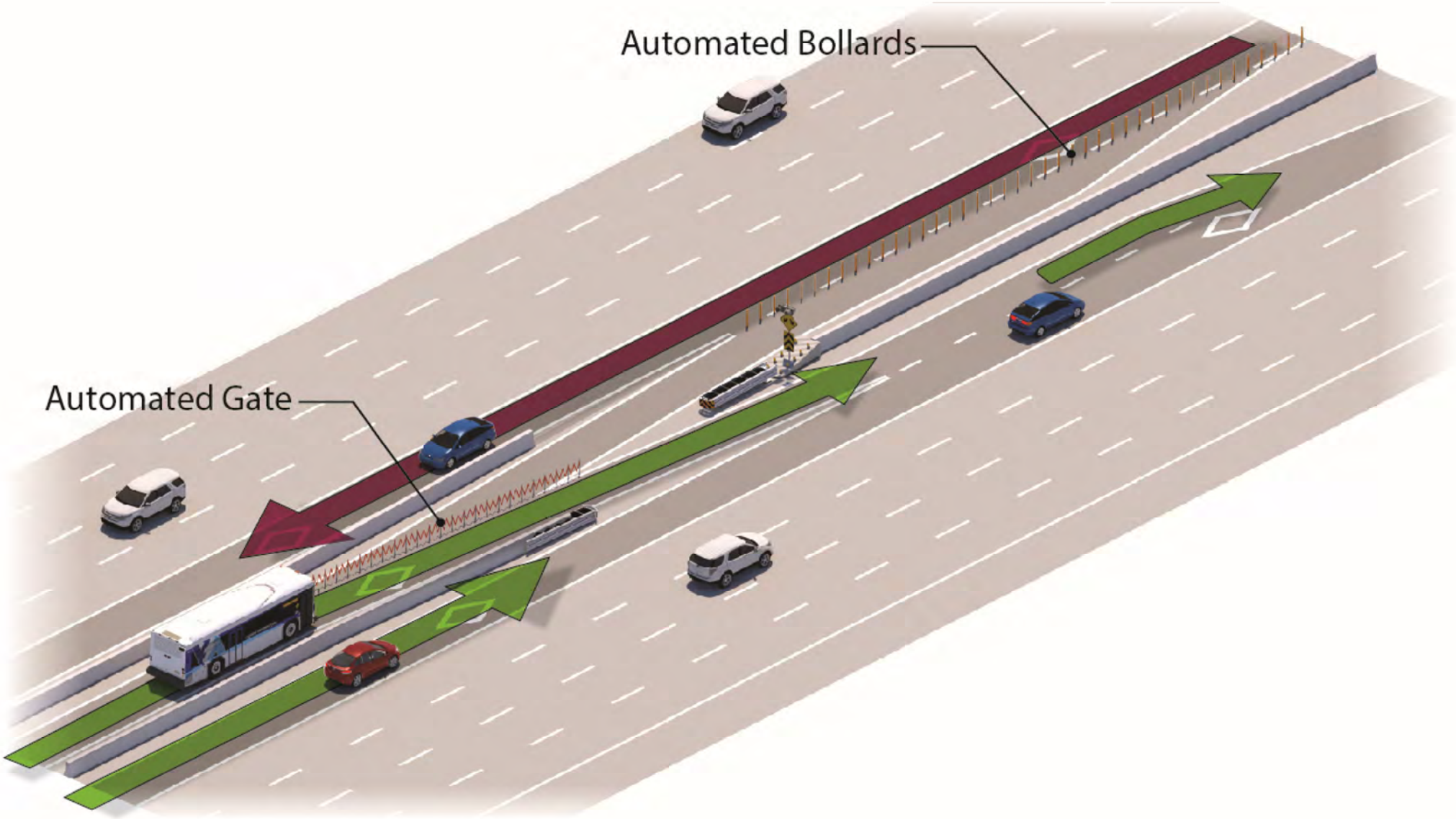
	Relocate Existing Irrigation Facilities?	As needed	Existing irrigation facilities will remain or will be upgraded for additional planting areas
	Highway Planting and Irrigation (including median and roadside)	Yes	Roadside only

Item	**Considerations**	**Yes/No/Specific**	**Comments (summarize pertinent information, assumptions and reference location of detailed information):**
Roadside Management	Vegetation control treatments (road edge, guardrails, signs, drainage facilities, miscellaneous pavement narrow areas, etc.)	Yes	
	Modernization and clustering of facilities and hardware (removing and replacing other items), gore area pavement	Yes	
	Rehabilitate gore area pavement and pavement beyond gore areas (remove and replace miscellaneous pavement and curbs	Yes	
	Contour grading, slope rounding, stepped slopes and topsoil reapplication	Yes	
	Side slopes/embankment slope	Yes	
Safety	Off-Freeway Access (gate, access road, and stairways)	Yes	Would only replace if existing facilities affected
	Maintenance Vehicle Pull-Out	Yes	
	Adequate safety working conditions	Yes	Would deploy standard worker protection devices during construction.
	Relocate roadside facilities/features (cabinets, poles, pull boxes and vaults) away from traffic	Yes	Would relocate facilities affected by the project
Hydraulics/ Stormwater (Refer to the Stormwater data sheet)	Erosion Control?	Yes	Would deploy standard erosion control in graded areas
	Drainage?	Yes	Relocation of drainage inlets, pipes and extensions of culverts if conflicted with project improvement

	Slope Design?	Yes	Would grade slopes as shallow as possible
Structures (Refer to Structures Scoping Checklist or APS)	New Bridge?	Yes	
	Bridge Rehab?	No	
	Retaining Wall	Yes	
	Bicycle or Pedestrian Overcrossing/Undercrossing	N/A	
	Other	N/A	
	On STRAIN list for:	N/A	
Other	Class I Bikeway (bicycle path)	N/A	

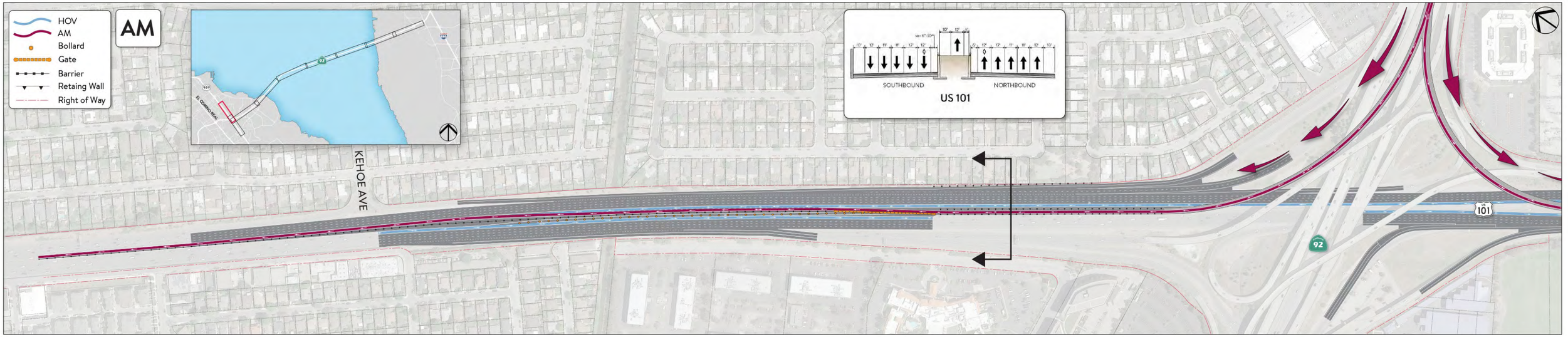
Attachment M

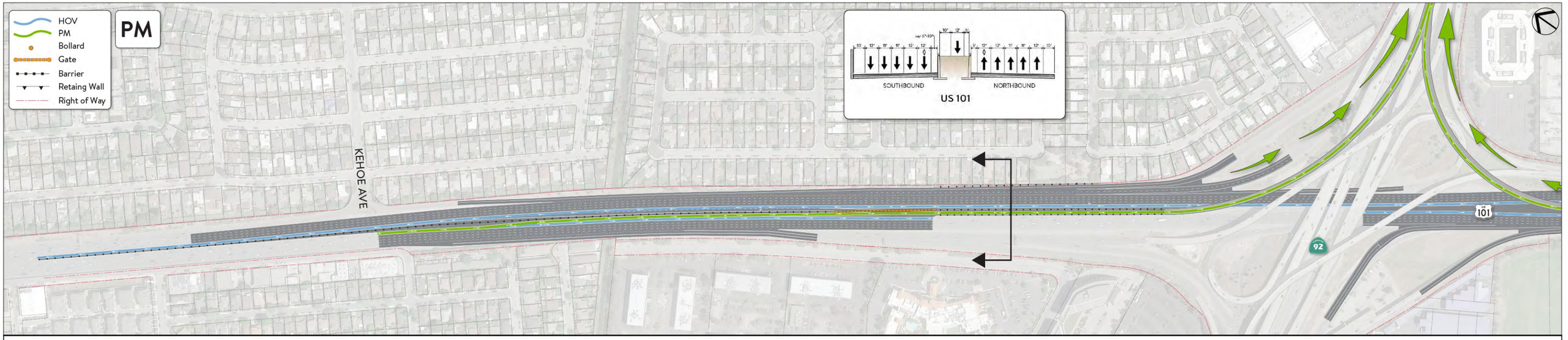
Reversible Gating System


Automated Bollards
Automated Gate

Attachment N

Improvements on San Mateo-Hayward Bridge
(Not Included with Project)

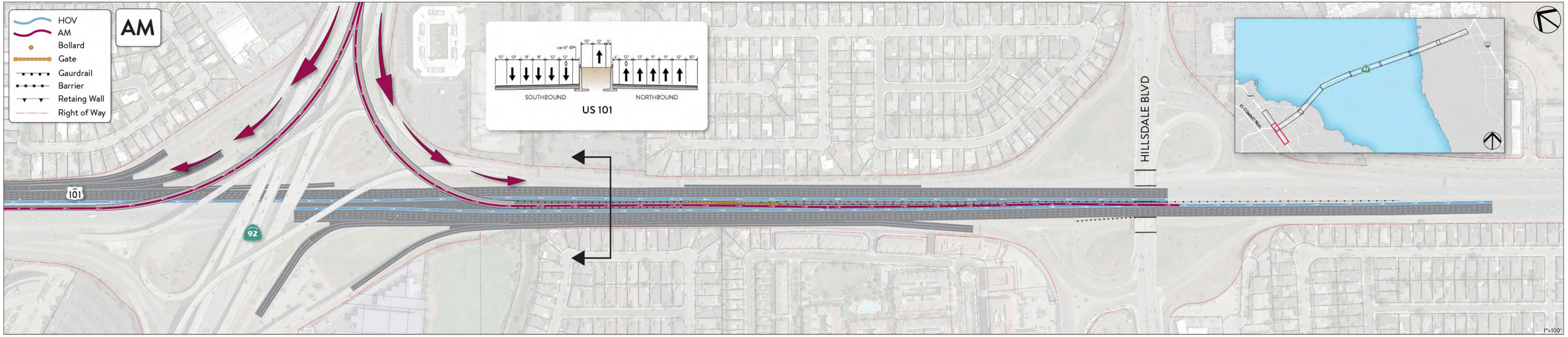


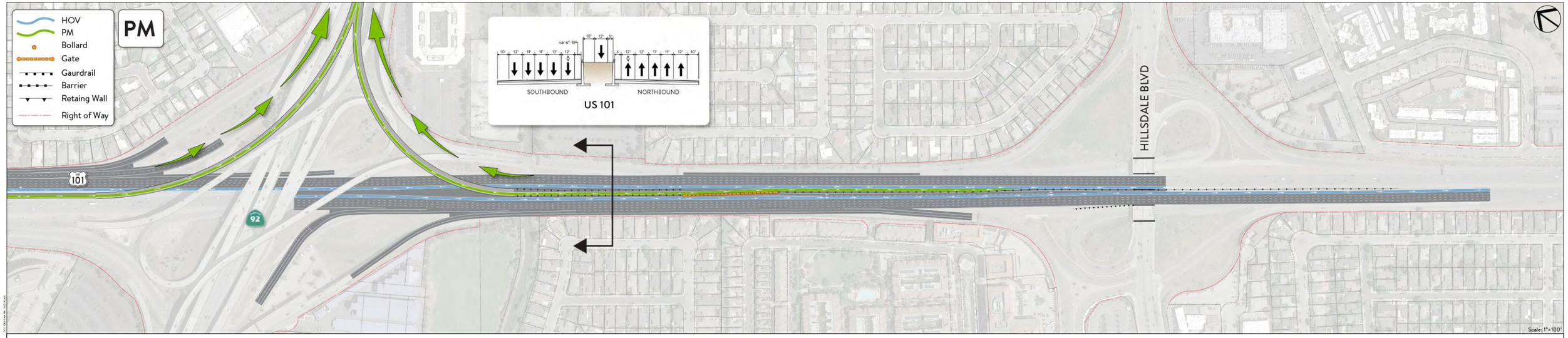


MARK THOMAS

US 101/92 INTERCHANGE

Reversable HOV 001

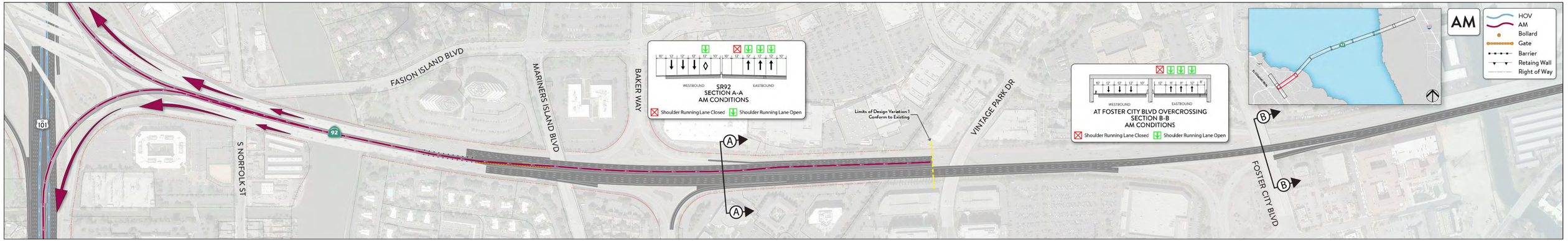


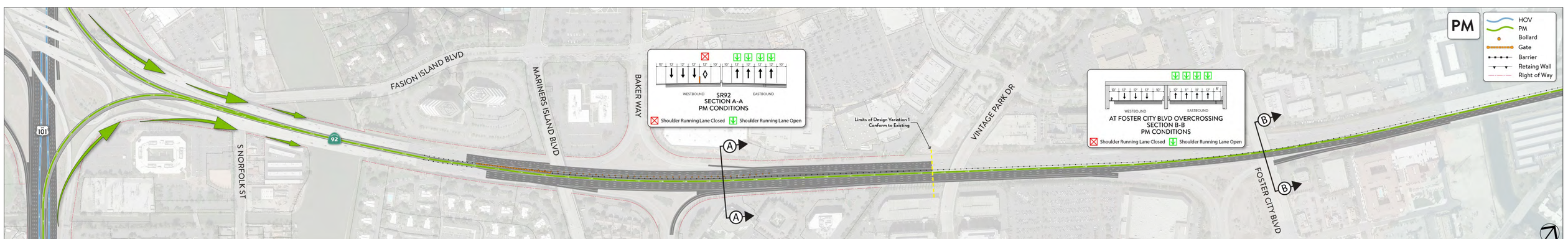


MARK THOMAS

US 101/92 INTERCHANGE

Reversable HOV 002

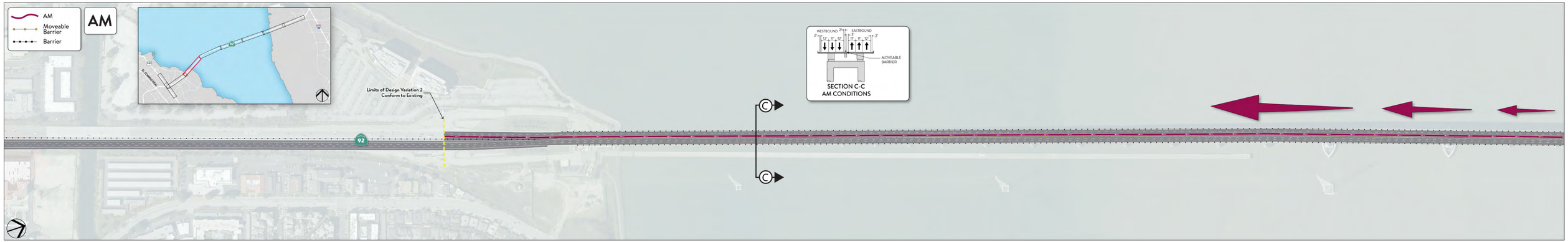


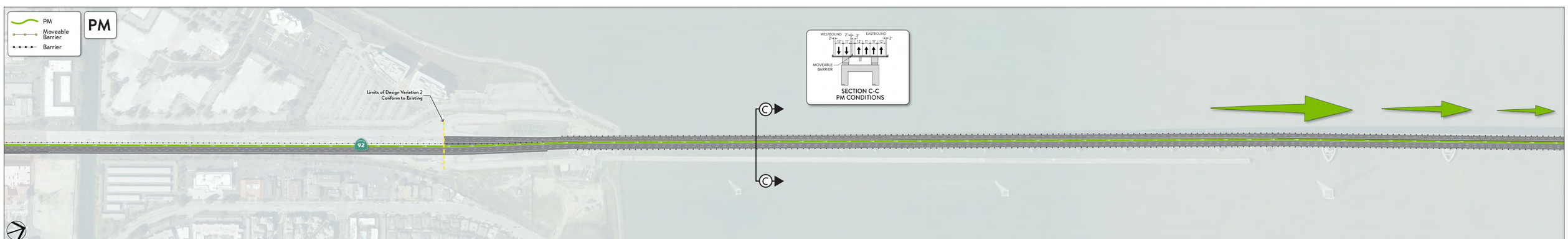


MARK THOMAS

US 101/92 INTERCHANGE

Reversable HOV 003

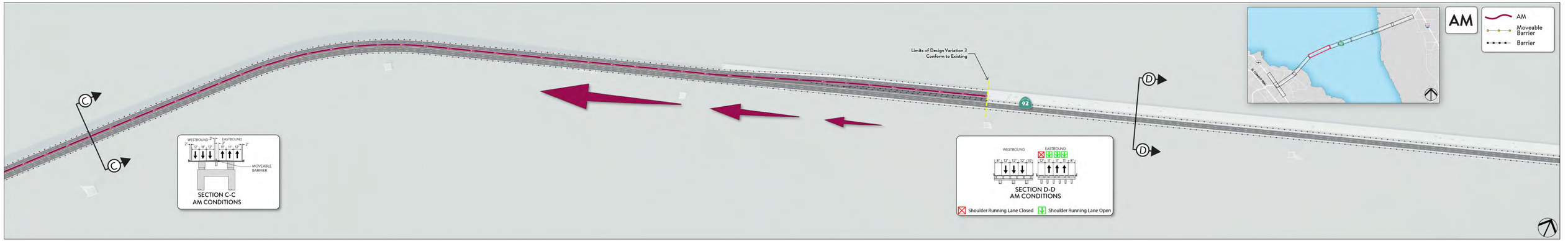


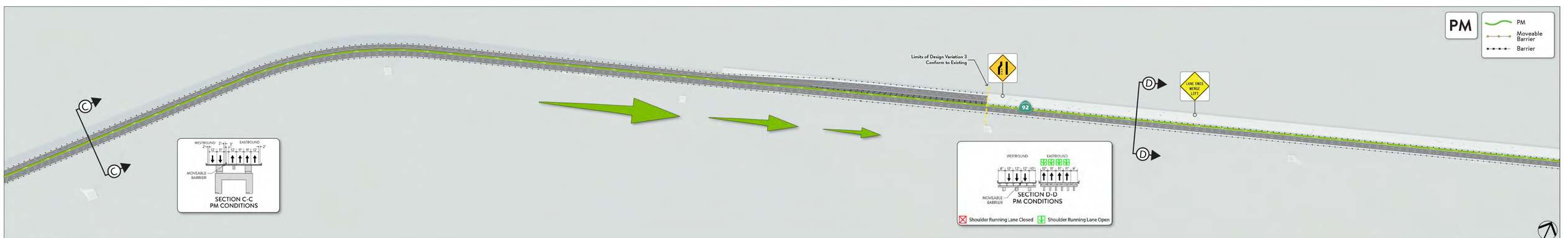


MARK THOMAS

US 101/92 INTERCHANGE

Reversable HOV 004

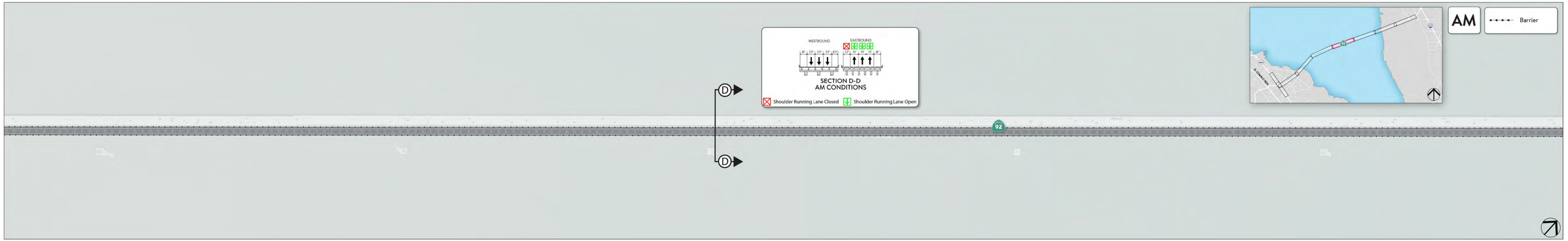


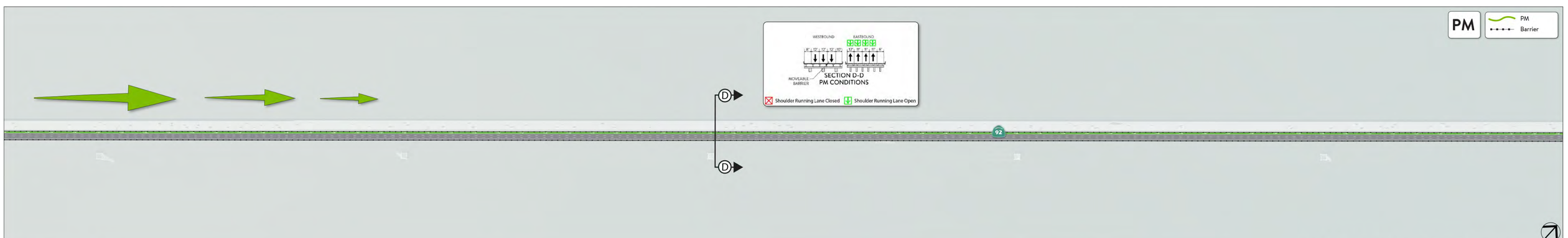


MARK THOMAS

US 101/92 INTERCHANGE

Reversable HOV 005

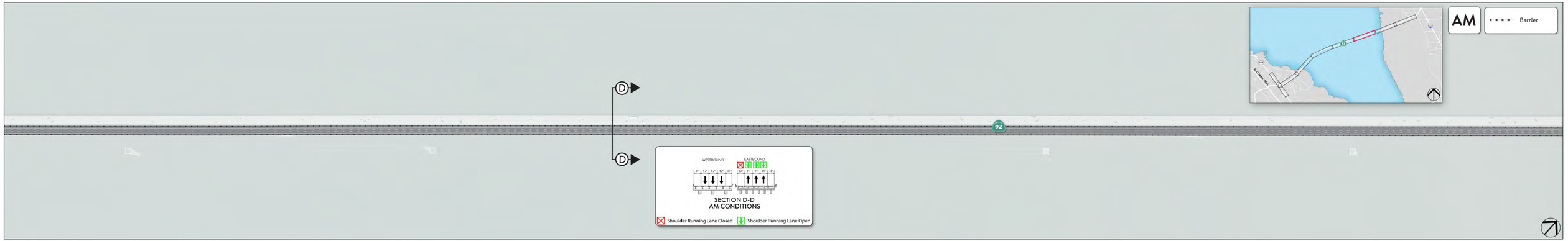


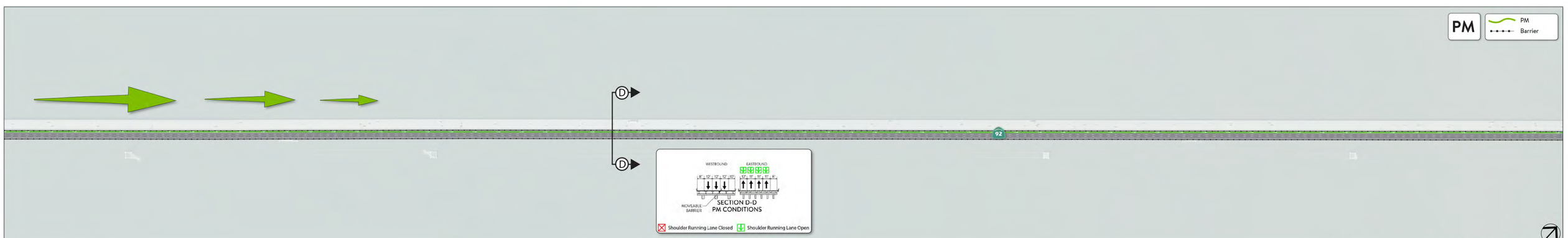


MARK THOMAS

US 101/92 INTERCHANGE

Reversable HOV 006

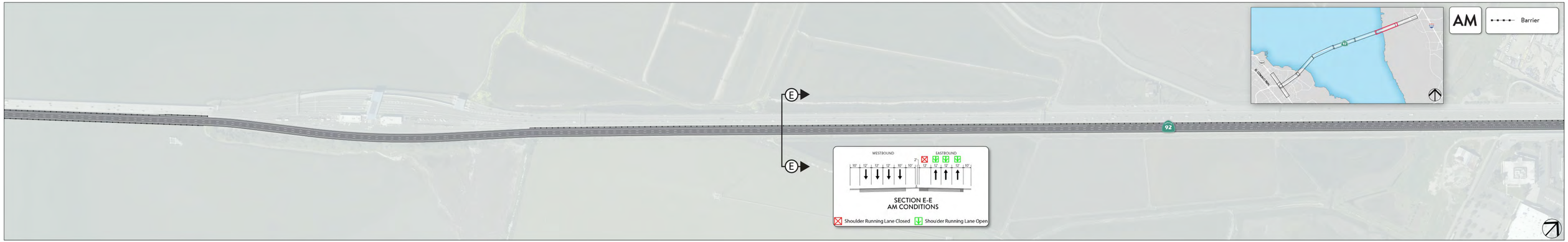


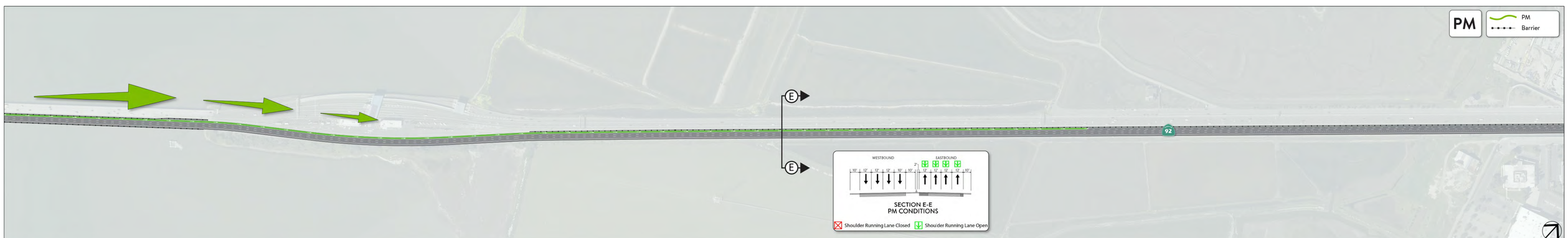


MARK THOMAS

US 101/92 INTERCHANGE

Reversable HOV 007





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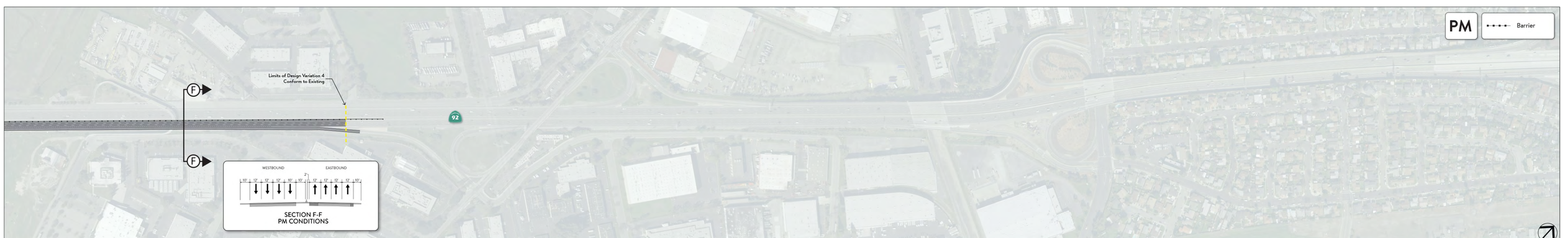
US 101/92 INTERCHANGE

Reversable HOV 008



MARK THOMAS

US 101/92 INTERCHANGE

Reversable HOV 009

Attachment O

TMP Data Sheets

TRANSPORTATION MANAGEMENT PLAN DATA SHEET

For Consultant TMP Projects

PROJECT MANAGER (Name) Sasha Dansky	(Phone #) (925) 324-1703
PROJECT ENGINEER (Name) Olga Rodriguez	(Phone #) (408) 831-5431
DIST-EA/PROJ ID: PROGRAM CATEGORY	04-2Q790 – 0419000049
PROJECT COMMON NAME 101/92 Direct Connector Project	
CO-RTE-PM: 04-SM-101/92-PM 10.6-12.9/PM R12.0-R14.5	
LEGAL DESCRIPTION:	
DETAILED WORK DESCRIPTION: Alternative 1: US 101 / SR 92 managed lane direct connector from westbound SR 92 to northbound and southbound US 101	
CONSTRUCTION COST ESTIMATE: $116 M	
PROJECT PHASE: PID ☒ PR ☐ PS&E ☐ _____%	

Traffic Impact Descriptions

A) Does the proposed project include long term closures (> 24 hours)
Yes_X_ No____
[If "No", Continue to Item D (Preliminary TMP Elements and Costs.). If "Yes", Check Applicable Facilities.]

- ☐ Freeway Lanes
- ☒ Freeway Shoulder
- ☐ Freeway Connectors
- ☐ Freeway Off-ramps
- ☐ Freeway On-ramps
- ☐ Local Streets
- ☐ Full Freeway Closures

B) Are there any construction strategies that can restore existing number of lanes? (Check Applicable Strategies)

- ☒ Temporary Roadway Widening Structure Involvement? Yes____ No_X___ (If yes, notify Project Manager)
- ☒ Lane Restriping (Temporary Narrow Lane Widths) Yes__X__ No____
- ☐ Roadway Realignment (Detour Around Work Area)
- ☒ Median and/or Right Shoulder Utilization
- ☐ Use of an HOV lane as a Temporary Mixed Flow Lane
- ☐ Staging Alternatives (Explain Below)

Notes:

C) Calculated Delays (To be performed if construction strategies in Item B do not mitigate congestion resulting from Item A)

1. Estimated Maximum Individual Vehicle Delay _____Minutes
2. Existing or Acceptable Individual Vehicle Delay _____Minutes
3. Estimated Individual Vehicle Delay Requiring Mitigation [(1) - (2)] _____Minutes
4. Estimated Delay Cost (Most Applicable)
   - ☐ Extended Weekend Closure $_____
   - ☐ Weekly (7 days) $_____
5. Estimated Duration of Project Related Delays _____
6. Cost of Construction Related Delays [(4 x 5)] $_____

D) Preliminary TMP Elements and Cost (**Individual costs are estimates only at this time. Refined public information costs and strategies will be developed during PA/ED phase)**

1. Public Information
   - ☒ a. Brochures and Mailers $10,000
   - ☒ b. Press Release $10,000
   - ☐ c. Paid Advertising $_____
   - ☒ d. Public Information Center/Kiosk $_____
   - ☒ e. Public Meeting/Speakers Bureau $10,000
   - ☒ f. Telephone Hotline $_____
   - ☒ g. Internet $10,000
   - ☒ h. Notification to impacted groups $5,000 (Bicycle users, Pedestrians with disability, others.)
   - ☐ i. Others _____ $

   SUB TOTAL **$**55,000

2. Motorists Information strategies
   - ☐ a. Changeable Message Signs (Fixed) $
   - ☒ b. Changeable Message Signs (Portable) $100,000 (1000PCMS days at $100/day)
   - ☒ c. Ground Mounted Signs $25,000
   - ☐ d. Highway Advisory Radio $
   - ☐ e. Caltrans Highway Information Network (CHIN) $_____
   - ☐ f. Revised Transit Schedules/Maps $_____
   - ☐ g. Others _____ $_____

   SUB TOTAL $ 125,000

3. Incident Management
   - ☒ a. Construction or Maintenance Zone Enhanced Enforcement Program (COZEEP or MAZEEP) $500,000 (200 days estimate)
   - ☐ b. Freeway Service Patrol $_____
   - ☒ c. Traffic Management Team $_____
   - ☐ d. New CCTVs and Detectors $_____
   - ☐ e. Others _____ $_____

SUB TOTAL **$** 500,000

4. Construction Strategies (In Addition to Elements Identified on Item B)

☒	a. Off Peak/Night/Weekend Work	$ 1,000,000 (Lane closures/ Traffic Control – 200days at $5000/day)
	(Lane Closure Charts)	
☐	b. Reversible Lanes	$_____
☐	c. Total Facility Closure	$_____
☐	d. Extended Weekend Closure	$_____
☐	e. Truck Traffic Restrictions	$_____
☒	f. Reduced Speed Zone	$0
☐	g. Connector and Ramp Closures	$_____
☐	h. Incentive and Disincentive	$_____
☒	i. Moveable Barrier	$ 900,000 (60,000 ft at $15/ft)
☐	j. Others	$_____

SUB TOTAL **$** 1,900,000

5. Demand Management

☒	a. HOV Lanes/Ramps (New or Convert)	$0
☐	b. Park and Ride Lots	$_____
☐	c. Rideshare Incentives	$_____
☐	d. Variable Work Hours	$_____
☐	e. Telecommute	$_____
☐	f. Ramp Metering (New Installation)	$_____
☒	g. Ramp Metering (Maintain Existing)	$ 100,000
☐	h. Others _____	$_____

SUB TOTAL **$** 100,000

6. Alternate Route Strategies

☐	a. Add Capacity to Freeway Connector	$_____
☐	b. Street Improvement (widening, traffic signal, etc)	$_____
☐	c. Traffic Control Officers	$_____
☐	d. Parking Restrictions	
☐	e. Others _____	$_____

SUB TOTAL **$**_____

7. Other Strategies

☐	a. Application of New Technology	$_____
☐	b. Others _____	$_____

SUB TOTAL **$**_____

8. The Project includes the following: (Check applicable type of facility closures)
   - ☒ a. Highway or Freeway Lanes
   - ☒ b. Highway or Freeway Shoulders
   - ☐ c. Full Freeway Closure
   - ☒ d. Freeway On/Off-Ramps
   - ☒ e. Freeway Connectors
   - ☐ f. Local Streets
   - ☐ g. Prolonged Ramp Closures:

9. Major operations requiring traffic control and working days for each

Operation	# of Working Days	# of Traffic Control Days
☒ a. Clearing and Grubbing	20	0
☒ b. Existing Feature Removal	60	20
☒ c. Excavation of Embankments Construction	20	0
☒ d. Structural Section Construction	240	20
☒ e. Drainage Feature Construction	30	
☒ f. Structures Construction	360	50
☒ g. MGS/Barrier Construction	240	50
☒ h. Striping	30	30
☒ i. Electrical Component Construction	120	30
☐ j. Other		
Total days	500	200

TOTAL ESTIMATED COST OF TMP ELEMENTS = **$** 2,680,000

Notes : Extensive TMP <u>will be prepared during later project phases</u> for this project. Number of days is estimated given major items of work. Additional Traffic Control and TMP considerations will be developed during PA&ED phase. TMP Elements are 5% or roadway costs and 2.5% of total construction costs.

PREPARED BY (Consultant) _____ DATE 8/1/2020
Sasha Dansky, PE

APPROVAL RECOMMENDED BY
(Caltrans Oversight Engineer) May C Kung DATE 8/12/2020

APPROVED BY (TMP Office) _____ DATE 8/13/20

Attachment P

Right of Way Conceptual Estimate

Date: May 2020

Co. SM Rte.101/92
P.M. PM 10.6-12.9/ PM R12.0- R14.5
EA 04-2Q790
Project ID: 0419000049

Subject: **RIGHT OF WAY CONCEPTUAL COST ESTIMATE**

Project Description:

The project proposes to add a managed lane direct connector at the US 101 and SR 92 Interchange area. The US 101 / SR 92 Managed Lane Direct Connector Project (Project) considers two build alternatives which will have identical right of way impacts.

Build Alternatives:

- Alternative 1: US 101 / SR 92 managed lane direct connector from westbound SR 92 to northbound and southbound US 101
- Alternative 2: Reversible US 101 / SR 92 managed lane direct connector ramps

I. *Right of Way Engineering*

Project will require full compliance with Right of Way Manual and Local Project Oversight Branch Guidelines including, but not limited to, pre-design Record of Survey, Base Map, Appraisal Map, legal descriptions and deeds, property transfer documents, JUAs/CCUAs, Record Map, monuments, and one or more Record of Surveys.

II. *Engineering Surveys*

Is any surveying or photogrammetric mapping required?
___ No (Provide an explanation in Remarks Section XIII)
_X_ Yes (See PSR-PDS Survey Needs Questionnaire)

III. *Parcel Information (Land and Improvements)*

Are there any property rights required within the proposed project limits?

No Yes X (Complete the following)

Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.)

It is anticipated that the project will require property rights from 50 single family residences. All acquisitions, both fee and temporary construction easement (TCE) are "sliver" takes and are not expected to require relocation, either temporarily or permanently. Of the effected properties, 31 will require both fee property and TCE acquisition. TCE's will be required from an additional 19 single family residences, resulting in a total of 50 property impacts. Of the properties requiring fee and TCE acquisition, unencumbered fee acquisition will be required from15 properties. Acquisition of property encumbered by an existing public utility easement will be required from 16 properties.

Right of Way Cost Estimate:

	Current Value	Escalation Rate	Escalated Value
A. Acquisition, including Excess Lands, Damages, and Goodwill	$400,000	3 %	$464,000
B. Environmental Mitigation	$1,500,000	3 %	$1,739,000
C. Grantor's Appraisal Cost	$250,000	NA	$250,000
D. Utility Relocation - Project Liability (from Section VII)	$100,000	3 %	$116,000
E. Relocation Assistance			
F. Clearance Demolition		%	
G. Title and Escrow Fees	$100,000	NA %	$116,000
Total Current Value	*$2,350,000*		
TOTAL ESCALATED VALUE			**$2,685,000**

Fee Acquisition (and TCE)	31
Standalone TCE	19
TOTAL PARCEL COUNT	**50**

Right of Way Support Estimate:

	Unit	Quantity	Cost	Total
A. Right of Way Engineering	LS	1	$100,000	$100,000
B. Appraisal Mapping	Sheet	5	$10,000	$50,000
C. Plat and Legal	Parcel	50	$3,500	$175,000
D. Appraisal	Parcel	50	$7,500	$375,000
E. Acquisition Support	Parcel	50	$8,000	$400,000
TOTAL RIGHT OF WAY SUPPORT				**$1,100,000**

IV. *Dedications*

Are there any property rights which have been acquired, or anticipate will be acquired, through the "dedication" process for the Project?

No x Yes _____

VI. *Relocation Information*

Are there relocations anticipated? YES _____ NO __X____
(If yes, provide the following information)

VII. *Utility Relocation Information*

Do you anticipate any utility facilities or utility rights of way to be affected?

No clearly required utility relocations have been identified. An allowance of $100,000* is being carried as a contingency should project improvements impact any existing facilities.

*This amount reflects the estimated total financial obligation by the Local Agency.

The following checked items may seriously impact lead time for utility relocation:

__X_ Longitudinal policy conflict(s)
____Environmental concerns impacting acquisition of potential easements
____Power lines operating in excess of 50 KV and substations

VIII. *Rail Information*

Are railroad facilities or railroad rights of way affected?

No __X__ Yes ____ (Complete the following)

IX. *Clearance Information*

Are there improvements that require clearance?

No __X__ Yes ____ (Complete the following)

X. *Hazardous Materials/Waste*

Are there any sites and/or improvements in the Project Limits that are known to contain hazardous waste/materials?

None __X__ Yes _____ (Explain in the Remarks Section XIII)

Are there any sites and/or improvements in the Project Limits that are suspected to contain hazardous waste/materials?

None _X__ Yes _____ (Explain in the Remarks Section XIII)

XI. *Project Scheduling* *Completion Dates*

Proposed completion of Appraisal maps and legal descriptions, if needed	October 2024
Proposed Environmental Clearance	July 2023
Proposed R/W Certification	January 2026
Proposed Ready to List (RTL)	February 2026
Proposed Construction Award	July 2026

XII. *Proposed Funding**

	Local	State	Federal	Other
Acquisition	$	$	$	$
Utilities	$	$	$	$
Relocation Assistance Program	$	$	$	$
R/W Support Costs	$	$	$	$

*Funding has not yet been identified. Funding will be determined prior to completion of the PS&E phase.

XIII. *Remarks*

All information contained herein is preliminary and conceptual in nature. Further definition of costs and impacts will be developed during PA/ED when property, utility, and environmental impacts are more well defined. Right of Way Data Sheets will be prepared during PA/ED.

Attachment Q

Cooperative Agreement

COOPERATIVE AGREEMENT

This AGREEMENT, effective on _____, is between the State of California, acting through its Department of Transportation, referred to as CALTRANS, and:

San Mateo County Transportation Authority, a political subdivision of the State of California, referred to hereinafter as SMCTA.

An individual signatory agency in this AGREEMENT is referred to as a PARTY. Collectively, the signatory agencies in this AGREEMENT are referred to as PARTIES.

RECITALS

1. PARTIES are authorized to enter into a cooperative agreement for improvements to the State Highway System per the California Streets and Highways Code, Sections 114 and 130.

2. For the purpose of this AGREEMENT, *the US 101/SR 92 Interchange Direct Connector project to construct direct connectors from westbound SR 92 to northbound and southbound US 101* will be referred to hereinafter as PROJECT. The PROJECT scope of work is defined in the project initiation and approval documents (e.g. Project Study Report, Permit Engineering Evaluation Report, or Project Report).

3. All obligations and responsibilities assigned in this AGREEMENT to complete the following PROJECT COMPONENT will be referred to hereinafter as WORK:

   - PROJECT APPROVAL AND ENVIRONMENTAL DOCUMENT (PA&ED)

   Each PROJECT COMPONENT is defined in the CALTRANS Workplan Standards Guide as a distinct group of activities/products in the project planning and development process.

4. The term AGREEMENT, as used herein, includes this document and any attachments, exhibits, and amendments.

   This AGREEMENT is separate from and does not modify or replace any other cooperative agreement or memorandum of understanding between the PARTIES regarding the PROJECT.

   PARTIES intend this AGREEMENT to be their final expression that supersedes any oral understanding or writings pertaining to the WORK. The requirements of this AGREEMENT will preside over any conflicting requirements in any documents that are made an express part of this AGREEMENT.

   If any provisions in this AGREEMENT are found by a court of competent jurisdiction to be, or are in fact, illegal, inoperative, or unenforceable, those provisions do not render any or all other AGREEMENT provisions invalid, inoperative, or unenforceable, and those provisions will be automatically severed from this AGREEMENT.

   Except as otherwise provided in the AGREEMENT, PARTIES will execute a written amendment if there are any changes to the terms of this AGREEMENT.

   PARTIES agree to sign a CLOSURE STATEMENT to terminate this AGREEMENT. However, all indemnification, document retention, audit, claims, environmental commitment, legal challenge, maintenance and ownership articles will remain in effect until terminated or modified in writing by mutual agreement or expire by the statute of limitations.

5. No PROJECT deliverables have been completed prior to this AGREEMENT.

6. In this AGREEMENT capitalized words represent defined terms, initialisms, or acronyms.

7. PARTIES hereby set forth the terms, covenants, and conditions of this AGREEMENT.

RESPONSIBILITIES

Sponsorship

8. A SPONSOR is responsible for establishing the scope of the PROJECT and securing the financial resources to fund the WORK. A SPONSOR is responsible for securing additional funds when necessary or implementing PROJECT changes to ensure the WORK can be completed with the funds obligated in this AGREEMENT.

   PROJECT changes, as described in the CALTRANS Project Development Procedures Manual, will be approved by CALTRANS as the owner/operator of the State Highway System.

9. SMCTA is the SPONSOR for the WORK in this AGREEMENT.

Implementing Agency

10. The IMPLEMENTING AGENCY is the PARTY responsible for managing the scope, cost, schedule, and quality of the work activities and products of a PROJECT COMPONENT.

    - SMCTA is the Project Approval and Environmental Document (PA&ED) IMPLEMENTING AGENCY.

      PA&ED includes the completion of the Final Environmental Document and the Project Report (documenting the project alternative selection).

11. The IMPLEMENTING AGENCY for a PROJECT COMPONENT will provide a Quality Management Plan (QMP) for the WORK in that component. The QMP describes the IMPLEMENTING AGENCY's quality policy and how it will be used. The QMP will include a process for resolving disputes between the PARTIES at the team level. The QMP is subject to CALTRANS review and approval.

12. Any PARTY responsible for completing WORK will make its personnel and consultants that prepare WORK available to help resolve WORK-related problems and changes for the entire duration of the PROJECT including PROJECT work that may occur under separate agreements.

Funding

13. The WORK does not use funds administered by CALTRANS. PARTIES will amend this AGREEMENT should this condition change.

14. Each PARTY is responsible for the costs they incur in performing the WORK unless otherwise stated in this AGREEMENT.

CALTRANS' Quality Management

15. CALTRANS, as the owner/operator of the State Highway System (SHS), will perform quality management work including Quality Management Assessment (QMA), environmental document quality control, and owner/operator approvals for the portions of WORK within the existing and proposed SHS right-of-way.

16. CALTRANS' Quality Management Assessment (QMA) efforts are to ensure that SMCTA's quality assurance results in WORK that is in accordance with the applicable standards and the PROJECT's quality management plan (QMP). QMA does not include any efforts necessary to develop or deliver WORK or any validation by verifying or rechecking WORK.

    When CALTRANS performs QMA, it does so for its own benefit. No one can assign liability to CALTRANS due to its QMA.

17. CALTRANS, as the owner/operator of the State Highway System, will approve WORK products in accordance with CALTRANS policies and guidance and as indicated in this AGREEMENT.

18. Per National Environmental Policy Act (NEPA) assignment and California Environmental Quality Act (CEQA) statutes, CALTRANS will perform environmental document quality control and NEPA assignment review procedures for environmental documentation. CALTRANS quality control and quality assurance procedures for all environmental documents are described in the NEPA Assignments memorandums, available at https://dot.ca.gov/programs/environmental-analysis/standard-environmental-reference-ser/policy-memos#LinkTarget_705. This also includes the independent judgement analysis and determination under CEQA that the environmental documentation meets CEQA requirements.

19. SMCTA will provide WORK-related products and supporting documentation upon CALTRANS' request for the purpose of CALTRANS' quality management work.

20. SMCTA, including any employee, agent, consultant or sub-consultant retained by the SMCTA, shall implement uniform document control policies necessary to retain all records and electronically stored information associated with the WORK, including but not limited to those records identified in California Public Resources Code, Section 21167.6, and including email and attachments, in a manner consistent with the CALTRANS Uniform Filing System and the "Final Caltrans Environmental Records Retention Policy", available at https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/nepa-recordretention-policy-final-a11y.pdf. These records, along with an index of the records, shall be provided to CALTRANS within 60 days of CALTRANS' written request.

21. The cost of CALTRANS' quality management work is to be borne by CALTRANS.

CEQA/NEPA Lead Agency

22. CALTRANS is the CEQA Lead Agency for the PROJECT.

23. CALTRANS is the NEPA Lead Agency for the PROJECT.

Environmental Permits, Approvals and Agreements

24. SMCTA will comply with the commitments and conditions set forth in the environmental documentation, environmental permits, approvals, and applicable agreements as those commitments and conditions apply to SMCTA's responsibilities in this AGREEMENT.

25. Unless otherwise assigned in this AGREEMENT, the IMPLEMENTING AGENCY for a PROJECT COMPONENT is responsible for all PROJECT COMPONENT WORK associated with coordinating, obtaining, implementing, renewing, and amending the PROJECT permits, agreements, and approvals whether they are identified in the planned project scope of work or become necessary in the course of completing the PROJECT.

26. It is expected that the PROJECT requires the following environmental permits/approvals:

ENVIRONMENTAL PERMITS/REQUIREMENTS
401, Regional Water Quality Control Board
National Pollutant Discharge Elimination System (NPDES), State Water Resources Control Board
Essential Fish Habitat Consultation, NOAA Fisheries
Coastal Development Permit, California Coastal Commission
Federal Coastal Zone Mgmt. Act Consistency Determination, San Francisco Bay Conservation and Development Commission

Project Approval and Environmental Document (PA&ED)

27. As the PA&ED IMPLEMENTING AGENCY, SMCTA is responsible for all PA&ED WORK except those activities and responsibilities that are assigned to another PARTY and those activities that are excluded under this AGREEMENT.

28. CALTRANS will be responsible for completing the following PA&ED activities:

CALTRANS Work Breakdown Structure Identifier (If Applicable)
100.10.10.xx Quality Management
165.15.15.xx Essential Fish Habitat Consultation
165.15.15.xx Section 7 Consultation
165.25.25 Approval to Circulate Resolution
175.20 Project Preferred Alternative
180.10.05.05.xx CEQA Lead Final Env. Doc QA/QC and Approval
180.10.05.45 Section 7 Consultation
180.15.05 Record of Decision (NEPA)
180.15.10 Notice of Determination (CEQA)

29. Any PARTY preparing environmental documentation, including studies and reports, will ensure that qualified personnel remain available to help resolve environmental issues and perform any necessary work to ensure that the PROJECT remains in environmental compliance.

30. SMCTA will provide written notice of the initiation of environmental studies to the CEQA and NEPA Lead Agencies prior to completing any other PA&ED phase work.

California Environmental Quality Act (CEQA)

31. Environmental documentation will be prepared in compliance with the California Public Resources Code §§ 21080.3.1(d)(e). CALTRANS will provide, and SMCTA will use, a letter template and a list of California Native American tribes requesting notification. SMCTA will prepare consultation documentation for CALTRANS' signature and transmittal in compliance with the statutorily required time frames.

32. The CEQA Lead Agency will determine the type of CEQA documentation and will cause that documentation to be prepared in accordance with CEQA requirements.

33. Any PARTY involved in the preparation of CEQA documentation will prepare the documentation to meet CEQA requirements and follow the CEQA Lead Agency's standards that apply to the CEQA process.

34. Any PARTY preparing any portion of the CEQA documentation, including any studies and reports, will submit that portion of the documentation to the CEQA Lead Agency for review, comment, and approval at appropriate stages of development prior to public availability.

35. SMCTA will submit CEQA-related public notices to CALTRANS for review, comment, and approval prior to publication and circulation.

36. SMCTA will submit all CEQA-related public meeting materials to the CEQA Lead Agency for review, comment, and approval at least ten (10) working days prior to the public meeting date.

    If the CEQA Lead Agency makes any changes to the materials, then the CEQA Lead Agency will allow SMCTA to review, comment, and concur on those changes at least three (3) working days prior to the public meeting date.

37. The CEQA Lead Agency will attend all CEQA-related public meetings.

38. If a PARTY who is not the CEQA Lead Agency holds a public meeting about the PROJECT, that PARTY must clearly state its role in the PROJECT and the identity of the CEQA Lead Agency on all meeting publications. All meeting publications must also inform the attendees that public comments collected at the meetings are not part of the CEQA public review process.

    That PARTY will submit all meeting advertisements, agendas, exhibits, handouts, and materials to the CEQA Lead Agency for review, comment, and approval at least ten (10) working days prior to publication or use. If that PARTY makes any changes to the materials, it will allow the CEQA Lead Agency to review, comment on, and approve those changes at least three (3) working days prior to the public meeting date.

    The CEQA Lead Agency maintains final editorial control with respect to text or graphics that could lead to public confusion over CEQA-related roles and responsibilities.

National Environmental Policy Act (NEPA)

39. Pursuant to Chapter 3 of Title 23, United States Code (23 U.S.C. 326) and 23 U.S.C. 327, CALTRANS is the NEPA Lead Agency for the PROJECT. CALTRANS is responsible for NEPA compliance, will determine the type of NEPA documentation, and will cause that documentation to be prepared in accordance with NEPA requirements.

    CALTRANS, as the NEPA Lead Agency for PROJECT, will review, comment, and approve all environmental documentation (including, but not limited to, studies, reports, public notices, and public meeting materials, determinations, administrative drafts, and final environmental documents) at appropriate stages of development prior to approval and public availability.

    When required as NEPA Lead Agency, CALTRANS will conduct consultation and coordination and obtain, renew, or amend approvals pursuant to the Federal Endangered Species Act, and Essential Fish Habitat.

    When required as NEPA Lead Agency, CALTRANS will conduct consultation and coordination approvals pursuant to Section 106 of the National Historic Preservation Act.

40. Any PARTY involved in the preparation of NEPA documentation will follow FHWA and CALTRANS standards that apply to the NEPA process including, but not limited to, the guidance provided in the FHWA Environmental Guidebook (available at http://environment.fhwa.dot.gov/index.asp) and the CALTRANS Standard Environmental Reference.

41. Any PARTY preparing any portion of the NEPA documentation (including, but not limited to, studies, reports, public notices, and public meeting materials, determinations, administrative drafts, and final environmental documents) will submit that portion of the documentation to CALTRANS for CALTRANS' review, comment, and approval prior to public availability.

42. SMCTA will prepare, publicize, and circulate all NEPA-related public notices, except Federal Register notices. SMCTA will submit all notices to CALTRANS for CALTRANS' review, comment, and approval prior to publication and circulation.

    CALTRANS will work with the appropriate federal agency to publish notices in the Federal Register.

43. The NEPA Lead Agency will attend all NEPA-related public meetings.

44. SMCTA will submit all NEPA-related public meeting materials to CALTRANS for CALTRANS' review, comment, and approval at least ten (10) working days prior to the public meeting date.

45. If a PARTY who is not the NEPA Lead Agency holds a public meeting about the PROJECT, that PARTY must clearly state its role in the PROJECT and the identity of the NEPA Lead Agency on all meeting publications. All meeting publications must also inform the attendees that public comments collected at the meetings are not part of the NEPA public review process.

    That PARTY will submit all meeting advertisements, agendas, exhibits, handouts, and materials to the NEPA Lead Agency for review, comment, and approval at least ten (10) working days prior to publication or use. If that PARTY makes any changes to the materials, it will allow the NEPA Lead Agency to review, comment on, and approve those changes at least three (3) working days prior to the public meeting date.

    The NEPA Lead Agency has final approval authority with respect to text or graphics that could lead to public confusion over NEPA-related roles and responsibilities.

46. SMCTA will ensure that the PROJECT is included in the approved Federal Statewide Transportation Improvement Program (FSTIP) prior to the NEPA Lead Agency's approval of the environmental document.

Schedule

47. PARTIES will manage the WORK schedule to ensure the timely use of obligated funds and to ensure compliance with any environmental permits, right-of-way agreements, construction contracts, and any other commitments. PARTIES will communicate schedule risks or changes as soon as they are identified and will actively manage and mitigate schedule risks.

Additional Provisions

Standards

48. PARTIES will perform all WORK in accordance with federal and California laws, regulations, and standards; Federal Highway Administration (FHWA) standards; and CALTRANS standards. CALTRANS standards include, but are not limited to, the guidance provided in the:

- CADD Users Manual
- CALTRANS policies and directives
- Plans Preparation Manual
- Project Development Procedures Manual (PDPM)
- Workplan Standards Guide
- Standard Environmental Reference
- Highway Design Manual

Qualifications

49. Each PARTY will ensure that personnel participating in WORK are appropriately qualified or licensed to perform the tasks assigned to them.

Consultant Selection

50. SMCTA will invite CALTRANS to participate in the selection of any consultants that participate in the WORK.

Encroachment Permits

51. CALTRANS will issue, upon proper application, the encroachment permits required for WORK within State Highway System (SHS) right-of-way. SMCTA, their contractors, consultants, agents and utility owners will not work within the SHS right-of-way without an encroachment permit issued in their name. CALTRANS will provide encroachment permits to SMCTA, their contractors, consultants, and agents at no cost. CALTRANS will provide encroachment permits to utility owners at no cost. If the encroachment permit and this AGREEMENT conflict, the requirements of this AGREEMENT will prevail.

52. The IMPLEMENTING AGENCY for a PROJECT COMPONENT will coordinate, prepare, obtain, implement, renew, and amend any encroachment permits needed to complete the WORK.

Protected Resources

53. If any PARTY discovers unanticipated cultural, archaeological, paleontological, or other protected resources during WORK, all WORK in that area will stop and that PARTY will notify all PARTIES within 24 hours of discovery. WORK may only resume after a qualified professional has evaluated the nature and significance of the discovery and CALTRANS approves a plan for its removal or protection.

Disclosures

54. PARTIES will hold all administrative drafts and administrative final reports, studies, materials, and documentation relied upon, produced, created, or utilized for the WORK in confidence to the extent permitted by law and where applicable, the provisions of California Government Code, Section 6254.5(e) will protect the confidentiality of such documents in the event that said documents are shared between PARTIES.

    PARTIES will not distribute, release, or share said documents with anyone other than employees, agents, and consultants who require access to complete the WORK without the written consent of the PARTY authorized to release them, unless required or authorized to do so by law.

55. If a PARTY receives a public records request pertaining to the WORK, that PARTY will notify PARTIES within five (5) working days of receipt and make PARTIES aware of any disclosed public records.

Hazardous Materials

56. HM-1 is hazardous material (including, but not limited to, hazardous waste) that may require removal and disposal pursuant to federal or state law, irrespective of whether it is disturbed by the PROJECT or not.

    HM-2 is hazardous material (including, but not limited to, hazardous waste) that may require removal and disposal pursuant to federal or state law only if disturbed by the PROJECT.

    The management activities related to HM-1 and HM-2, including and without limitation, any necessary manifest requirements and disposal facility designations are referred to herein as HM-1 MANAGEMENT and HM-2 MANAGEMENT respectively.

57. If HM-1 or HM-2 is found the discovering PARTY will immediately notify all other PARTIES.

58. CALTRANS, independent of the PROJECT, is responsible for any HM-1 found within the existing State Highway System right-of-way. CALTRANS will undertake, or cause to be undertaken, HM-1 MANAGEMENT with minimum impact to the PROJECT schedule.

    CALTRANS, independent of the PROJECT will pay, or cause to be paid, the cost of HM-1 MANAGEMENT related to HM-1 found within the existing State Highway System right-of-way.

59. SMCTA, independent of the PROJECT, is responsible for any HM-1 found within the PROJECT limits and outside the existing State Highway System right-of-way. SMCTA will undertake, or cause to be undertaken, HM-1 MANAGEMENT with minimum impact to the PROJECT schedule.

    SMCTA, independent of the PROJECT, will pay, or cause to be paid, the cost of HM-1 MANAGEMENT for HM-1 found within the PROJECT limits and outside of the existing State Highway System right-of-way.

60. The CONSTRUCTION IMPLEMENTING AGENCY is responsible for HM‑2 MANAGEMENT within the PROJECT limits.

SMCTA and CALTRANS will comply with the Soil Management Agreement for Aerially Deposited Lead Contaminated Soils (Soil Management Agreement) executed between CALTRANS and the California Department of Toxic Substances Control (DTSC). Under Section 3.2 of the Soil Management Agreement, CALTRANS and SMCTA each retain joint and severable liability for noncompliance with the provisions of the Soil Management Agreement. SMCTA will assume all responsibilities assigned to CALTRANS in the Soil Management Agreement during PROJECT COMPONENTS for which they are the IMPLEMENTING AGENCY except for final placement and burial of soil within the State right-of-way, per Section 4.5 of the Soil Management Agreement, which is subject to CALTRANS concurrence and reporting to DTSC which will be performed by CALTRANS.

61. CALTRANS' acquisition or acceptance of title to any property on which any HM-1 or HM-2 is found will proceed in accordance with CALTRANS' policy on such acquisition.

Claims

62. SMCTA may accept, reject, compromise, settle, or litigate claims of any consultants or contractors hired to complete WORK without concurrence from the other PARTY.

63. PARTIES will confer on any claim that may affect the WORK or PARTIES' liability or responsibility under this AGREEMENT in order to retain resolution possibilities for potential future claims. No PARTY will prejudice the rights of another PARTY until after PARTIES confer on the claim.

64. If the WORK expends state or federal funds, each PARTY will comply with the Federal Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards of 2 CFR, Part 200. PARTIES will ensure that any for-profit consultant hired to participate in the WORK will comply with the requirements in 48 CFR, Chapter 1, Part 31. When state or federal funds are expended on the WORK these principles and requirements apply to all funding types included in this AGREEMENT.

65. If the WORK expends state or federal funds, each PARTY will undergo an annual audit in accordance with the Single Audit Act in the Federal Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards as defined in 2 CFR, Part 200.

66. When a PARTY reimburses a consultant for WORK with state or federal funds, the procurement of the consultant and the consultant overhead costs will be in accordance with the Local Assistance Procedures Manual, Chapter 10.

Interruption of Work

67. If WORK stops for any reason, each PARTY will continue with environmental commitments included in the environmental documentation, permits, agreements, or approvals that are in effect at the time that WORK stops, and will keep the PROJECT in environmental compliance until WORK resumes.

Penalties, Judgements and Settlements

68. Any PARTY whose action or lack of action causes the levy of fines, interest, or penalties will indemnify and hold all other PARTIES harmless per the terms of this AGREEMENT.

GENERAL CONDITIONS

69. All portions of this AGREEMENT, including the Recitals Section, are enforceable.

Venue

70. PARTIES understand that this AGREEMENT is in accordance with and governed by the Constitution and laws of the State of California. This AGREEMENT will be enforceable in the State of California. Any PARTY initiating legal action arising from this AGREEMENT will file and maintain that legal action in the Superior Court of the county in which the CALTRANS district office that is signatory to this AGREEMENT resides, or in the Superior Court of the county in which the PROJECT is physically located.

Exemptions

71. All CALTRANS' obligations under this AGREEMENT are subject to the appropriation of resources by the Legislature, the State Budget Act authority, programming and allocation of funds by the California Transportation Commission (CTC).

Indemnification

72. Neither CALTRANS nor any of their officers and employees, are responsible for any injury, damage, or liability occurring by reason of anything done or omitted to be done by SMCTA, its contractors, sub-contractors, and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon SMCTA under this AGREEMENT. It is understood and agreed that SMCTA, to the extent permitted by law, will defend, indemnify, and save harmless CALTRANS and all of their officers and employees from all claims, suits, or actions of every name, kind, and description brought forth under, but not limited to, tortious, contractual, inverse condemnation, or other theories and assertions of liability occurring by reason of anything done or omitted to be done by SMCTA, its contractors, sub-contractors, and/or its agents under this AGREEMENT.

73. Neither SMCTA nor any of their officers and employees, are responsible for any injury, damage, or liability occurring by reason of anything done or omitted to be done by CALTRANS, its contractors, sub-contractors, and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon CALTRANS under this AGREEMENT. It is understood and agreed that CALTRANS, to the extent permitted by law, will defend, indemnify, and save harmless SMCTA and all of their officers and employees from all claims, suits, or actions of every name, kind, and description brought forth under, but not limited to, tortious, contractual, inverse condemnation, or other theories and assertions of liability occurring by reason of anything done or omitted to be done by CALTRANS, its contractors, sub-contractors, and/or its agents under this AGREEMENT.

Non-parties

74. PARTIES do not intend this AGREEMENT to create a third party beneficiary or define duties, obligations, or rights for entities not signatory to this AGREEMENT. PARTIES do not intend this AGREEMENT to affect their legal liability by imposing any standard of care for fulfilling the WORK different from the standards imposed by law.

75. PARTIES will not assign or attempt to assign obligations to entities not signatory to this AGREEMENT without an amendment to this AGREEMENT.

Ambiguity and Performance

76. Neither PARTY will interpret any ambiguity contained in this AGREEMENT against the other PARTY. PARTIES waive the provisions of California Civil Code, Section 1654.

    A waiver of a PARTY's performance under this AGREEMENT will not constitute a continuous waiver of any other provision.

77. A delay or omission to exercise a right or power due to a default does not negate the use of that right or power in the future when deemed necessary.

Defaults

78. If any PARTY defaults in its performance of the WORK, a non-defaulting PARTY will request in writing that the default be remedied within thirty (30) calendar days. If the defaulting PARTY fails to do so, the non-defaulting PARTY may initiate dispute resolution.

Dispute Resolution

79. PARTIES will first attempt to resolve AGREEMENT disputes at the PROJECT team level as described in the Quality Management Plan. If they cannot resolve the dispute themselves, the CALTRANS District Director and the Executive Officer of SMCTA will attempt to negotiate a resolution. If PARTIES do not reach a resolution, PARTIES' legal counsel will initiate mediation. PARTIES agree to participate in mediation in good faith and will share equally in its costs.

    Neither the dispute nor the mediation process relieves PARTIES from full and timely performance of the WORK in accordance with the terms of this AGREEMENT. However, if any PARTY stops fulfilling its obligations, any other PARTY may seek equitable relief to ensure that the WORK continues.

    Except for equitable relief, no PARTY may file a civil complaint until after mediation, or forty-five (45) calendar days after filing the written mediation request, whichever occurs first.

    PARTIES will file any civil complaints in the Superior Court of the county in which the CALTRANS District Office signatory to this AGREEMENT resides or in the Superior Court of the county in which the PROJECT is physically located.

80. PARTIES maintain the ability to pursue alternative or additional dispute remedies if a previously selected remedy does not achieve resolution.

Prevailing Wage

81. When WORK falls within the Labor Code § 1720(a)(1) definition of "public works" in that it is construction, alteration, demolition, installation, or repair; or maintenance work under Labor Code § 1771, PARTIES will conform to the provisions of Labor Code §§ 1720-1815, and all applicable provisions of California Code of Regulations, Title 8, Division 1, Chapter 8, Subchapter 3, Articles 1-7. PARTIES will include prevailing wage requirements in contracts for public work and require contractors to include the same prevailing wage requirements in all subcontracts.

    Work performed by a PARTY's own employees is exempt from the Labor Code's Prevailing Wage requirements.

    If WORK is paid for, in whole or part, with federal funds and is of the type of work subject to federal prevailing wage requirements, PARTIES will conform to the provisions of the Davis-Bacon and Related Acts, 40 U.S.C. §§ 3141-3148.

    When applicable, PARTIES will include federal prevailing wage requirements in contracts for public works. WORK performed by a PARTY's employees is exempt from federal prevailing wage requirements.

Contact Information

CALTRANS

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SAN MATEO COUNTY TRANSPORTATION AUTHORITY

Arul K. Edwin, Project Manager

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Email: EdwinA@samtrans.com

SIGNATURES

PARTIES are empowered by the law to enter into this AGREEMENT and have delegated to the undersigned the authority to execute this AGREEMENT on behalf of the respective agencies and covenants to have followed all the necessary legal requirements to validly execute this AGREEMENT.

This AGREEMENT may be executed and delivered in counterparts, and by each PARTY in a separate counterpart, each of which when so executed and delivered shall constitute an original and all of which taken together shall constitute one and the same instrument.

The PARTIES acknowledge that executed copies of this AGREEMENT may be exchanged by facsimile or email, and that such copies shall be deemed to be effective as originals.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

Helena (Lenka) Culik-Caro
Deputy District Director, Design

Verification of funds and authority:

Jeffrey Armstrong
District Budget Manager

SAN MATEO COUNTY
TRANSPORTATION AUTHORITY

Joseph Hurley
Program Director

Attest:

Name Tbd
Title TBD

Approved as to form and procedure:

Shayna Van Hoften
Counsel for SMCTA